Driving Safety, Environmental Protection, and Sustainability Across the Natural Gas and Oil Industry

API is pleased to present its 2024 Publications Catalog. The 2024 Edition lists API standards, recommended practices, and other technical documents to help the natural gas and oil industry operate safely and efficiently, supplying energy to billions of people around the world. API standards and recommended practices are developed by leading industry subject-matter experts to establish and maintain consensus guidelines and good practices for the industry.

As we look to the future, we continue to strive to deliver energy in ways that protect our workers, communities, and the environment. This commitment to improvement is underscored by the release of the 10th Edition of API Specification Q1, Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry—a significant evolution that establishes revised quality management system benchmarks. Designed to foster continuous improvement, reduce the risk of using nonconforming products, and streamline efficiency, the 10th Edition includes a broadened scope that reinforces our commitment to upholding the highest quality standards in an industry that continues to evolve.

The publications in this catalog are intended for all segments of the natural gas and oil industry.

- **For upstream**, API publications cover offshore structures and floating production systems, tubular goods, valves and wellhead equipment, and drilling and production equipment.

- **Midstream** standards cover pipeline and transportation-related subjects.

- **In the downstream** arena, API publications address marketing and refinery equipment, including storage tanks, pressure-relieving systems, compressors, turbines, and pumps.

API also has publications that apply across industry sectors, covering fire and safety protection and petroleum measurement.

Other API publications cataloged here include API Statistical Data Reports, economic analysis, research reports, and other educational materials that provide basic information about the oil and natural gas industry and how technology is transforming it.

API’s influence extends globally, with standards that are referenced in at least 31 countries. This is a testament to the quality and best-in-class reputation of API documents for advancing environmental, health, safety, and operational performance.

Through the publication and use of our 800+ standards—and initiatives like API Energy Excellence®, API’s foundational performance program—we are accelerating industry’s practices in driving safety, health, and environmental progress while meeting global demand for affordable, reliable, and cleaner energy.

For more information or questions about the catalog, please contact the API Standards Department at 202-682-8417 or standards@api.org.

Alexa Burr
Vice President, Standards & Segment Services
API
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### Ordering Information

Print and PDF versions of API standards are available for purchase at [www.apiwebstore.org](http://www.apiwebstore.org).

API provides the public with online access to nearly 200 key industry standards via our IBR (Incorporated by Reference) Reading Room. These standards cover all aspects of the oil and gas industry, including process safety, refinery and chemical plant operations and equipment, offshore drilling, hydraulic fracturing and well construction, and pipeline safety on welding, and public awareness programs. API’s goal is to provide the public with access to these standards, particularly those related to safety or that have been incorporated into federal regulation.

Please view the read-only publications at [http://publications.api.org](http://publications.api.org). The standards are available for review only.
If you have any questions or comments regarding API standards, please visit https://www.api.org/products-and-services/standards

NOTE Free* publications with an asterisk are subject to a $10.00 handling charge for each total order, plus actual shipping charges.

GENERAL: OIL FIELD EQUIPMENT AND MATERIALS

The API Composite List
This is a directory of companies licensed to use the API Monogram and APIQR Registration Mark. This directory also lists the companies who have registered Perforator Designs with API. It provides an alphabetical list of approximately 1,400 manufacturers licensed (at the time of publication) to mark their products with the API Monogram. It also contains a classified listing (by specific API specification) of these licensed manufacturers, as well as over 200 APIQR ISO 9000 registered firms. This directory was developed to assist those individuals desiring to purchase products and services meeting API specifications from companies whose quality systems and capabilities are verified by API's Quality Programs. It is updated and published quarterly.

A searchable on-line version of the composite list is updated weekly and can be found at https://mycerts.api.org/Search/CompositeSearch.

Free*

Spec Q1 •
Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry
(includes Errata 1 dated October 2023)
Establishes minimum quality management system requirements for organizations that provide products for use in the petroleum and natural gas industry. Pages: 43
10th Edition | September 2023
Product Number: G0Q110 | Price: $131.00

Spec Q1 *+
Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry—Chinese
(includes Errata 1 dated October 2023)
Chinese translation of Spec Q1.
10th Edition | September 2023
Product Number: G0Q110CH | Price: $131.00

Spec Q1 *+
Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry—Ukrainian
(includes Errata 1 dated October 2023)
Ukrainian translation of Spec Q1.
10th Edition | September 2023
Product Number: G0Q109U | Price: $131.00

Spec Q2 •
Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries
Defines the quality management system (QMS) requirements for service supply organizations for the petroleum and natural gas industry. This includes, but is not limited to, activities such as well construction, intervention, production, and abandonment, as well as repair/maintenance/configuration of service-related product. Pages: 33
2nd Edition | July 2021 | Product Number: G0Q202 | Price: $96.00

Spec Q2 *
Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries—Russian
Russian translation of Q2.
2nd Edition | July 2021 | Product Number: G0Q202R | Price: $96.00

RP 1FSC
Facilities Systems Completion Planning and Execution
Applies to a wide variety of projects within the oil and gas industry excluding subsurface. Although intended for oil and gas industry, the process described in this document can be applied to other industries as well. It is intended that the processes and practices established herein can be adapted and applied from a single piece of tagged equipment to a complex petrochemical facility. The process described is intended to be applied at a system level. The systems completion process is the sequential activities within a project that verify and prove the construction, installation, integration, testing, and preparation of systems have been completed as designed, and thus, the facility is ready for start-up and operations. The systems completion process is designed to help prepare and manage the transfer of care, custody, and control of facilities under construction through appropriate certification and documentation, such that the details of progress are evident. Pages: 11
1st Edition | July 2013 | Reaffirmed: December 2019
Product Number: G1FSC01 | Price: $66.00

TR 1PER15K-1
Protocol for Verification and Validation of High-Pressure High-Temperature Equipment
Focuses on an evaluation process for HPHT equipment in the petroleum and natural gas industries that includes design verification analysis, design validation, material selection considerations, and manufacturing process controls necessary to ensure the equipment is fit-for-service in the applicable HPHT environment where HPHT environments are intended to mean one or more of the following conditions exist:
• the maximum anticipated surface pressure or shut-in tubing pressure is greater than 15,000 psig or a temperature rating greater than 350 °F;
• the maximum anticipated surface pressure or shut-in tubing pressure is greater than 15,000 psig on the seafloor for a well with a subsea wellhead or at the surface for a well with a subsea wellhead or at the surface for a well with a surface wellhead; or
• the flowing temperature is greater than 350 °F on the seafloor for a well with a subsea wellhead or on the surface for a well with a surface wellhead.

The design verification and validation protocols in this report should be used as a guide by the various API standards committees to develop future documents on equipment specifications for HPHT service. This report is not intended to replace existing API equipment specifications, but to supplement them by illustrating accepted practices and principles that may be considered in order to maintain the safety and integrity of the equipment. This report is intended to apply to the following equipment: wellheads, tubing heads, tubulars, packers, connections, seals, seal assemblies, production trees, chokes, and well control equipment. It may be used for other equipment in HPHT service. Pages: 90
1st Edition | March 2013 | Product Number: G1PER15K11 | Price: $159.00

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This publication is a new entry in this catalog. This publication is related to an API licensing, certification, or accreditation program.
thereof could be applicable to other industry segments, it is recommended that other segments carefully review these requirements in order to determine their applicability and, if necessary, to develop an applicable annex identifying any segment-specific requirements.

This document does not include technical requirements for products and does not include requirements for determination of fitness-for-service for a particular product. In addition, this document does not include requirements for original design and manufacture of product. Pages: 14

1st Edition | April 2017 | Product Number: G18LCM1 | Price: $84.00

TR 18TR1◆
Guidance on Changes to API Q1, Ninth Edition
Written for experienced quality professionals seeking to implement the new requirements of API Q1, 9th Edition and to gain a deeper understanding of the requirements with an overall view to improving their quality management system (QMS) and conformance to API Q1, 9th Edition. While API Q1, 9th Edition was created independently of ISO 9001:2008, the specification continues to satisfy those requirements and the supplemental requirements in API Q1, 8th Edition. The formatting of API Q1, 9th Edition was revised to align with API Q2, 1st Edition and to follow a chronological order in the production and delivery of the product. Pages: 22
1st Edition | June 2015 | Product Number: G18TR101 | Price: $71.00

TR 18TR4
Evaluation of Welding Requirements as Applicable to API Product Specifications
A result of an evaluation of the consistency of welding requirements between API Product Specifications that are primarily used in exploration and production. The intent of the evaluation was to identify a means to standardize welding requirements across API Product Specifications. Pages: 117
1st Edition | December 2017
Product Number: G18TR401 | Price: $131.00

OFFSHORE STRUCTURES

TR 2A-LFS
Load Factor Study for API Recommended Practice 2A-LRFD
Evaluates the suitability of the load factors in API 2A-LRFD, 1st Edition (1993) given the accumulated experience since the 1980s about hurricane hazards and platform performance. Pages: 124
1st Edition | November 2020
Product Number: G2ALFS01 | Price: $120.00

RP 2A-LRFD
Planning, Designing, and Constructing Fixed Offshore Platforms—Load and Resistance Factor Design
Specifies requirements and provides recommendations applicable to the following types of fixed steel offshore structures for the petroleum and natural gas industries: free-standing and braced caissons, jackets, monotonets, and towers. In addition, it is applicable to compliant bottom founded structures, steel gravity structures, jack-ups, other bottom founded structures, and other structures related to offshore structures (such as underwater oil storage tanks, bridges, and connecting structures), to the extent to which its requirements are relevant. This document contains requirements for planning and engineering of the following tasks: design, fabrication, transportation, and installation of new structures, as well as their future removal; in-service inspection and integrity management of both new and existing structures; assessment of existing structures; and evaluation of structures for reuse at different locations. Pages: 518
2nd Edition | August 2019 | Product Number: G2ALRFD2 | Price: $387.00

RP 2A-WSD
Planning, Designing, and Constructing Fixed Offshore Platforms—Working Stress Design
Contains requirements for the design and construction of new fixed offshore platforms and for the relocation of existing platforms used for drilling, development, and storage of hydrocarbons in offshore areas. In addition, this document should be used in conjunction with RP 2SIM for the assessment of existing platforms in the event that it becomes necessary to make a determination of the fitness-for-purpose of the structure. Pages: 310
22nd Edition | November 2014 | Reaffirmed: September 2020
Product Number: G2AWSD22 | Price: $428.00

Spec 2B◆
Specification for the Fabrication of Structural Steel Pipe
Covers the fabrication of structural steel pipe formed from plate steel with longitudinal and circumferential butt-welded seams. Pipe is typically in sizes of 14 in. outside diameter and greater, with a wall thickness 3/8 in. and greater (up to a nominal 40 ft in length), and is suitable for use in construction of welded offshore structures. The use of the ERW process or spiral welded pipe is not included in this specification. Pipe fabricated under this specification is intended to be used primarily in piling and main structural members, including tubular truss connections, where internal stiffeners are not usually required. Pages: 8
Product Number: G02B06 | Price: $90.00

Spec 2B *
Specification for the Fabrication of Structural Steel Pipe—Chinese
Chinese translation of Spec 2B.
Product Number: G02B06C | Price: $90.00

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**Spec 2B**

**Specification for the Fabrication of Structural Steel Pipe—Russian**

Russian translation of Spec 2B.


Product Number: G02B06R | Price: $90.00

**Spec 2C**

**Offshore Pedestal-Mounted Cranes**

(includes Errata 1 dated June 2021)

Provides requirements for design, construction, and testing of offshore pedestal mounted cranes. Offshore cranes are defined in this specification as pedestal mounted elevating and rotating lift devices for transfer of materials or personnel to or from marine vessels and structures. Offshore cranes are typically mounted on a fixed (bottom supported) or floating platform structure used in drilling and production operations. Spec 2C is not intended to be used for the design, fabrication, and testing of davits and/or emergency escape devices. Spec 2C is also not intended to be used for shipboard cranes or heavy lift cranes. Pages: 150

8th Edition | October 2020 | Product Number: G02C08 | Price: $175.00

---

**RP 2D**

**Operation and Maintenance of Offshore Cranes**

(includes Errata 1 dated August 2015 and Addendum 1 dated October 2020)

Intended to serve as a guide to crane owners and operators in developing operating and maintenance practices and procedures for use in the safe operation of pedestal-mounted revolving cranes on fixed or floating platforms, jackup drilling rigs, semi-submersible drilling rigs and other types of mobile offshore drilling units (MODUs). Guidelines are also given for the pre-use inspection and testing of temporary cranes (also called self-erecting, leapfrog or bootstrap cranes) that are erected offshore.

Equipment (e.g. davits, launch frames) used only for launching life-saving appliances (life boats or life rafts) are not included in the scope of this document. Pages: 120

7th Edition | December 2014 | Product Number: G02D07 | Price: $157.00

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**RP 2D-2**

**Training for Offshore Pedestal-Mounted Crane Riggers, Operators, and Inspectors**

Enhances the robustness of previous test programs an improved hands-on style of testing that will strengthen competency and understanding of safety protocols. This standard establishes general principles for the training of personnel for safe operations and maintenance of offshore pedestal-mounted cranes, as a companion to API 2D and API 2C. This standard also provides requirements and recommendations for personnel seeking qualification as a crane rigger, operator, or inspector. The revised training requirements in API 2D-2 will help enhance worker safety at offshore sites, with the goal of improving industry safety by reducing the number of drop incidents while boosting productivity and working to eliminate the economic losses that stem from damage. API 2D-2 means all around improvements when it comes to operational safety, maintenance, and sustainability of pedestal-based cranes, improving the overall lifespan of these key pieces of lifting hardware. Pages: 57

1st Edition | October 2020 | Product Number: G02D21 | Price: $90.00

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**RP 2EQ/ISO 19901-2:2004**

**Seismic Design Procedures and Criteria for Offshore Structures**

(includes Addendum 1 dated January 2019)

Contains requirements for defining the seismic design procedures and criteria for offshore structures and is a modified adoption of ISO 19901-2. The intent of the modification is to map the requirements of ISO 19901-2 to the United States’ offshore continental shelf (U.S. OCS). The requirements are applicable to fixed steel structures and fixed concrete structures. The effects of seismic events on floating structures and partially buoyant structures are also briefly discussed. The site-specific assessment of jack-ups in elevated condition is only covered to the extent that the requirements are applicable. This document defines the seismic requirements for new construction of structures in accordance with RP 2A-WSD, 22nd Edition and later. Earlier editions of RP 2A-WSD are not applicable. Only earthquake-induced ground motions are addressed in detail. Other geologically induced hazards such as liquefaction, slope instability, faults, tsunamis, mud volcanoes, and shock waves are mentioned and briefly discussed. The requirements are intended to reduce risks to persons, the environment, and assets to the lowest levels that are reasonably practicable.

This edition of RP 2EQ is the modified national adoption of ISO 19901-2:2004. Pages: 54

1st Edition | November 2014 | Reaffirmed: January 2021

Product Number: G02EQ01 | Price: $136.00

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**Spec 2F**

**Specification for Mooring Chain**

Covers flash-welded chain and forged center connecting links used for mooring of offshore floating vessels such as drilling vessels, pipe lay barges, derrick barges, and storage tankers.

Pages: 16


Product Number: G02F06 | Price: $97.00

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**Spec 2F**

**Specification for Mooring Chain—Chinese**

Chinese translation of Spec 2F


Product Number: G02F06C | Price: $97.00

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**RP 2FB**

**Recommended Practice for Design of Offshore Facilities Against Fire and Blast Loading**

Provides an assessment process for the consideration of fire and blast in the design of offshore structures and includes guidance and examples for setting performance criteria. This document complements the contents of the Section 18 of RP 2A-WSD, 21st Edition with more comprehensive guidance in design of both fixed and floating offshore structures against fire and blast loading. Guidance on the implementation of safety and environmental management practices and hazard identification, event definition and risk assessment can be found in RP 75 and the RP 14 series. The interface with these documents is identified and emphasized throughout, as structural engineers need to work closely with facilities engineers experienced in performing hazard analysis as described in RP 14J, and with the operator’s safety management system as described in RP 75. Pages: 63

1st Edition | April 2006 | Reaffirmed: September 2020

Product Number: G2FB01 | Price: $171.00

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**TR 2FC-1**

**Studlink and Studless Fatigue Curves for Mooring Lines**

Summarizes the derivation of fatigue curves for studless and studlink chain mooring lines for inclusion in API 2SK, 3rd Edition. The 2nd of API 2SK has a single fatigue curve for mooring chain; this curve is a non-unique lower bound to all of the in-water and in-air studlink fatigue test data. API 2SK, 2nd Edition does not have separate fatigue curves for studlink and studless chain. The studlink fatigue curve derived in this report is based on the salt water tension-tension fatigue tests performed by the National Engineering Laboratory, Glasgow, UK (NEL) and Exxon Production Research Company (EPR) on oil rig quality (ORQ) studlink chain with bar diameters of 2 in., 3 in., and 4 in. The studless fatigue curve is based on the saltwater tension-tension fatigue tests performed by NEL on R3 and R4 studless chain with a bar diameter of 3 in. Pages: 32

1st Edition | January 2020 | Product Number: G02FC101 | Price: $75.00

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Exploration and Production

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TR 2FC-2
Fatigue TN Curves for Chain, Wire, and Polyester Mooring Lines
(Including Corrections for High-tension Ranges)
Summarizes the derivation of high-load, long-low cycle corrections to API 2SK, 3rd Edition studylink and studless chain fatigue curves, and in this respect supplements the derivation of standard fatigue curves reported in API 2FC-1, 1st Edition. In addition, low cycle high load range corrections to API 2SK’s independent wire rope core (WR) and spiral strand (SS) wire rope fatigue curves are proposed, and polyester rope fatigue data is reviewed and compared to the recommendations presently contained in API 2SM, API 2SK, and ISO 19901-7. The proposed corrections to the API TN curves and chain and polyester fatigue test data are provided; where the lower part of the piecewise linear TN curves (in the log-log space) are the same as in API 2SK, while the upper part is the correction, or change, proposed. Pages: 26
1st Edition | January 2020 | Product Number: G02FC201 | Price: $65.00

RP 2FPS
Planning, Designing, and Constructing Floating Production Systems
Provides guidelines for design, fabrication, installation, inspection, and operation of floating production systems (FPSs). A FPS may be designed with the capability of one or more stages of hydrocarbon processing, as well as drilling, well workover, product storage, and export. This document addresses only floating systems where a buoyant hull of some form supports the deck, production, and other systems. Bottom-fixed components, such as self-supporting risers, and station keeping systems, such as turret mooring, catenary anchor leg mooring (CALM), single anchor leg mooring (SALM), etc. are considered as ancillary components and are addressed in more detail in other API recommended practices. Pages: 191
2nd Edition | October 2011 | Reaffirmed: September 2020
Product Number: G02FPS02 | Price: $202.00

RP 2FSIM
Floating Systems Integrity Management
Provides guidance for floating system integrity management (FSIM) of floating production systems (FPSs), which include tension leg platforms (TLPs), used by the petroleum and natural gas industries to support drilling, production, storage, and/or offloading operations. FPSs described in this recommended practice are governed by local regulatory requirements and recognized classification society (RCS) rules (if classified). No specific regulatory compliance or RCS requirements are restated in this RP. The requirements of this RP do not apply to mobile offshore drilling units (MODUs) or to mobile offshore units (MUs) used in support of construction operations. For integrity management (IM) considerations, these units are typically governed by RCS rules. Pages: 101
1st Edition | September 2019
Product Number: G02FSIM01 | Price: $175.00

RP 2GEO/ISO 19901-4:2003
Geotechnical and Foundation Design Considerations
(includes Addendum 1 dated October 2014)
Contains requirements and recommendations for those aspects of geoscience and foundation engineering that are applicable to a broad range of offshore structures, rather than to a particular structure type. Such aspects are site characterization, soil and rock characterization, design and installation of foundations supported by the seabed (shallow foundations), identification of hazards, and design of pile foundations. Aspects of soil mechanics and foundation engineering that apply equally to offshore and onshore structures are not addressed. The user of this document is expected to be familiar with such aspects.
This edition of RP 2GEO is the modified national adoption of ISO 19901-4:2003. Pages: 103
1st Edition | April 2011 | Reaffirmed: January 2021
Product Number: G02GEO01 | Price: $167.00
RP 2MET
Derivation of Metocean Design and Operating Considerations

Gives general requirements for the determination and use of meteorological and oceanographic (metocean) conditions for the design, construction and operation of offshore structures of all types used in the petroleum and natural gas industries.

The requirements are divided into two broad types:
- those that relate to the determination of environmental conditions in general, together with the metocean parameters that are required to adequately describe them;
- those that relate to the characterization and use of metocean parameters for the design, the construction activities or the operation of offshore structures.

The environmental conditions and metocean parameters discussed are:
- extreme and abnormal values of metocean parameters that recur with given return periods that are considerably longer than the design service life of the structure;
- long-term distributions of metocean parameters, in the form of cumulative, conditional, marginal or joint statistics of metocean parameters; and normal environmental conditions that are expected to occur frequently during the design service life of the structure.

Metocean parameters are applicable to:
- the determination of actions for the design of new structures;
- the determination of actions for the assessment of existing structures;
- the site-specific assessment of mobile offshore units;
- the determination of limiting environmental conditions, weather windows, actions and action effects for pre-service and post-service situations (i.e. fabrication, transportation and installation or decommissioning and removal of a structure); and facility operations, where appropriate. Pages: 280

2nd Edition | November 2019
Product Number: GG2MET02 | Price: $227.00

RP 2MIM
Mooring Integrity Management

Provides guidance for the integrity management (IM) of mooring systems connected to a permanent floating production system (FPS) used for the drilling, development, production, and/or storage of hydrocarbons in offshore areas. The scope of this recommended practice (RP) extends from the anchor to the connection to the floating unit (e.g. chain stopper) and includes components critical to the mooring system (e.g. turret bearings, fairleads, chain stoppers, anchors, suction piles).

Specific guidance is provided for the inspection, monitoring, evaluation of damage, fitness-for-service assessment, risk reduction, mitigation planning, and the process of decommissioning. This RP incorporates and expands on the IM recommendations found in API 2I and API 2SK. In the event of any discrepancy between API 2MIM and API 2I/API 2SK, API 2I/API 2SK will govern. Pages: 83

1st Edition | September 2019
Product Number: G2MIM01 | Price: $137.00

RP 2MOP/ISO 19901-6:2009
Marine Operations
(includes Errata 1 dated April 2015)

Provides requirements and guidance for the planning and engineering of marine operations, encompassing the design and analysis of the components, systems, equipment, and procedures required to perform marine operations, as well as the methods or procedures developed to carry them out safely. This document is also applicable to modifications of existing structures, e.g. installation of additional topsides modules. This edition of RP 2MOP is the identical national adoption of ISO 19901-6:2009. Pages: 168

1st Edition | July 2010 | Reaffirmed: January 2021
Product Number: G62MOP01 | Price: $263.00

Spec 2MT1 ◆ Specification for Carbon Manganese Steel Plate with Improved Toughness for Offshore Structures

Covers one grade of intermediate strength steel plates for use in welded construction of offshore structures. These steels are intended for fabrication primarily by cold forming and welding as per Spec 2B. The primary use of these steels is for Class "B" applications as defined in RP 2A. Specs 2H, 2W, and 2Y cover other steels providing improved mechanical properties and toughness for Class "A" applications and should be used where substantial z-direction stresses are expected. Pages: 6

2nd Edition | September 2001 | Effective Date: March 1, 2002
Reaffirmed: January 2012 | Product Number: G2MT12 | Price: $90.00

Spec 2MT2 ◆ Rolled Shapes with Improved Notch Toughness
(includes Addendum 1 dated December 2019)

Covers rolled shapes (wide flange shapes, angles, etc.), having a specified minimum yield strength of 50 ksi (345 Mpa), intended for use in offshore structures. Commonly available Class A, Class B, and Class C beams refer to degrees of fracture criticality as described in RP 2A-WSD, with Class C being for the least critical applications. For special critical applications, Class AAZ shapes may be specified, by agreement, using Supplement S101. Pages: 8

1st Edition | June 2002 | Effective Date: December 1, 2002
Reaffirmed: June 2015 | Product Number: G2MT21 | Price: $86.00

RP 2N/ISO 19906:2010
Planning, Designing, and Constructing Structures and Pipelines for Arctic Conditions

Specifies requirements and provides recommendations and guidance for the design, construction, transportation, installation, and removal of offshore structures, related to the activities of the petroleum and natural gas industries in arctic and cold regions. Reference to arctic and cold regions includes both the Arctic and other cold regions that are subject to similar sea ice, iceberg, and icing conditions. The objective of this standard is to ensure that offshore structures in arctic and cold regions provide an appropriate level of reliability with respect to personnel safety, environmental protection, and asset value to the owner, the industry, and to society in general.

This standard does not contain requirements for the operation, maintenance, service-life inspection, or repair of arctic and cold region offshore structures, except where the design strategy imposes specific requirements. While this standard does not apply specifically to mobile offshore drilling units, the procedures relating to ice actions and ice management contained herein are applicable to the assessment of such units. This standard does not apply to mechanical, process, and electrical equipment or any specialized process equipment associated with arctic and cold region offshore operations except in so far as it is necessary for the structure to sustain safely the actions imposed by the installation, housing, and operation of such equipment.

This edition of RP 2N is the modified national adoption of ISO 19906:2010. Pages: 458

3rd Edition | April 2015 | Reaffirmed: January 2021
Product Number: G02N03 | Price: $216.00

TR 2PY
Effect of Best-Estimate Geotechnical p-y Curves on Performance of Offshore Structures

Performs structural analyses using soil models developed by 2GEQ, 1st Edition criteria and 2GEQ, 2nd Edition draft criteria to determine the effect of the new clay soil p-y formulations on the structural responses of these platforms. The predicted responses were then compared with measured or observed platform performance in field. Pages: 89

1st Edition | February 2020 | Product Number: G2PY01 | Price: $105.00
Design of Windlass Wildcats for Floating Offshore Structures

Covers the design of windlass wildcats to ensure proper fit and function between windlass and mooring chain. Wildcats are of the five-wheel type for use with stud link anchor chain conforming to the classification society Grades 1, 2, and 3, ORQ and Grade 4 chain. Wildcat dimensions are provided for chains in integral 1/6 in. (3 mm) steps, ranging in size from 2 in. to 4 in. (51 mm to 102 mm). Wildcat dimensions for chain in intermediate 1/16 in. (1.5 mm) steps are not provided, but wildcats in these sizes are permitted within the scope of this publication. Pages: 7

Product Number: G02S02 | Price: $82.00

Spec 2SF ◆
Manufacture of Structural Steel Castings for Primary Offshore Applications

Castings manufactured to this specification are intended for use in the fabrication of offshore structures, manufacture of critical marine or mechanical or other system components intended for application on permanent offshore structures, or for components used in the construction of offshore tendons, risers and pipelines. This specification is based on the experience acquired during the design, construction, operation, and maintenance of offshore processing units and permanent facilities, as supplemented with the experience of operating companies with topsides, fixed platforms, floating structures (e.g. TLPs and spars), and their tendons and risers. Castings in these applications tend to be limited production components, with relatively few replications, and receive more intense scrutiny than routine mass production runs. Pages: 29

1st Edition | September 2009 | Effective Date: March 1, 2010
Reaffirmed: September 2020 | Product Number: G2SC01 | Price: $123.00
Exploration and Production

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RP 2T
Planning, Designing and Constructing Tension Leg Platforms
Contains a guide to the designer in organizing an efficient approach to the design of a tension leg platform (TLP). Emphasis is placed on participation of all engineering disciplines during each stage of planning, development, design, construction, installation, and inspection. This publication contains guidelines developed from the latest practices in designing tension leg platforms and are adapted from successful techniques employed for related structural systems in the offshore and marine industries. Pages: 254
3rd Edition | July 2010 | Reaffirmed: June 2015
Product Number: G02T03 | Price: $246.00

Bull 2TD
Guidelines for Tie-Downs on Offshore Production Facilities for Hurricane Season
Addresses the need to evaluate the tie-downs in use on offshore production facilities for drilling rigs, permanent equipment, and facilities such as quarters, helidecks, etc. The information contained in this document is presented as recommendations to improve tie-down performance during hurricanes. Bull 2TD also addresses situations where failure of a drilling or workover rig would result in significant damage to the platform or adjacent infrastructure. Pages: 3
1st Edition | June 2006 | Product Number: G2TD01 | Price: $56.00

RP 2TOP
Topides Structure
Provides requirements for the design, fabrication, transportation, installation, modification, and structural integrity management for the topside structure for an oil and gas platform. It complements API 2A-WSD, API 2A-LRFD, ISO 19903, API 2FPS, API 2T, ISO 19905 1, and API 2N, which give requirements for various forms of substructures. It is based on ISO 19901-3:2010 (Corrected version, 15-Dec-2011) and is consistent with ISO 19903, API 2FPS, API 2T, ISO 19905 1, and API 2N, which give requirements for various forms of substructures. It is based on ISO 19901-3:2010 (Corrected version, 15-Dec-2011) and is consistent with ISO 19901-3:2014. In fact, ISO 19901-3 was followed to the fullest extent possible and modified only where needed to conform to standards and practices of API.
Requirements in API 2TOP concerning modifications and maintenance relate only to those aspects that are of direct relevance to the structural integrity of the topside structure. Pages: 136
1st Edition | August 2019 | Product Number: G2TOP1 | Price: $156.00

Bull 2U
Bulletin on Stability Design of Cylindrical Shells
Contains semi-empirical formulations for evaluating buckling strength of stiffened and unstiffened cylindrical shells. Pages: 146
3rd Edition | June 2004 | Product Number: G02U03 | Price: $207.00

Bull 2V
Design of Flat Plate Structures
(includes Errata 1 dated March 2008)
Provides guidance for the design of steel flat plate structures. Pages: 139
3rd Edition | June 2004 | Product Number: G02V03 | Price: $207.00

Spec 2W *
Steel Plates Produced by Thermo-Mechanically Controlled Processing for Offshore Structures—Russian
Russian translation of Spec 2W.

RP 2X
Recommended Practice for Ultrasonic and Magnetic Examination of Offshore Structural Fabrication and Guidelines for Qualification of Technicians
Contains guidance on commonly used NDE methods such as visual (VT), penetrant (PT), magnetic particle (MT), radiography (RT), and ultrasonic (UT) examinations, which are routinely used in offshore structural fabrication. This recommended practice primarily addresses the MT and UT methods. Guidance on VT, PT, and RT is incorporated by reference to AWS D1.1. Further recommendations are offered for determining the qualifications of personnel using MT and UT techniques. Recommendations are also offered for the integration of these techniques into a general quality control program. The interrelationship between joint design, the significance of defects in welds, and the ability of NDE personnel to detect critical-size defects is also discussed. Pages: 77
Product Number: G02X04 | Price: $159.00

Spec 2Y *
Specification for Steel Plates, Quenched-and-Tempered, for Offshore Structures
Covers two grades of high strength steel plate for use in welded construction of offshore structures, in selected critical portions that must resist impact, plastic fatigue loading, and lamellar tearing. Grade 50 is covered in thicknesses up to 6 in. (150 mm) inclusive, and Grade 60 is covered in thicknesses up to 4 in. (100 mm) inclusive. Pages: 13
5th Edition | December 2006 | Effective Date: June 1, 2007
Reaffirmed: September 2020 | Product Number: G02Y05 | Price: $102.00

RP 2Z
Recommendation Practice for Preproduction Qualification for Steel Plates for Offshore Structures
Covers requirements for preproduction qualification, by special welding and mechanical testing, of specific steelmaking and processing procedures for the manufacture of steel of a specified chemical composition range by a specific steel producer. This is a recommended practice for material selection and qualification, but not for the performance of production weld joints. This recommended practice was developed in conjunction with, and is intended primarily for use with, Specs 2W and 2Y. However, it may be used as a supplement to other material specifications (e.g. Spec 2H) if so desired. Pages: 19
Product Number: G02Z04 | Price: $130.00

Spec 2Z *
Recommendation Practice for Preproduction Qualification for Steel Plates for Offshore Structures—Russian
Russian translation of RP 2Z.
Product Number: G02Z04R | Price: $130.00

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This publication is a new entry in this catalog. ◆ This publication is related to an API licensing, certification, or accreditation program.
RP 95J
Gulf of Mexico Jackup Operations for Hurricane Season

Presents an interim approach to siting jackup mobile offshore drilling units (MODUs) and to recommend certain operational procedures to enhance jackup survivability and stationkeeping during hurricane season in the Gulf of Mexico during drilling and workover and while stacked (idled) at a non-sheltered location. This RP provides guidance and processes, and when combined with an understanding of the environment at a particular location, the characteristics of the unit being utilized, and other factors, it may be used to enhance operational integrity. This RP was developed through a cooperative arrangement with the International Association of Drilling Contractors' (IADC) Jackup Rig Committee. Specifically, this RP provides guidance in the following areas:
- site—including location-specific, geotechnical, and metocean;
- preloading process;
- air gap recommendations;
- unit preparations and evacuation;
- post storm recovery; and
- post storm inspections. Pages: 15
Product Number: G95J01 | Price: $68.00

DERRICKS AND MASTS

Spec 4F ◆
Specification for Drilling and Well Servicing Structures (includes Addendum 1 dated August 2023)

Covers the design, manufacture, and use of steel derricks, portable masts, crown block assemblies, and substructures suitable for drilling and well-servicing operations in the petroleum industry. It includes requirements for marking, inspection, a uniform method of rating, and design loading for the equipment. This specification provides two product specification levels (PSLs) that define two levels of technical and quality requirements. Pages: 66
5th Edition | June 2020 | Product Number: G04F05 | Price: $136.00

RP 4G
Operation, Inspection, Maintenance, and Repair of Drilling and Well Servicing Structures (includes Addendum 1 dated June 2020 and Addendum 2 dated September 2020)

Provides guidelines and establishes recommended procedures for inspection, maintenance, and repair of items for drilling and well servicing structures to maintain the serviceability of this equipment. These recommendations should be considered as supplemental to, and not as a substitute for, the manufacturer's instructions and the recommendations in API 54. Items of drilling and well servicing structures covered are masts/derricks, substructures, and their accessories. Pages: 64
5th Edition | February 2019 | Product Number: G04G05 | Price: $126.00

TUBULAR GOODS

RP 5A3 ◆
Thread Compounds for Casing, Tubing, Line Pipe, and Drill Stem Elements

Provides requirements, recommendations, and methods for the testing of thread compounds intended for use on threaded casing, tubing, and line pipe connections; and for thread compounds intended for use on rotary shouldered connections. The tests outlined are used to evaluate the critical performance properties and physical and chemical characteristics of thread compounds under laboratory conditions. These test methods are primarily intended for thread compounds formulated with a lubricating base grease and are not applicable to some materials used for lubricating and/or sealing thread connections. It is recognized that many areas can have environmental requirements for products of this type. This standard does not include requirements for environmental compliance. It is the responsibility of the end-user to investigate these requirements and to select, use and dispose of the thread compounds and related waste materials accordingly. Pages: 80

RP 5A5/ISO 15463:2003
Field Inspection of New Casing, Tubing, and Plain-End Drill Pipe (includes Errata 1 dated December 2009)

Specifies requirements and gives recommendations for field inspection and testing of oil country tubular goods (OCTG). This International Standard covers the practices and technology commonly used in field inspection; however, certain practices may also be suitable for mill inspections. Covers the qualification of inspection personnel, a description of inspection methods and apparatus calibration and standardization procedures for various inspection methods. The evaluation of imperfections and marking of inspected OCTG are included. Applicable to field inspection of OCTG and is not applicable for use as a basis for acceptance or rejection. This edition of RP 5A5 is the identical national adoption of ISO 15463:2003. Pages: 118
7th Edition | June 2005 | Reaffirmed: January 2021
Product Number: G5A507 | Price: $171.00

RP 5A5/ISO 15463:2003◆
Field Inspection of New Casing, Tubing, and Plain-End Drill Pipe—Chinese (includes Errata 1 dated December 2009)

7th Edition | June 2005 | Reaffirmed: January 2021
Product Number: G5A507C | Price: $171.00

RP 5A5/ISO 15463:2003◆
Field Inspection of New Casing, Tubing, and Plain-End Drill Pipe—Russian (includes Errata 1 dated December 2009)

7th Edition | June 2005 | Reaffirmed: January 2021
Product Number: G5A507R | Price: $171.00

RP 5A5/ISO 15463:2003◆
Field Inspection of New Casing, Tubing, and Plain-End Drill Pipe—Ukrainian (includes Errata 1 dated December 2009)

7th Edition | June 2005 | Reaffirmed: January 2021
Product Number: G5A507U | Price: $171.00

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RP 5C5
Procedures for Testing Casing and Tubing Connections
(includes Addendum 1 dated May 2021)
 Defines tests to perform to determine the galling tendency, sealing performance, and structural integrity of threaded casing and tubing connections. The words “casing” and “tubing” apply to the service application and not to the diameter of the pipe. This recommended practice addresses the primary loads to which casing and tubing strings are subjected: fluid pressure (internal and/or external), axial force (tension and/or compression), bending (buckling and/or wellbore deviation), and temperature variations. Pages: 197


Spec 5C8
Casing and Tubing

Spec 5CT
Casing and Tubing

This International Standard is based on ISO or API Standards. This International Standard can also be used for drill-pipe with tool joints not specified by ISO or API Standards. This International Standard is based on Spec 5D and Spec 7.

This edition of Spec 5DP is the identical national adoption of ISO 11961:2008. Pages: 133

11th Edition | December 2023 | Effective December 19, 2024
Product Number: G5CT11 | Price: $310.00

Spec 5DP
Drill Pipe

(includes Errata 1 dated July 2020)

Spec 5DP
Drill Pipe—Russian

(includes Errata 1 dated July 2020)

This International Standard can also be used for drill-pipe with tool joints not specified by ISO or API Standards. This International Standard is based on Spec 5D and Spec 7.

This edition of Spec 5DP is the identical national adoption of ISO 11961:2008. Pages: 133

2nd Edition | May 2020 | Product Number: G5DP02 | Price: $216.00

RP 5C6
Pipe with Welded Connectors

Provides a practice for facility or field welding of connectors to pipe. The technical content contains guidance and requirements for welding procedure qualification, welder performance qualification, materials, testing, production welding, and inspection. Additionally, this standard covers the weld fabrication of connectors and handling attachments such as lift eyes and landing pads to pipe. This standard also includes practices used within industry and is intended to be analogous to API 6A PSL 1, with additional requirements specific to the equipment fabrication. Pages: 28

3rd Edition | May 2018 | Product Number: G05C63 | Price: $103.00

Spec 5CT
Casing and Tubing

Specifies the technical delivery conditions for steel pipes (casing, tubing, and pup joints), coupling stock, coupling material, and accessory material for products covered by this standard, the sizes, masses, and wall thicknesses, as well as grades and applicable end-finishes, are provided. API 5L pipe may be ordered as casing in accordance with API 5C6. By agreement between the purchaser and the manufacturer, this standard can also be applied to other plain-end pipe sizes and wall thicknesses. Pages: 151

11th Edition | December 2023 | Effective December 19, 2024
Product Number: G5CT11 | Price: $310.00

Spec 5DP
Drill Pipe

(includes Errata 1 dated July 2020)

Spec 5DP
Drill Pipe—Russian

(includes Errata 1 dated July 2020)

This International Standard can also be used for drill-pipe with tool joints not specified by ISO or API Standards. This International Standard is based on Spec 5D and Spec 7.

This edition of Spec 5DP is the identical national adoption of ISO 11961:2008. Pages: 133

2nd Edition | May 2020 | Product Number: G5DP02 | Price: $216.00

RP 5C8
Care, Maintenance, and Inspection of Coiled Tubing

Covers the care, maintenance, and inspection of used low alloy carbon steel coiled tubing. Commonly manufactured coiled tubing outside diameters range from 25.4 mm (1.000 in.) to 88.9 mm (3.5 in.). Pages: 122

1st Edition | January 2017 | Product Number: G05C801 | Price: $131.00

Spec 5CR/ISO 13680:2020
Corrosion-Resistant Alloy Seamless Products for Use as Casing, Tubing, Coupling Stock, and Accessory Material

Specifies the technical delivery conditions for corrosion-resistant alloy seamless products for casing, tubing, coupling stock, and accessory material (including coupling stock and accessory material from bar) for two product specification levels: PSL-1, which is the basis of this document, and PSL-2, which provides additional requirements for a product that is intended to be both corrosion and cracking resistant for the environments and qualification method specified in Annex G and in the ISO-15156:2020 series. Pages: 152

2nd Edition | October 2022 | Effective Date: April 1, 2023
Product Number: G5CRA02 | Price: $185.00

Spec 5L
Line Pipe

(includes Errata 1 dated May 2018)

Specifies requirements for the manufacture of two product specification levels (PSL 1 and PSL 2) of seamless and welded steel pipes for use in pipeline transportation systems in the petroleum and natural gas industries. This specification is not applicable to cast pipe. Pages: 210

46th Edition | April 2018 | Effective Date: November 1, 2018
Product Number: G05L46 | Price: $298.00

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Spec 5L *
Line Pipe—Chinese
(includes Errata 1 dated May 2018)
Chinese translation of Spec 5L.
46th Edition | April 2018 | Product Number: G05L46C | Price: $298.00

Spec 5L *
Line Pipe—Russian
(includes Errata 1 dated May 2018)
Russian translation of Spec 5L.
46th Edition | April 2018 | Product Number: G05L46R | Price: $298.00

RP 5L1
Recommended Practice for Railroad Transportation of Line Pipe
Applies to the transportation on railcars of Spec 5L steel line pipe in sizes 2 1/2” and larger in lengths longer than single random. These recommendations cover coated or uncoated pipe, but they do not encompass loading practices designed to protect pipe coating from damage. Pages: 5
Product Number: G5L107 | Price: $65.00

RP 5L1 *
Recommended Practice for Railroad Transportation of Line Pipe—Russian
Russian translation of RP 5L1.
Product Number: G5L107R | Price: $65.00

RP 5L1 *
Recommended Practice for Railroad Transportation of Line Pipe—Ukrainian
Ukrainian translation of RP 5L1.
Product Number: G5L107U | Price: $65.00

RP 5L3
Drop-Weight Tear Tests on Line Pipe
(includes Addendum 1 dated October 2020 and Errata 1 dated March 2021)
Describes procedures for a recommended method for conducting drop-weight tear tests to measure the fracture appearance or fracture ductility of line pipe as referenced in Spec 5L. Pages: 11
Product Number: G5L304 | Price: $103.00

RP 5L3 *
Drop-Weight Tear Tests on Line Pipe—Russian
(includes Addendum 1 dated October 2020 and Errata 1 dated March 2021)
Russian translation of RP 5L3.
Product Number: G5L304R | Price: $103.00

RP 5L8
Recommended Practice for Field Inspection of New Line Pipe
Covers the qualification of inspection personnel, a description of inspection methods, and apparatus calibration and standardization procedures for various inspection methods. The evaluation of imperfections and marking of inspected new line pipe are included. Also included are recommended procedures for field inspection and testing of new plain-end line pipe. This document was prepared specifically to address the practices and technology used in field inspection of line pipe, and certain parts are not suitable or appropriate for mill inspections. Pages: 39
Product Number: G05L82 | Price: $136.00

RP 5L8 *
Recommended Practice for Field Inspection of New Line Pipe—Kazakh
Kazakh translation of RP 5L8.
Product Number: G05L82K | Price: $136.00

RP 5L8 *
Recommended Practice for Field Inspection of New Line Pipe—Russian
Russian translation of RP 5L8.
Product Number: G05L82R | Price: $136.00

Spec 5LC
CRA Line Pipe
(includes Errata 1 dated October 2015)
Covers seamless, centrifugal cast, and welded corrosion resistant alloy line pipe as well as austenitic stainless, martensitic stainless, duplex stainless, and Ni-base alloys. Also includes standard weight, regular weight, special, extra strong, and double extra strong plain end line pipe as well as processes of manufacturer, chemical and physical requirements, and methods of testing. Pages: 110
Reaffirmed: July 2020 | Product Number: G5LC04 | Price: $189.00

Spec 5LC *
CRA Line Pipe—Russian
(includes Errata 1 dated October 2015)
Russian translation of Spec 5LC.
4th Edition | March 2015 | Reaffirmed: July 2020
Product Number: G5LC04R | Price: $189.00

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Exploration and Production

To purchase individual API standards, visit apiwebstore.org

Spec 5LCP ◆
Specification on Coiled Line Pipe
(includes Errata 1 dated July 2007)
Provides standards for pipe suitable for use in conveying gas, water, and oil in both the oil and natural gas industries. Covers welded steel continuously milled coiled line pipe in the size range 0.5 in. (12.7 mm) to 6.625 in. (168.3 mm). Pipe that is pipe-to-pipe welded outside the confines of the manufacturing plant is not included within this document. Pages: 42
2nd Edition | October 2006 | Effective Date: April 18, 2007
Reaffirmed: July 2020 | Product Number: G5LCP2 | Price: $158.00

Spec 5LCP *
Specification on Coiled Line Pipe—Chinese
(includes Errata 1 dated July 2007)
Chinese translation of Spec 5LCP.
2nd Edition | October 2006 | Reaffirmed: July 2020
Product Number: G5LCP2C | Price: $158.00

Spec 5LCP *
Specification on Coiled Line Pipe—Russian
(includes Errata 1 dated July 2007)
Russian translation of Spec 5LCP.
2nd Edition | October 2006 | Reaffirmed: July 2020
Product Number: G5LCP2R | Price: $158.00

Spec 5LD ◆
CRA Clad or Lined Steel Pipe
(includes Errata 1 dated June 2017)
Covers seamless, centrifugal cast, and welded clad steel line pipe, and lined steel pipe with improved corrosion-resistant properties. The clad and lined steel line pipe specified in this document shall be composed of a base metal outside and CRA layer inside the pipe. The base material shall conform to Spec 5L, except as modified in the 5LC document. Provides standards for pipe with improved corrosion resistance suitable for use in conveying gas, water, and oil in both the oil and natural gas industries. Pages: 38
Reaffirmed: July 2020 | Product Number: G5LD04 | Price: $157.00

Spec 5LD *
CRA Clad or Lined Steel Pipe—Russian
(includes Errata 1 dated June 2017)
Russian translation of Spec 5LD.
4th Edition | March 2015 | Reaffirmed: July 2020
Product Number: G5LD04R | Price: $157.00

RP 5LT *
Recommended Practice for Truck Transportation of Line Pipe—Chinese
Chinese translation of RP 5LT.
Product Number: G5LT01C | Price: $65.00

RP 5LT *
Recommended Practice for Truck Transportation of Line Pipe—Russian
Russian translation of RP 5LT.
Product Number: G5LT01R | Price: $65.00

RP 5LW
Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels
Applies to the transportation of Spec 5L steel line pipe by ship or barge. Covers both inland and marine waterways except in cases where the specific requirement of a paragraph references only marine or only inland-waterway transport. Pages: 5
Product Number: G5LW03 | Price: $65.00

RP 5LW *
Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels—Russian
Russian translation of RP 5LW.
Product Number: G5LW03R | Price: $65.00

RP 5LW *
Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels—Ukrainian
Ukrainian translation of RP 5LW.
Product Number: G5LW03U | Price: $65.00

RP 5MT
Pipeline Inspection Documents for Material Traceability and Electronic Test Reports
Provides a method for the electronic exchange of MTR inspection documents from manufacturer to purchaser to support enhanced material traceability and records for steel line pipe, and could be applied to related steel assets. Pages: 21
1st Edition | September 2021 | Product Number: G5MT01 | Price: $75.00

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Spec 5ST◆
Specification for Coiled Tubing—U.S. Customary and SI Units
Covers the manufacturing, inspection, and testing of all carbon and low alloy steel coiled tubing in Grades CT70, CT80, CT90, CT100, and CT110, in the designations and wall thicknesses given in Table A.5, that can be used as work strings, completion strings, and static installations in oil and gas wells. Coiled tubing may be ordered to this specification. Coiled tubing is manufactured using the continuously milled process. This specification does not cover the joining of seamless or welded tubing segments in lengths less than 200 ft (61 m). Pages: 68
1st Edition | April 2010 | Reaffirmed: July 2020
Product Number: GSST01 | Price: $145.00

Spec 5ST◆
Specification for Coiled Tubing—U.S. Customary and SI Units—Chinese
Chinese translation of Spec 5ST.
1st Edition | April 2010 | Reaffirmed: July 2020
Product Number: GSST01C | Price: $145.00

Spec 5ST◆
Specification for Coiled Tubing—U.S. Customary and SI Units—Russian
Russian translation of Spec 5ST.
1st Edition | April 2010 | Reaffirmed: July 2020
Product Number: GSST01R | Price: $145.00

Bull 5T1
Imperfection and Defect Terminology
Provides terms and definitions and example figures of imperfections and defects that occur in manufacturing steel tubulars. The words “imperfection” and “defect” refer to metallurgical and other features of steel tubular products, which may or may not affect the performance of the products. Inspection requirements and acceptance criteria are not defined in this document, and are found instead in the respective product specification. Pages: 65
11th Edition | October 2017 | Product Number: G05T111 | Price: $138.00

Bull 5T1◆
Imperfection and Defect Terminology—Russian
Russian translation of Bull 5T1.
11th Edition | October 2017 | Product Number: G05T111R | Price: $138.00

Bull 5T1◆
Imperfection and Defect Terminology—Ukrainian
Ukrainian translation of Bull 5T1.
11th Edition | October 2017 | Product Number: G05T111U | Price: $138.00

TR 5TP
Torque-Position Assembly Guidelines for API Casing and Tubing Connections
Provides alternative connection assembly procedures to those found in Spec 5B (power turns) and those found in RP 5C1 (optimum torque). The procedures set forth are referred to as “torque-position” because the make-up torque and final position are used as acceptance criteria for the assembly operation. The connections are threaded in accordance with Spec 5B. The torque-position assembly parameters have been developed for most SC (short round thread casing), LC (long round thread casing), BC (buttress thread casing), and EU (external upset tubing) connections. Pages: 30
1st Edition | December 2013 | Product Number: G5TP01 | Price: $124.00

TR 5TP◆
Torque-Position Assembly Guidelines for API Casing and Tubing Connections—Russian
Russian translation of TR 5TP.
1st Edition | December 2013 | Product Number: G5TP01R | Price: $124.00

TR 5TRSR22
Technical Report in SR22 Supplementary Requirements for Enhanced Leak Resistance LTC
Covers the supplemental requirements for Enhanced Leak Resistance LTC (SC22) connections and the changes in Spec 5CT, Std 5B, 5B1, and RP 5C1 needed to produce and inspect these connections. By agreement between the purchaser and manufacturer, the supplemental requirements for SR22 shall apply to connections manufactured in accordance with Spec 5CT. Pages: 24
1st Edition | June 2002 | Product Number: GSR221 | Price: $96.00

RP 5UE
Recommended Practice for Ultrasonic Evaluation of Pipe Imperfections
(includes Addendum 1 dated April 2009)
Describes procedures that may be used to “prove-up” the depth or size of imperfections. Included in this practice are the recommended procedures for ultrasonic prove-up inspection of new pipe using the Amplitude Comparison Technique and the Amplitude-Distance Differential Technique for evaluation of:
• surface breaking imperfections in the body of pipe, and
• surface breaking and subsurface imperfections in the weld area of electric resistance, electric induction or laser welded pipe, and
• surface breaking and subsurface imperfections in the weld area of arc welded pipe. Pages: 22
2nd Edition | June 2005 | Reaffirmed: July 2020
Product Number: GSUE2 | Price: $86.00

RP 5UE◆
Recommended Practice for Ultrasonic Evaluation of Pipe Imperfections—Russian
(includes Addendum 1 dated April 2009)
Russian translation of RP 5UE.
2nd Edition | June 2005 | Reaffirmed: July 2020
Product Number: GSUE2R | Price: $86.00

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This publication is a new entry in this catalog.  

**VALVES AND WELLHEAD EQUIPMENT**

**Spec 6A**

Specification for Wellhead and Tree Equipment

(includes Errata 1 dated April 2019, Errata 2 dated June 2020, Addendum 1 dated July 2020, Errata 3 dated September 2020, Addendum 2 dated June 2021, Errata 4 dated September 2021, and Addendum 3 dated August 2022)

Specifies requirements for the performance, dimensional and functional interchangeability, design, materials, testing, inspection, welding, marking, handling, storing, shipment, purchasing, repair, and remanufacture of wellhead and tree equipment for use in the petroleum and natural gas industries. This document does not apply to field use, field testing, or field repair of wellhead and Christmas tree equipment.

This document is applicable to the following specific equipment: wellhead equipment (integral, blind, and test flanges; ring gaskets; threaded connectors; tees and crosses; bullplugs; valve-removal plugs; standard and nonstandard top connectors; crossover connectors; other end connectors; adapter spools and spacer spools; gate, plug, and ball valves; actuated valves (manual and remote); check valves (swing- and lift-type); back-pressure valves; slip-type and mandrel-type casing and tubing hangers, casing and tubing heads (housings and adapters); chokes (fixed, manually actuated, remotely actuated); actuators (for valves and chokes); surface safety valve (SSV) assemblies, valves prepared for actuators, and actuators; underwater safety valve (USV) assemblies, valves prepared for actuators, and actuators; boarding shutdown valve (BSDV) assemblies, valves prepared for actuators, and actuators; and tree assemblies).

This document defines service conditions in terms of pressure, temperature, and material class for the well-bore constituents, and operating conditions. This international standard establishes requirements for four product specification levels (PSL). These four PSL designations define different levels of technical quality requirements. Pages: 414

21st Edition | November 2018 | Effective Date: November 1, 2019
Product Number: GX06A21 | Price: $310.00

**Spec 6A**

Specification for Wellhead and Tree Equipment—Chinese

(includes Errata 1 dated April 2019, Errata 2 dated June 2020, Addendum 1 dated July 2020, Errata 3 dated September 2020, Addendum 2 dated June 2021, Errata 4 dated September 2021, and Addendum 3 dated August 2022)

Chinese translation of Spec 6A.

21st Edition | November 2018
Product Number: GX06A21C | Price: $310.00

**Spec 6A**

Specification for Wellhead and Tree Equipment—Russian

(includes Errata 1 dated April 2019, Errata 2 dated June 2020, Addendum 1 dated July 2020, Errata 3 dated September 2020, Addendum 2 dated June 2021, Errata 4 dated September 2021, and Addendum 3 dated August 2022)

Russian translation of Spec 6A.

21st Edition | November 2018
Product Number: GX06A21R | Price: $310.00

**Std 6ACRA**

Age-Hardened Nickel-Based Alloys for Oil and Gas Drilling and Production Equipment


Provides requirements for age-hardened nickel-base alloys that are intended to supplement the existing requirements of Spec 6A. For downhole applications, refer to Spec SCRA.

These additional requirements include detailed process control requirements and detailed testing requirements. The purpose of these additional requirements is to ensure that the age-hardened nickel-base alloys used in the manufacture of Spec 6A pressure-containing and pressure-controlling components are not embrittled by the presence of an excessive level of deleterious phases and meet the minimum metallurgical quality requirements.

This standard is intended to apply to pressure-containing and pressure-controlling components as defined in Spec 6A. Requirements of this standard may be applied by voluntary conformance by a manufacturer, normative reference in Spec 6A or other product specification(s), or by contractual agreement.

This document expands the scope of Std 6A7L. With its issuance, it replaces Std 6A7L, 2nd Edition in its entirety. Pages: 33

1st Edition | August 2015 | Product Number: G6ACRA1 | $98.00

**Std 6ACRA**

Age-Hardened Nickel-Based Alloys for Oil and Gas Drilling and Production Equipment—Russian


Russian translation of Std 6ACRA.

1st Edition | August 2015 | Product Number: G6ACRA1R | $98.00

**TR 6AF**

Technical Report on Capabilities of API Flanges Under Combinations of Load

(includes Errata 1 dated March 2017)

Presents the results of analysis work done in to establish the load capacity of all flanges give in the April 1986 editions of Spec 6A and Spec 6AB. A total of 69 different geometries were analyzed initially. The various loads considered were bolt makeup (preload), internal pressure, tension, and bending moment. All flanges were analyzed with an axisymmetric finite elementary model for each of the four load cases. A post-processor program was written to calculate the maximum moment capacity for various levels of pressure and tension, based on linear superposition of results. Three different criteria were used to establish the maximum moment:

- ASME Section VIII, Division 2 allowable stress categories for the flange with the basic membrane stress allowable established by API;
- allowable bolt stresses as established by API; and
- loss of preload on the ring joint.

The results of this post-processing are presented in plots of pressure vs. allowable moment for various tension levels. Limitations to this work include: the effects of transverse shear or torsion were not considered in the analysis; dynamic, fatigue, or fretting phenomena were not considered in these results; and thermal stresses or elevated temperature effects were not considered. The charts are intended to be used only as general guidelines for design. These charts are not intended to replace a critical evaluation of any particular connection in an application where the charts show the flange to be marginal. Pages: 79

3rd Edition | September 2008 | Product Number: G6AF03 | Price: $163.00

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TR 6AF *
Technical Report on Capabilities of API Flanges Under Combinations of Load—Russian
(includes Errata 1 dated March 2017)
Russian translation of TR 6AF
3rd Edition | September 2008 | Product Number: G6AF03R | Price: $163.00

TR 6AF1
Technical Report on Temperature Derating of API Flanges Under Combination of Loading
Continuation to the report on the capabilities of flanges under combined loadings (PRAC 86-21) that resulted in the publication of Bull 6AF. Included in this technical report is an in-depth look into the effect of elevated temperatures of API flanges. The results in this report are analytical and assume a temperature gradient across the flange as stated in this report.
Pages: 256
2nd Edition | November 1998 | Product Number: G06AF1 | Price: $171.00

TR 6AF2
Technical Report on Capabilities of API Integral Flanges Under Combination of Loading—Phase II
(includes Errata 1 dated November 2018)
Result of the evaluation of the load carrying capacity of Spec 6A integral flanges, including the end tension and bending moment in addition to the conventional rated pressure and makeup forces. The effect of a temperature difference corresponding to 250 °F on the inside and 30 °F on the outside is also evaluated. Three-dimensional finite element meshes are generated for the Type 6B and Type 6BX flanges. The computer program SESAM is used to obtain the stresses at selected critical flange and hub sections and to determine the gasket reaction due to each of the four load cases and the temperature difference load case. The leakage criterion is defined as the load combination with reduces the initial compressive forces in the gasket to zero. The stresses in each defined section are linearized in accordance with the ASME Section VIII, Division 2 procedure to determine the membrane and membrane-plus-bending stress intensities. The stress intensities are checked against the allowable conditions specified in Spec 6A.
Pages: 119
5th Edition | April 2013 | Product Number: G6AF25 | Price: $184.00

TR 6AF3
High-Pressure High-Temperature (HPHT) Flange Design Methodology
Provides design guidelines for API 6BX style flanges utilized as end and outlet connectors in high-pressure, high-temperature (HPHT) surface and subsea applications. For this document, HPHT applications are intended to mean flanges assigned a temperature rating greater than 350 °F or a pressure rating greater than 15,000 psi. This document does not address thermal effects including gradient effects or subsea production equipment. Service temperature ratings above 550 °F (288 °C) are outside the scope of this technical report. The flange designer should address thermal effects when designing flanges rated for high temperatures.
Pages: 34
1st Edition | August 2020 | Product Number: G6AF301 | Price: $86.00

TR 6AM
Technical Report on Material Toughness
Includes CVN toughness requirement that can be used as a quality assurance measure in Spec 6A equipment to screen materials with poor notch toughness.
Pages: 12
2nd Edition | September 1995 | Product Number: G06AM2 | Price: $82.00

Std 6AR
Repair and Remanufacture of Wellhead and Tree Equipment
Identifies the requirements for repair and remanufacture of wellhead and tree equipment under a quality management system and manufactured in conformance with API 6A for continued service when specified by the user/purchaser of the equipment.
This standard applies to equipment manufactured to editions of API 6A in which a product specification level (PSL) identifies the quality, material, and testing requirements for a specific product. Equipment identified as manufactured in conformance with API 6A prior to April 1986 (API 6A, 15th Edition) is outside the scope of this document. A repair and remanufacture specification level (RSL) is designated to provide the appropriate quality control requirements for the repair and remanufacture of wellhead and tree equipment under this standard.
Pages: 25
2nd Edition | September 2019 | Product Number: G6AR02 | Price: $75.00

Spec 6AV1 ◆
Validation of Safety and Shutdown Valves for Sandy Service
There are three service classes—Class I, Class II, and Class III—for API 6A surface safety valve (SSV), underwater safety valve (USV), or boarding shutdown valve (BSDV). This standard establishes sandy service design validation for valves to meet Class II and Class III.
Class II is intended to validate the valve bore sealing mechanism if substances such as sand can be expected to cause safety or shutdown valve failure.
Class III adds additional requirements and validation of the bonnet assembly inclusive of stem seals and may be selected by the user/purchaser.
Validation to Class III also validates the same SSV/USV/BSDV for Class II in accordance with scaling limitations specified in the document.
Pages: 32
3rd Edition | July 2018 | Product Number: G6AV103 | Price: $105.00

Std 6AV2
Installation, Maintenance, and Repair of Safety Valves (SSV, USV, and BSDV)
Provides requirements for installing and maintaining surface safety valves (SSV) and underwater safety valves (USV). Included are requirements for receiving inspection, installation and maintenance, field and offshore repair, testing procedures with acceptance criteria, failure reporting, and documentation. Power and control systems for SSV/USVs are not included. This document is applicable to SSVs/USVs used or intended to be used as part of a safety system, as defined by documents such as API 14C. This standard is the revision of and supersedes RP 14H, 5th Edition.
Pages: 36
2nd Edition | August 2020 | Product Number: G6AV202 | Price: $160.00

Spec 6D ◆
Specification for Valves
(includes Errata 1 dated December 2021, Errata 2 dated October 2023, and Addendum 1 dated April 2023)
Defines the requirements for the design, manufacturing, materials, welding, quality control, assembly, testing, marking, documentation, and process controls of axial, ball, check, gate, and plug valves for application in the natural gas and petroleum industry. The specification is used on a global scale to help ensure access to reliable and sustainable energy, and supports UN Sustainable Development Goal 9, Resilient Infrastructure. The title was updated to reflect its broad use and applicability in the natural gas and petroleum industry.
Pages: 173

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RP 6DR
Recommended Practice for the Repair and Remanufacture of Pipeline Valves
Provides guidelines for the repair and remanufacture of steel ball, check, gate, and plug valves normally used in pipeline applications, as defined by Spec 6D. This RP covers repair or remanufacturing of end user’s (owner’s) valves for continued service in the owner’s production applications. Repaired or remanufactured valves may not meet API and/or the OEM standard requirements for new valves. The owner is responsible for the correct application of valves repaired or remanufactured per this document. It does not cover repair or remanufacture of used or surplus valves intended for resale. Furthermore, field repair is outside the scope of this document. Pages: 11
2nd Edition | May 2012 | Reaffirmed: January 2020
Product Number: G06DR2 | Price: $84.00

RP 6DR *
Recommended Practice for the Repair and Remanufacture of Pipeline Valves—Russian
Russian translation of Spec RP 6DR.
2nd Edition | May 2012 | Reaffirmed: January 2020
Product Number: G06DR2R | Price: $84.00

Spec 6DSS
Specification for Subsea Pipeline Valves
(includes Errata 1 dated May 2018, Errata 2 dated July 2018, Addendum 1 dated April 2019, and Addendum 2 dated June 2022)
Defines the requirements for the design, manufacturing, quality control, assembly, testing, and documentation of ball, check, gate, plug, and axial on-off valves for application in subsea pipeline systems for the petroleum and natural gas industries. The document contains requirements for both full-opening and reduced-opening valves. Valves covered by this specification include one of the following pressure classes: Class 150, Class 300, Class 600, Class 900, Class 1500, or Class 2500. This specification is not applicable to valves for pressure ratings exceeding Class 2500. Pages: 130
3rd Edition | August 2017 | Product Number: G6DSS3 | Price: $179.00

Spec 6DSS *
Specification for Subsea Pipeline Valves—Russian
(includes Errata 1 dated May 2018, Errata 2 dated July 2018, Addendum 1 dated April 2019, and Addendum 2 dated June 2022)
Russian translation of Spec 6DSS.
3rd Edition | August 2017 | Product Number: G6DSS3R | Price: $179.00

Std 6DSSX
Operator and Mounting Kits for Subsea Valves
(includes Errata 1 dated May 2021)
Defines the requirements for design, mechanical integrity, and sizing of operators and related components used on subsea pipeline valves that conform to API Spec 6DSS. This standard is applicable to the following: electric actuators; electro-hydraulic actuators; hydraulic actuators; actuator override systems; diver and remotely operated tool (ROT)-operated gearboxes; other actuators, by agreement; mounting kit; pressure and volume compensation and associated systems; pressure caps; protection covers; and electrohydraulic position indication systems. Pages: 105
1st Edition | March 2021 | Product Number: G6DSSX1 | Price: $156.00

Std 6DX
Standard for Actuators and Mounting Kits for Valves
(includes Addendum 1 dated March 2023 and Errata 1 dated April 2023)
Defines the requirements for mechanical integrity and sizing of actuators used on valves manufactured under Spec 6D. It is applicable to all types of electric, pneumatic, and hydraulic actuators, inclusive of mounting kit, installed on pipeline valves. This document is not applicable to actuators installed on control valves, valves being used for regulation, valves in sub-sea service, handheld powered devices, stand-alone manually operated gearboxes, instrument tubing and associated fittings, and actuator control equipment. Pages: 44
2nd Edition | February 2020 | Product Number: G6DX02 | Price: $156.00

TR 6F1
Summarizes the results of four projects to test the performance of API and ANSI end connections in a fire test according to Spec 6FA. The appendices present the analytical procedures used to generate performance prediction. Pages: 29
3rd Edition | April 1999 | Product Number: G06F13 | Price: $124.00

TR 6F2
Technical Report on Fire Resistance Improvements for API Flanges
Establishes recommended methods for improving the performance of standard API flanges when subjected to the adverse effects of external high temperatures induced by exposure to fires. This publication does not cover fire prevention, suppression, or firefighting practices. Pages: 19
3rd Edition | April 1999 | Product Number: G06F23 | Price: $118.00

Std 6FA
Standard for Fire Test of Valves
(includes Errata 1 dated August 2020 and Errata 2 dated August 2020)
Establishes the requirements for testing and evaluating the pressure-containing performance of API 6A and API 6D valves when exposed to fire. The performance requirements of this document are intended to establish standard limits of acceptability regardless of size or pressure rating. This standard applies to valves with one or more closure members. Pages: 36
5th Edition | May 2020 | Product Number: G06FA5 | Price: $110.00

Std 6FB
Standard for Fire Test for End Connectors
Establishes procedures for testing and evaluating the pressure-containing performance of API end connectors when exposed to fire. Valves, wellhead seals, or other related equipment are not included in the scope of this document. The performance requirements of this standard establish standard qualification criteria for all sizes and pressure ratings of end connectors. The procedures are presented in two parts: Part I represents conditions in an onshore or open offshore location, and Part II represents conditions in an offshore platform well bay. Pages: 27
4th Edition | May 2019 | Product Number: G06FB4 | Price: $75.00

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Elastomer Life Estimation Testing Procedures

The proposed procedure discussed in this publication outlines a technique based on the Arrhenius principle of chemical reaction rates, which permits the life of an elastomeric material to be estimated when exposed to a severe service environment. This is a companion document to Bull 6J, 2nd Edition. Pages: 14

1st Edition | August 2000 | Product Number: G06J11 | Price: $86.00

Spec 7-1

Rotary Drill Stem Elements

(includes Errata 1 dated September 2023)

Specifies the technical delivery conditions for rotary drill stem elements: upper and lower Kelly valves, square and hexagonal Kellys, drill stem sub, drill collars (steel and non-magnetic, round and spiral), heavy-weight drill pipe (HWDPI), drilling and coring bit connections, and stabilizers. This standard is not applicable to drill pipe and tool joints, rotary shouldered connection designs, thread gauging practices, or grand master, reference master, and working gauges, and does not include or identify performance properties. A typical drill stem assembly applicable to this standard is provided. Pages: 125

2nd Edition | February 2023 | Product Number: GX7102 | Price: $195.00

Spec 7-2

Threading and Gauging of Rotary Shouldered Connections

(includes Errata 1 dated August 2017, Errata 2 dated November 2019, Addendum 1 dated March 2020, and Addendum 2 dated September 2023)

Specifies requirements on rotary shouldered connections for use in petroleum and natural gas industries, including dimensional requirements on threads and thread gauges, stipulations on gauging practice and gauge specifications, as well as instruments and methods for inspection of thread connections. These connections are intended primarily for use in drill-string components.

Other supplementary specifications can be agreed between interested parties for special tolerance requirements, qualification, testing, inspection, and finishing. This standard applies both to newly manufactured connections and connections that are recut after service. It should be realized that recut connections are subject to additional inspection and testing—the user is referred to API 7G-2 for such information.

This standard is applicable to the following preferred rotary shouldered connection designs. These are traceable to an internationally supported system of gauges and calibration that can be described as number (NC) style, regular (REG) style, or full-hole (FH) style. Pages: 114

2nd Edition | January 2017 | Product Number: GX70202 | Price: $206.00

Spec 7-2

Threading and Gauging of Rotary Shouldered Connections—Russian

(includes Errata 1 dated August 2017, Errata 2 dated November 2019, Addendum 1 dated March 2020, and Addendum 2 dated September 2023)

Russian translation of Spec 7-2.

Exploration and Production

To purchase individual API standards, visit apiwebstore.org

TR 7CR
Cold Working Thread Roots with CNC Lathes for Rotary Shouldered Connections

Describes procedures for cold root rolling the thread roots on API 7-2 thread sizes using CNC Lathes (OW/CNC). Cold working can be applied by a couple methods: (1) cold rolling under pressure with a roller shaped like the thread form, or (2) shot peening. Both methods achieve acceptable results, but machine thread root rolling is more controllable. Pages: 49

1st Edition | January 2020 | Product Number: G7CR01 | Price: $75.00

Std 7CW
Casing Wear Tests

Provides a method by which results will be reproducible, under a specified set of conditions, for conducting tests that determine casing wear due to rotation of drill stem elements.

This standard is intended to be used in a laboratory environment and is not intended for use in the field during operations. The testing requirements in this standard are not represented at well conditions. This standard is divided into four major areas: machine apparatus, procedures, materials, and reporting.

This standard will not address the significance of specific data values. It is the responsibility of the user of this standard to establish the appropriate test data values that are acceptable based on their respective application, operational limitations, and safety practices. Pages: 18

1st Edition | June 2015 | Reaffirmed: July 2020
Product Number: G7CW01 | Price: $93.00

Spec 7F •

Oil Field Chain and Sprockets

(includes Errata 1 dated May 2013)

Covers the manufacture of the components for, and the assembly and packaging of, single and multiple strand, numbers 40 through 240, standard and heavy series rollers for oil field applications, including chain designation, chain length tolerance, tensile strength specifications, pin and bushing press-out specifications, and dynamic test requirements. For informational purposes, Annex A provides recommendations for installation, lubrication, and maintenance of oil field chain drives, and Annex B includes a basic description of roller chain sprockets. Pages: 29

8th Edition | November 2010 | Effective Date: May 1, 2011
Reaffirmed: July 2022 | Product Number: G7FO01 | Price: $125.00

Spec 7F *

Oil Field Chain and Sprockets—Chinese

(includes Errata 1 dated May 2013)

Chinese translation of Spec 7F.

8th Edition | November 2010 | Reaffirmed: July 2022
Product Number: G7FO08C | Price: $125.00

RP 7G-1

Drill Stem Performance Properties

(supersedes RP 7G)

Includes the performance properties for certain drill stem elements and gives general cautions regarding the use of the performance properties. The properties of drill pipe and tool joints, drill collars, heavy weight drill pipe, Kellys, rock bits, and lift subs are given. Also provided are the properties of rotary shoulder connections and associated special processes, and break-in steps. Pages: 99

17th Edition | April 2023 | Product Number: G7G117 | Price: $230.00

RP 7G-2

Inspection and Classification of Used Drill Stem Elements

Specifies the requirements for each level of inspection and procedures for the inspection and testing of used drill stem elements. This document has been prepared to address the practices and technology commonly used in inspection. This document also specifies the qualification of inspection personnel, a description of inspection methods, and apparatus calibration and standardization procedures for various inspection methods. The evaluation of imperfections and the marking of inspected drill stem elements is included. Pages: 227

2nd Edition | October 2020 | Product Number: G7G202 | Price: $167.00

RP 7HU1

Safe Use of 2-Inch Hammer Unions for Oilfield Applications

(includes Errata 1 dated February 2014)

Sets forth procedural recommendations as well as an engineering solution to the mismatching of a female 2-inch Figure 402, a female 2-inch Figure 602, or a female 2-inch Figure 1002 hammer union component (sub) with a male 2-inch Figure 1502 hammer union component (wing nut) as described in 3.2. The procedural recommendations described in this recommended practice should be implemented to reduce further incidents. The engineering solution, which makes impossible the mating of female 2-inch Figure 402, 2-inch Figure 602, and/or 2-inch Figure 1002 subs with the wing nut of the 2-inch Figure 1502 hammer union, applies to the manufacture of new hammer union components and should not be applied in the modification of existing hammer union components due to unknown factors caused by field wear. Pages: 12

Product Number: H7HU11 | Price: $40.00

Spec 7HU2

Oilfield Hammer Unions

Addresses the incompatibility of hammer union components, a common issue in the industry that has led to equipment mismatching incidents. Its application will serve to improve operations through interoperability of a field proven standard design. This standard specifies minimum requirements for the dimensional and functional interchangeability, design, materials, inspection, marking, storing, and shipment of hammer union parts and assemblies for use in the petroleum and natural gas industries. Pages: 50

1st Edition | March 2022 | Product Number: H7HU21 | Price: $116.00

Spec 7K

Drilling and Well Servicing Equipment

(includes Errata 1 dated May 2016, Errata 2 dated August 2016, and Errata 3 dated October 2017)

Provides general principles and specifies requirements for design, manufacture, and testing of new drilling and well-servicing equipment and of replacement primary load-carrying components manufactured subsequent to the publication of this specification. This specification is applicable to the following equipment:

• rotary tables;
• rotary bushings;
• high-pressure mud and cement hoses;
• piston mud-pump components;
• drawworks components;
• manual tongs;
• safety clamps not used as hoisting devices;
• blowout preventer (BOP) handling systems;
• pressure-relieving devices for high-pressure drilling fluid circulating systems;
• sub-lines for manual and power tongs;
• rotary slips, both manual and powered;
• slip bowls; and
• spiders, both manual and powered. Pages: 130

6th Edition | December 2015 | Product Number: G07K06 | Price: $217.00

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**Spec 7K *  
Drilling and Well Servicing Equipment—Russian**  
(includes Errata 1 dated May 2016, Errata 2 dated August 2016, and Errata 3 dated October 2017)

Russian translation of Spec 7K.

6th Edition | December 2015  
Product Number: G07K06R | Price: $217.00

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**RP 7L  
Procedures for Inspection, Maintenance, Repair, and Remanufacture of Drilling Equipment**  
(includes Addendum 1 dated February 2006 and Addendum 2 dated March 2006)

Provides owners and users of drilling equipment with guidelines for inspection, maintenance, repair, and remanufacture procedures that may be utilized to maintain serviceability of the drilling equipment. Covers the following drilling equipment:
- rotary tables;
- rotary bushings;
- rotary slips;
- rotary hoses;
- slush pump connectors;
- drawworks components;
- spiders not used as elevators; manual tongs; and
- safety clamps not used as hoisting devices. Pages: 26

1st Edition | December 1995 | Effective Date: April 1, 1996  
Reaffirmed: August 2019 | 2-Year Extension: July 2016  
Product Number: G07L01 | Price: $118.00

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**Spec 7NRV ◆  
Specification for Drill String Non-Return Valves**  
(includes Addendum 1 dated December 2019)

Provides the minimum acceptable requirements for drill string non-return valve (NRV) equipment. It covers drill string non-return valves, non-return valve subs, non-return valve landing nipples, non-return valve equalizing heads, and all components that establish tolerances and/or clearances that may affect performance or interchangeability of the NRV equipment. Non-return valve subs, non-return valve landing nipples, non-return valve equalizing heads, and NRVs manufactured by different facilities or manufacturers may be supplied as separate items. Pages: 19

1st Edition | July 2006 | Reaffirmed: July 2020  
Product Number: G7NRV01 | Price: $76.00

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**Spec 7NRV ◆  
Specification for Drill String Non-Return Valves—Chinese**  
(includes Addendum 1 dated December 2019)

Chinese translation of Spec 7NRV.

1st Edition | July 2006 | Reaffirmed: July 2020  
Product Number: G7NRV01C | Price: $76.00

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**Spec 8C ◆  
Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)**  
(includes Errata 1 dated May 2014 and Errata 2 dated November 2020)

Provides requirements for the design, manufacture, and testing of hoisting equipment suitable for use in drilling and production operations. This specification is applicable to numerous drilling and production hoisting equipment, some of which include: hoisting sheaves, traveling and hook blocks; elevator links, casing elevators, sucker rod elevators, rotary and power swivels, drilling hooks, wireline anchors, drill string motion compensators, and safety clamps. Pages: 53

5th Edition | April 2012 | Effective Date: October 1, 2012  
Reaffirmed: August 2019 | Product Number: G08B08 | Price: $103.00

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**Spec 8C ◆  
Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)—Chinese**  
(includes Errata 1 dated May 2014 and Errata 2 dated November 2020)

Chinese translation of Spec 8C.

5th Edition | April 2012 | Reaffirmed: August 2019  
Product Number: G08C05 | Price: $152.00

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**HOISTING TOOLS**

**RP 8B  
Recommended Practice for Procedures for Inspection, Maintenance, Repair, and Remanufacture of Hoisting Equipment**  
(includes Addendum 1 dated March 2019 and Addendum 2 dated July 2021)

Provides guidelines and establishes requirements for inspection, maintenance, repair, and remanufacture of items of hoisting equipment manufactured according to Spec 8A, Spec 8C, or ISO 13535 used in drilling and production operations, in order to maintain the serviceability of this equipment. Items of drilling and production hoisting equipment covered are:
- crown-block sheaves and bearings;
- traveling blocks and hook blocks;
- block-to-hook adapters;
- connectors and link adapters;
- drilling hooks;
- tubing hooks and sucker-rod hooks;
- elevator links;
- casing elevators, tubing elevators, drill-pipe elevators, and drill-collar elevators;
- sucker-rod elevators;
- rotary swivel-bail adapters;
- rotary swivels;
- power swivels;
- power subs;
- spiders, if capable of being used as elevators;
- dead-line tie-down/wireline anchors;
- drill-string motion compensators;
- Kelly spinners, if capable of being used as hoisting equipment;
- riser-running tool components, if capable of being used as hoisting equipment;
- wellhead-running tool components, if capable of being used as hoisting equipment;
- safety clamps, capable of being used as hoisting equipment;
- top drives;
- casing running tools. Pages: 16

8th Edition | May 2014 | Product Number: G08B08 | Price: $103.00

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**Spec 8C**

Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)—Russian

(includes Errata 1 dated May 2014 and Errata 2 dated November 2020)

Russian translation of Spec 8C.

5th Edition | April 2012 | Reaffirmed: August 2019
Product Number: G08C05R | Price: $152.00

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**WIRE ROPE**

**Spec 9A**

Specification for Wire Rope

(includes Addendum 1 dated May 2023)

Specifies the minimum requirements and terms of acceptance for the manufacture and testing of steel wire ropes not exceeding rope grade 2160 for the petroleum and natural gas industries. The following products are covered by this specification:

- wire rope,
- bright- or drawn-galvanized wire rope,
- well-measuring wire, and
- well-measuring strand.

Typical applications include tubing lines, rod hanger lines, sand lines, cable-tool drilling and clean out lines, cable tool casing lines, rotary drilling lines, winch lines, horse head pumping unit lines, torpedo lines, mast raising lines, guideline tensioner lines, riser tensioner lines, and mooring and anchor lines. Ropes for lifting slings and cranes, and wire for well-measuring and strand for servicing, are also included. The minimum breaking forces for the more common sizes, grades, and constructions of stranded rope are given in tables. However, this standard does not restrict itself to the classes covered by those tables. Other types, such as ropes with compacted strands and compacted (swaged) ropes, may also conform with its requirements. The minimum breaking force values for these ropes are provided by the manufacturer. For information only, other tables present the minimum breaking forces for large diameter stranded and spiral ropes (i.e. spiral strand and locked coil), while approximate nominal length masses for the more common stranded rope constructions and large diameter stranded and spiral ropes are also given. Pages: 91


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**RP 9B**

Application, Care, and Use of Wire Ropes for Oil Field Service

(includes Addendum 1 dated August 2020)

Covers typical wire rope applications for the oil and gas industry. Typical practices in the application of wire rope to oil field service are indicated in Table 1, which shows the sizes and constructions commonly used. Because of the variety of equipment designs, the selection of other constructions than those shown is justifiable.

In oilfield service, wire rope is often referred to as wire line or cable. For the purpose of clarity, these various expressions are incorporated in this recommended practice. Pages: 44

14th Edition | October 2015 | Product Number: G9B014 | Price: $131.00

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**OIL WELL CEMENTS**

**Bull E3**

Wellbore Plugging and Abandonment Practices

Addresses the environmental concerns related to well abandonment and inactive well practices. The primary environmental concerns are protection of usable aquifers from fluid migration; and isolation of hydrocarbon production and water injection intervals. Additional issues in the document include protection of surface soils and surface waters, future and use, and permanent documentation of plugged and abandoned wellbore locations and conditions. Pages: 22

25th Edition | March 2019 | Effective Date: September 2019
Product Number: G10A25 | Price: $163.00

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**Spec 10A**

Cements and Materials for Well Cementing—Russian

(includes Addendum 1 dated November 2019 and Addendum 2 dated August 2022)

Specifies requirements and gives recommendations for six classes of well cements, including their chemical and physical requirements and procedures for physical testing.

This specification is applicable to well cement classes A, B, C, and D, which are the products obtained by grinding Portland cement clinker and, if needed, calcium sulfate, as an interground additive. Processing additives can be used in the manufacture of cement of these classes. Suitable set-modifying agents can be interground or blended during manufacture of class D cement. This specification is also applicable to well cement classes G and H, which are the products obtained by grinding clinker with no additives other than one or more forms of calcium sulfate, water, or chemical additives as required for chromium (VI) reduction. Pages: 76


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**RP 10B-2**

Recommended Practice for Testing Well Cements

(includes Errata 1 dated June 2006 and Errata 2 dated January 2007) (supersedes RP 10B)

Specifies methods and gives recommendations for the testing of cement slurries and related materials under simulated well conditions. Pages: 111

2nd Edition | April 2013 | Reaffirmed: April 2019
Product Number: G10B202 | Price: $239.00

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**RP 10B-2**

Recommended Practice for Testing Well Cements—Russian

(includes Errata 1 dated June 2006 and Errata 2 dated January 2007) (supersedes RP 10B)

Russian translation of RP 10B-2.

2nd Edition | April 2013 | Reaffirmed: April 2019
Product Number: G10B202R | Price: $239.00

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The test methods contained in this recommended practice, though generally based on API 10B-2, take into account the specialized testing requirements and unique wellbore temperature profiles found in deepwater wells or wells in areas with low seafloor temperatures. This document does not address the mitigation of shallow water flow zones in deepwater wells, which is addressed in RP 65. Pages: 32

Product Number: G10B32 | Price: $103.00

RP 10B-4
Preparation and Testing of Foamed Cement Formulations at Atmospheric Pressure
Defines the test methods including the generation of unfoamed base and their corresponding foamed cement slurries at atmospheric pressure. These procedures are developed for foaming cement slurries with air, at atmospheric conditions, which could mimic a foam quality experienced with nitrogen at downhole conditions; they may be modified to accommodate other gases such as nitrogen. Slurries that are foamed with nitrogen, and their properties, will also be discussed within this standard as they are relevant to the scope of the standard.
This standard does not address testing at pressures above atmospheric conditions nor does this standard include or consider the effects of nitrogen solubility in the nitrogen fraction calculations. Pages: 40

2nd Edition | October 2015 | Product Number: G10B402 | Price: $103.00

RP 10B-5/ISO 10426-5:2004
Recommended Practice on Determination of Shrinkage and Expansion of Well Cement Formulations at Atmospheric Pressure
Provides the methods for the testing of well cement formulations to determine the dimension changes during the curing process (cement hydration) at atmospheric pressure only. This is a base document, because under real well cementing conditions shrinkage and expansion take place under pressure and different boundary conditions. This edition of RP 10B-5 is the identical national adoption of ISO 10426-5:2004. Pages: 13

1st Edition | April 2005 | Reaffirmed: August 2020
Product Number: GX10B501 | Price: $87.00

RP 10B-6/ISO 10426-6:2008
Recommended Practice on Determining the Static Gel Strength of Cement Formulations
(includes Addendum 1 dated January 2020)
This document specifies requirements and provides test methods for the determination of static gel strength (SSS) of the cement slurries and related materials under simulated well conditions. This edition of RP 10B-6 is the modified national adoption of ISO 10426-6:2008. Pages: 7

1st Edition | August 2010 | Reaffirmed: December 2019
Product Number: G610B601 | Price: $68.00

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## Selection of Centralizers for Primary Cementing Operations

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<td>May 2008</td>
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Std 65-2 ♦
Isolating Potential Flow Zones During Well Construction
Contains best practices for zone isolation in wells to prevent annular pressure and/or flow through or past pressure-containment barriers that are abandoned (suspended) are intended to be re-entered in the future. Well construction practices may affect barrier sealing performance are mentioned along with methods to help prevent pressure containment barriers. The guidance from this document covers recommendations for pressure-containment barrier design and installation practices that affect the zone isolation process to prevent or mitigate annular fluid flow or pressure. Pages: 83
Product Number: G65202 | Price: $141.00

RP 65-3
Wellbore Plugging and Abandonment
Provides guidance for the design, placement, and verification of cement plugs in wells to be temporarily or permanently abandoned, as well as remediation and verification of annular barriers. Wells temporarily abandoned (suspended) are intended to be re-entered in the future. Placement of barriers may depend on whether the well is to be temporarily or permanently abandoned. Cement plug lengths are not considered in this document. Pages: 52
1st Edition | June 2021 | Product Number: G65301 | Price: $112.00

FIELD OPERATING EQUIPMENT

RP 11AR
Recommended Practice for Care and Use of Subsurface Pumps
Provides information on the proper selection, operation, and maintenance of subsurface pumps so the best economical life can be obtained. Pages: 50
Product Number: G11AR4 | Price: $135.00

Spec 11AX ♦
Specification for Subsurface Sucker Rod Pump Assemblies, Components, and Fittings
Provides the requirements and guidelines for the design of subsurface sucker rod pump assemblies (including insert and tubing), components, and fittings in commonly used bore sizes for the sucker rod lift method for the petroleum and natural gas industry. The specification covers subsurface sucker rod pump assemblies including insert and tubing, components, and fittings in commonly used bore sizes for the sucker rod lift method for the petroleum and natural gas industry. The specification covers subsurface sucker rod pump assemblies including insert and tubing, components, and fittings in commonly used bore sizes for the sucker rod lift method. Sufficient dimensional and material requirements are provided to assure interchangeability and standardization of all component parts. The specification does not cover specialty subsurface sucker rod pump accessories or special design components. Also, installation, operation, and maintenance of these products are not included in this specification; however, recommendations can be found in RP 11AR. Pages: 107
Product Number: G11AX13 | Price: $189.00

Spec 11B ♦
Sucker Rods and Rod-Related Products
Provides the requirements and guidelines for the design of thread form requirements, steel sucker rods and rod, filter and reinforced plastic (FRP) sucker rods and rod, sinker bars, polished rods, couplings and sub-couplings, thread gauges, pumping tees, stuffing boxes, polished rod clamps, calibration of measuring equipment, standard methods of mechanical properties testing, and polished rod liners as defined for use in the sucker rod lift method for the petroleum and natural gas industry. Pages: 188
28th Edition | December 2023 | Effective Date: December 12, 2024
Product Number: G11B28 | Price: $185.00

RP 11BR
Recommended Practice for the Care and Handling of Sucker Rods
Covers the care and handling of steel sucker rods, including guidelines on selection, allowable stress, proper joint makeup, corrosion control, and used rod inspection. Pages: 28
9th Edition | August 2008 | Reaffirmed: July 2020
Product Number: G11BR09 | Price: $114.00

Spec 11E ♦
Pumping Units
Provides the requirements and guidelines for the design and rating of beam pumping units for use in the petroleum and natural gas industry. Included are all components between the carrier bar and the gear reducer input shaft. This includes the following: beam pump structures; pumping unit gear reducer. Only loads imposed on the structure and/or gear reducer by the polished rod load are considered in this specification. Also included are the requirements for the design and rating of enclosed gear reducers wherein the involute gear tooth designs include helical and herringbone gearing. The rating methods and influences identified in this specification are limited to single- and multiple-stage designs applied to beam pumping units in which the pitch-line velocity of any stage does not exceed 5000 ft/min and the speed of any shaft does not exceed 3600 rpm. Pages: 109
20th Edition | October 2022 | Effective Date: April 1, 2023
Product Number: G11E20 | Price: $202.00

RP 11ER
Guarding of Pumping Units
Provides a reference or guide for the design, manufacture, and installation of guards for moving parts on pumping units. It is based on knowledge and experience gained through the application of guards for pumping units by the production segment of the petroleum industry. Pages: 27
4th Edition | July 2022 | Product Number: G11ER04 | Price: $96.00

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This publication is a new entry in this catalog. This publication is related to an API licensing, certification, or accreditation program.
RP 11G
Recommended Practice for Installation, Maintenance and Lubrication of Pumping Units
Provides guidance related to the proper installation, care, and maintenance of surface mounted beam pumping units, varieties of which are described in Spec 11E. Information provided in this document is of a general nature and is not intended to replace specific instruction provided by the pumping unit manufacturer. This document further establishes certain minimum requirements intended to promote the safe installation, operation, and servicing of pumping unit equipment. Pages: 26
5th Edition | November 2013 | Reaffirmed: July 2019
Product Number: G11G05 | Price: $93.00

TR 11L
Design Calculations for Sucker Rod Pumping Systems (Conventional Units)
Covers recommendations for design calculations for conventional unit sucker rod pumping systems based on test data submitted to API by Sucker Rod Pumping Research, Inc. The topics include vibration characteristics of sucker rod strings, physical characteristics of sucker rods, and dimensional analysis of sucker rod pumping systems. The calculations apply to the broad category of average, normal pumping wells fitting the assumed conditions defined therein. Unusual or out-of-the-ordinary conditions will cause deviations from calculated performance. Pages: 24
5th Edition | June 2008 | Product Number: G11L05 | Price: $115.00

Bull 11L2
Bulletin on Catalog of Analog Computer Dynamometer Cards
Contains over 1100 polished rod dynamometer cards taken with the electronic analog simulator and arranged in convenient form for comparison with field tests. Pages: 77
1st Edition | December 1969 | Reaffirmed: September 1999
Product Number: G05700 | Price: $133.00

Bull 11L3
Sucker Rod Pumping System Design Book
(includes Errata 1 dated November 1973 and Supplement 1 dated February 1977)
Contains print-out tables of computer calculated values for selecting sucker rod systems. Values are included for depths of 200 ft to 12,000 ft in increments of 500 feet, and production rates of 100 barrels per day to over 1,500 barrels per day in varying increments. Various rod string pump stroke, pump size, and pumping speed combinations that will do the job within the limiting parameters are listed. Pages: 574
1st Edition | May 1970 | Product Number: G05800 | Price: $143.00

TR 11L6
Technical Report on Electric Motor Prime Mover for Beam Pumping Unit Service
Covers polyphase, squirrel-cage, induction motors for use as the prime mover for beam pumping units (size range of 200 hp and below). Motors to be operated from solid-state or other types of variable frequency/variable voltage power supplies for adjustable speed applications will require individual consideration to provide satisfactory performance and are beyond the scope of this document. Motors conforming to this document are suitable for operation in accordance with their full load rating under ambient temperature at a maximum altitude of 1000 m (3300 ft) above sea level with outdoor sever duty application, including blowing dust or snow, corrosive atmospheres, high humidity, and cyclic loading. Pages: 13
2nd Edition | May 2008 | Product Number: G11L602 | Price: $94.00

TR 11L6 *
Technical Report on Electric Motor Prime Mover for Beam Pumping Unit Service—Chinese
2nd Edition | May 2008 | Product Number: G11L602C | Price: $94.00

Spec 11PL
Plunger Lift Lubricators and Related Equipment
Provides requirements and guidelines for plunger lift lubricators, which includes plunger catchers as defined herein for use in the petroleum and natural gas industry. Threaded and flanged external connections are covered by the applicable API or proprietary connection design requirements. This specification provides requirements for the functional specification and technical specification, including design requirements (outlet locations, specified and optional), design extensions, design verification and validation, welding, materials, quality controls, marking, documentation and data control, shipment, and storage. Pages: 72
1st Edition | June 2019 | Effective Date: June 2020
Product Number: G11PL01 | Price: $121.00

RP 11S
Recommended Practice for the Operation, Maintenance and Troubleshooting of Electric Submersible Pump Installations
Covers all of the major components that comprise a standard electric submersible pumping system, their operation, maintenance, and troubleshooting. It is specifically prepared for installations in oil and water producing wells where the equipment is installed on tubing. It is not prepared for equipment selection or application. Pages: 18
Product Number: G11S03 | Price: $90.00

RP 11S1
Electrical Submersible Pump Dismantle, Inspection and Failure Analysis
Covers the processes and procedures of collecting required information to complete a root cause failure analysis of an electrical submersible pump (ESP) system. These include: procedures for disassembly, inspection, final report, failure classification, and corrective actions. Items covered by this recommended practice include pumps, intakes, gas separators, gas handling devices, seals/protectors, motors (induction and permanent magnet motors), gauges, sensors, motor lead extensions, potheads, and power cables. Tooling and test equipment may differ between suppliers; however, the typical assembly and inspection procedures and principles are generally applicable for most ESP systems. Pages: 60
4th Edition | April 2022 | Product Number: G11S14 | Price: $133.00

RP 11S2
Recommended Practice for Electric Submersible Pump Testing
Provides guidelines and procedures covering electric submersible pump performance testing intended to establish product consistency. These practices are generally considered appropriate for the majority of pump applications. This document covers the acceptance testing of electric submersible pumps (sold as new) by manufacturers, vendors, or users to the prescribed minimum specifications. Pages: 12
2nd Edition | August 1997 | Effective Date: October 1, 1997
Reaffirmed: October 2013 | Product Number: G11S22 | Price: $90.00

RP 11S2 *
Recommended Practice for Electric Submersible Pump Testing—Russian
Russian translation of RP 11S2.
Product Number: G11S22R | Price: $90.00

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Recommended Practice for Testing of Electric Submersible Pump Installations
Addresses the installation and replacement of all major components comprising an electrical submersible pumping system. Specifically, it addresses equipment installation on tubing in oil and gas production operations. Pages: 11
Product Number: G11S52 | Price: $97.00

Recommended Practice for Testing of Electric Submersible Pump Cable Systems
Covers field testing of electric submersible pump cable systems. This document is organized into three major topic categories. The first category provides general definitions and an overview of terms, safety considerations, and cable system preparation guidelines. The second category identifies various situations under which testing is performed. The third category identifies test methods and procedures. Pages: 18
Product Number: G11S61 | Price: $97.00

Recommended Practice on Application and Testing of Electric Submersible Pump Seal Chamber Sections
Applies to the seal chamber section used in support of an electric submersible motor. The recommended practice contains tutorial, testing, and failure evaluation information on the seal chamber section used in support of an electric submersible motor. The document provides a general understanding of construction and functioning of seal chamber sections, identification of well conditions, system requirements, and characteristics that influence component section and application. Pages: 28
Product Number: G05947 | Price: $97.00

Recommended Practice on Electric Submersible System Vibrations
Provides guidelines to establish consistency in the control and analysis of electric submersible pump (ESP) system vibrations. This document is considered appropriate for the testing of ESP systems and subsystems for the majority of ESP applications. This RP covers the vibration limits, testing, and analysis of ESP systems and subsystems. Pages: 18
2nd Edition | October 2012 | Product Number: G11S82 | Price: $84.00

Specification for Bolted Tanks for Storage of Production Liquids
Covers material, design, fabrication, and testing requirements for vertical, cylindrical, aboveground, closed and open-top, bolted steel storage tanks in various standard sizes and capacities with internal pressures approximating atmospheric pressure. This specification is designed to provide the oil production industry with safe and economical bolted tanks of adequate safety and reasonable economy for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. Pages: 30
17th Edition | December 2020
Product Number: G12B17 | Price: $143.00

Specification for Field-Welded Tanks for Storage of Production Liquids
Covers material, design, fabrication, and testing requirements for vertical, cylindrical, aboveground, closed top, welded steel storage tanks with internal pressures approximately atmospheric at various sizes and capacities ranging from 500 to 10,000 barrels. This specification is designed to provide the oil production industry with tanks of adequate safety and reasonable economy for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. This specification is for the convenience of purchasers and manufacturers in ordering and fabricating tanks. Pages: 29
12th Edition | June 2017 | Effective Date: December 1, 2017
Product Number: G12D12 | Price: $116.00

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Spec 12F◆
Specification for Shop-Welded Tanks for Storage of Production Liquids
Covers material, design, fabrication, and testing requirements for new shop-fabricated vertical, cylindrical, aboveground, welded steel storage tanks in the standard sizes and capacities, and for internal pressures approximately atmospheric, given in Table 1.
This specification is designed to provide the oil production industry with tanks of adequate safety and reasonable economy for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. This specification is for the convenience of purchasers and manufacturers in ordering and fabricating tanks. Pages: 35
13th Edition | January 2019 | Effective Date: July 1, 2019
Product Number: G12F13 | Price: $146.00

Spec 12J◆
Specification for Oil and Gas Separators
Covers minimum requirements for the design, fabrication, and plant testing of oil and gas separators and oil-gas-water separators that are used in the production of oil and gas and are located at some point on the producing flow line between the wellhead and pipeline. Separators covered by this specification may be vertical, spherical, or single or double barrel horizontal. Unless otherwise agreed upon between the purchaser and the manufacturer, the jurisdiction of this specification terminates with the pressure vessel as defined in Section VII, Division 1 of the ASME Boiler and Pressure Vessel Code. Pressure vessels covered by this specification are normally classified as natural resource vessels. Separators outside the scope of this specification include centrifugal separators, filter separators, and desanding separators. Pages: 25
8th Edition | October 2008 | Effective Date: April 1, 2009
Product Number: G12J08 | Price: $105.00

Spec 12J*
Specification for Oil and Gas Separators—Chinese
Chinese translation of Spec 12J.
8th Edition | October 2008 | Reaffirmed: June 2023
Product Number: G12J08C | Price: $105.00

Spec 12J*
Specification for Oil and Gas Separators—Russian
Russian translation of Spec 12J.
8th Edition | October 2008 | Reaffirmed: June 2023
Product Number: G12J08R | Price: $105.00

RP 12N
Recommended Practice for the Operation, Maintenance and Testing of Firebox Flame Arrestors
Covers practices that should be considered in the installation, maintenance, and testing of firebox flame arrestors installed on the air intake of oilfield production equipment. Pages: 6
Product Number: G12N02 | Price: $90.00

Spec 12P◆
Specification for Fiberglass Reinforced Plastic Tanks
Covers material, design, fabrication, and testing requirements for fiberglass reinforced plastic (FRP) tanks. Only shop-fabricated, vertical, cylindrical tanks are covered. Tanks covered by this specification are intended for aboveground and atmospheric pressure service. This specification applies to new tanks. The requirements may be applied to existing tanks at the discretion of the owner/operator. This specification is designed to provide the petroleum industry with various standard sizes of FRP tanks. Because of the versatility of FRP tanks, the user shall be responsible for determining the suitability of FRP tanks for the intended service. Pages: 30
5th Edition | May 2022 | Effective Date: November 1, 2022
Product Number: G12P05 | Price: $129.00

Std 12R1
Installation, Operation, Maintenance, Inspection, and Repair of Tanks in Production Service
(includes Addendum 1 dated June 2021)
For use as a guide for new tank installations and maintenance of existing tanks, Std 12R1 contains recommendations for good practices in the collection of well or lease production; gauging; delivery to pipeline carriers for transportation; and other production storage and treatment operations. This recommended practice is intended primarily for application to tanks fabricated to Specs 12F, 12D, 12F, and 12P when employed in on-land production service, but its basic principles are applicable to atmospheric tanks of other dimensions and specifications when they are employed in similar oil and gas production, treating, and processing services. It is not applicable to refineries, petrochemical plants, marketing bulk stations, or pipeline storage facilities operated by carriers. Pages: 53

DRILLING, COMPLETION, AND FRACTURING FLUIDS

Spec 13A◆
Drilling Fluids Materials
(includes Addendum 1 dated April 2020 and Addendum 2 dated June 2022)
Covers physical properties and test procedures for materials manufactured for use in oil- and gas-well drilling fluids. The materials covered are barite; hematite; bentonite; non-treated bentonite; attapulgite; sepiolite; technical grade, low-viscosity carboxymethyl cellulose (CMC-LVT); technical grade, high-viscosity carboxymethyl cellulose (CMC-HVT); starch; low-viscosity polyacrylamide (PAC-LV); high-viscosity polyacrylamide (PAC-HV); and drilling-grade xanthan gum. This specification is intended for the use of manufacturers, distributors, and end users of named products. Annex A (informative) contains information on the API Monogram Program and requirements for the approved use of the API Monogram by licensees. Pages: 120
19th Edition | October 2019 | Effective Date: April 2020
Product Number: G13A19 | Price: $205.00

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RP 13B-1
Recommended Practice for Field Testing Water-Based Drilling Fluids
(includes Errata 1 dated May 2020, Errata 2 dated December 2021, and Errata 3 dated January 2023)
Provides standard procedures for determining the following characteristics of water-based drilling fluids:
- drilling fluid density (mud weight);
- viscosity and gel strength;
- filtration;
- water, oil, and solids contents;
- sand content;
- methylene blue capacity;
- pH;
- alkalinity and lime content;
- chloride content;
- total hardness as calcium;
- low-gravity solids and weighting material concentrations.
Annexes A through K provide additional test methods that may be used for:
- chemical analysis for calcium, magnesium, calcium sulfate, sulfide, carbonate, and potassium;
- determination of shear strength;
- determination of resistivity;
- removal of air;
- drill-pipe corrosion monitoring;
- sampling, inspection, and rejection;
- rig-site sampling;
- calibration and verification of glassware, thermometers, timers, viscometers, retort cup, and drilling fluid balances;
- permeability plugging testing at high temperature and high pressure for two types of equipment;
- sag testing. Pages: 132


RP 13B-2
Field Testing Nonaqueous-Based Drilling Fluids
Provides standard procedures for determining the following characteristics of nonaqueous drilling fluids (NAFs): drilling fluid density (mud weight); viscosity and gel strength; filtration; nonaqueous fluid (NAF), water, and solids concentrations; alkalinity, chloride concentration, and calcium concentration; electrical stability (ES); lime and calcium concentrations, calcium chloride, and sodium chloride concentrations; low-gravity solids and weighting material concentrations; sand content; high-temperature, high-pressure (HTHP) filtration using the permeability plugging apparatus (PPA). Pages: 164


RP 13C
Drilling Fluid Processing Systems Evaluation
Specifies procedures for assessing and modifying the performance of solids control equipment systems commonly used in the field in petroleum and natural gas drilling-fluids processing. Pages: 116

6th Edition | December 2023 | Product Number: G13C06 | Price: $197.00

RP 13D
Rheology and Hydraulics of Oil-Well Drilling Fluids
Provides a basic understanding of and guidance about drilling fluid rheology and hydraulics, and their application to drilling operations. For this recommended practice, rheology is the study of flow characteristics of a drilling fluid and how these characteristics affect movement of the fluid. Specific measurements are made on a fluid to determine rheological parameters under a variety of conditions. From this information the circulating system can be designed or evaluated regarding how it will accomplish certain desired objectives. Pages: 98

7th Edition | September 2017 | Reaffirmed: May 2023
Product Number: G13D07 | Price: $187.00

RP 13I
Laboratory Testing of Drilling Fluids
(includes Addendum 1 dated January 2023)
Provides procedures for the laboratory testing of the physical, chemical, and performance properties of both drilling fluid materials and drilling fluid. It is applicable to both water- and oil-based drilling fluids, as well as the base or “make-up” fluid. It is not applicable as a detailed manual on drilling fluid control procedures. Recommendations regarding agitation and testing temperature are presented because the agitation history and temperature have a profound effect on drilling fluid properties. Pages: 93

9th Edition | December 2020 | Product Number: GX13I9 | Price: $288.00

RP 13J
Testing of Heavy Brines
Covers the physical properties, potential contaminants, and test procedures for heavy brine fluids manufactured for use in oil and gas well drilling, completion, fracturing, and workover fluids. This standard provides methods for assessing the performance and physical characteristics of heavy brines for use in field operations. It includes procedures for evaluating the density or specific gravity, the clarity or amount of particulate matter carried in the brines, the crystallization point or the temperature at which the brines make the transition between liquid and solid at atmospheric pressure (a discussion of crystallization temperature under pressure is provided in Annex C), the pH, iron contamination, and buffering capacity. Pages: 91

6th Edition | January 2023 | Product Number: G13J06 | Price: $150.00

RP 13K
Chemical Analysis of Barite
Provides a comprehensive, detailed description of the chemical analytical procedures for quantitatively determining the mineral and chemical constituents of barite. These procedures are quite elaborate and will normally be carried out in a well-equipped laboratory. Pages: 79

4th Edition | April 2022 | Product Number: G13K04 | Price: $130.00

RP 13L
Training and Qualification of Drilling Fluid Technologists
Seeks to formalize the specific knowledge base, professional skills, and application skills needed to ensure the competency and professionalism of individuals working in the drilling fluids industry. Drilling fluid technologists should use this recommended practice (RP) as an outline to self-determine any gaps in learning and seek to improve their skills. A company contracting the service of a drilling fluid technologist should use this RP as a checklist of knowledge that a technologist should be able to demonstrate proficiency in applying. Pages: 36

2nd Edition | November 2017 | Reaffirmed: May 2023
Product Number: G13L02 | Price: $94.00
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RP 13M/ISO 13503-1:2003
Recommended Practice for the Measurement of Viscous Properties of Completion Fluids
(RP 13M replaces RP 39)
Provides consistent methodology for determining the viscosity of completion fluids used in the petroleum and natural gas industries. For certain cases, methods are also provided to determine the rheological properties of a fluid. This edition of RP 13M is the identical national adoption of ISO 13503-1:2003. Pages: 21
1st Edition | July 2004 | Reaffirmed: July 2023
2-Year Extension: June 2015 | Product Number: GX13M01 | Price: $107.00

RP 13M/ISO 13503-1:2003 *
Recommended Practice for the Measurement of Viscous Properties of Completion Fluids—Russian
(RP 13M replaces RP 39)
1st Edition | July 2004 | Reaffirmed: July 2023
Product Number: GX13M01R | Price: $107.00

Recommended Practice for Measuring Stimulation and Gravel-Pack Fluid Leakoff Under Dynamic Conditions
Provides consistent methodology to measure fluid loss of stimulation and gravel-pack fluid under dynamic conditions. However, the procedure in this recommended practice excludes fluids that react with porous media. This edition of RP 13M-4 is the identical national adoption of ISO 13503-4:2006. Pages: 14
Product Number: GG13M41 | Price: $62.00

TR 13M-5
Procedure for Testing and Evaluating the Performance of Friction (Drag) Reducers in Aqueous-Based Fluid Flowing in Straight, Smooth Circular Conduits
Provides a consistent methodology to test and evaluate the performance of friction (drag) reducers in straight, smooth circular conduits. This standard includes only smooth-walled tubing and excludes any rough-walled tubing. Pages: 22
1st Edition | October 2018 | Product Number: G13M501 | Price: $89.00

RP 13M-6/ISO 13503-6:2012
Procedure for Measuring Leakoff of Completion Fluids Under Dynamic Conditions
Provides consistent methodology for measuring the fluid loss of completion fluids under dynamic conditions. This standard is applicable to all completion fluids except those that react with porous media. This edition of RP 13M-6 is the modified national adoption of ISO 13503-6:2012. Pages: 23
1st Edition | May 2020 | Product Number: G13M601 | Price: $110.00

TR 13TR1
Stress Corrosion Cracking of Corrosion Resistant Alloys in Halide Brines Exposed to Acidic Production Gas
(includes Addendum 1 dated July 2022)
Evaluates the stress corrosion cracking (SCC) risks of a range of corrosion resistant alloys (CRAs) in various halide brine compositions for the case of exposure to acidic production gas (CO₂+H₂S). Also evaluated are SCC risks due to air exposure. However, the testing became focused on a group of martensitic stainless steels alloyed with Ni and Mo, which are collectively referred to as modified 13Cr martensitic stainless steel (SS) or alternatively in some publications as super (S13Cr) martensitic SSs. Most tests evaluated the as-received brine, excluding proprietary additives such as corrosion inhibitor or oxygen scavengers. For completeness and comparison, test results provided by member companies in the API program or in the publications are cited; these test protocols may be different from those in the API test protocols hence, where that occurs, significant differences are noted. Pages: 39

TR 13TR3
Size Measurement of Dry, Granular Drilling Fluid Particulates
Serves as a guide for selection of appropriate techniques to determine the particle size distribution (PSD) of relatively large, dry solid additives for drilling fluids, especially lost circulation materials (LCMs). Detailed procedures for the utilization of any specific PSD method are not included. The technician should refer to and be guided by the measurement equipment manufacturer's instructions. The particulates range in size from approximately one micron to as much as several millimeters in diameter and are considered “granular” in shape, i.e. relatively isometric (of similar length, width, and height). The recommendations in this technical report generally are not applicable to the measurement of the PSD of non-isometric (high aspect ratio) materials, such as fibers or flakes. Pages: 32
1st Edition | October 2018 | Product Number: G13TR31 | Price: $103.00

OFFSHORE SAFETY AND ANTIPOLLUTION

Std 2CCU
Offshore Cargo Carrying Units
Defines the design, material, manufacture, inspection, repair, maintenance, and marking requirements for offshore cargo carrying units (CCU) and lifting sets to include dry goods boxes, baskets, and other skids designed to move equipment and goods offshore with maximum gross weight up to 70,000 kg (154,323 lb). Pages: 57
1st Edition | August 2017 | Product Number: G2CCU01 | Price: $114.00

RP 14B
Design, Installation, Operation, Test, and Redress of Subsurface Safety Valve Systems
Establishes requirements and provides guidelines for subsurface safety valve (SSSV) system equipment. This includes requirements for SSSV system design, installation, operation, testing, redress, support activities, documentation, and failure reporting. SSSV system equipment addressed by this document includes control systems, control lines, SSSVs, and secondary tools as defined herein. SSSV types including surface controlled (SCSSV), sub-surface controlled (SSCSV), and sub-surface injection safety valves (SSISVs) are included. Requirements for testing of SSSVs including frequency and acceptance criteria are included. Alternate technology SSSV equipment and systems are included in these requirements. This document is not applicable to design, qualification, or repair activities for SSSVs. This document does not specify when a SSSV is required. Pages: 37
6th Edition | September 2015 | Product Number: G14B06 | Price: $137.00

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RP 14C
Analysis, Design, Installation, and Testing of Safety Systems for Offshore Production Facilities
(includes Errata 1 dated May 2018)
Illustrates how system analysis methods can be used to determine safety requirements to protect common process components. This document also includes:
- a method to document and verify process safety system functions (i.e. SAFE chart);
- design guidance for ancillary systems such as pneumatic supply systems and liquid containment systems;
- a uniform method of identifying and symbolizing safety devices;
- procedures for testing common safety devices with recommendations for test data and acceptable test tolerances. Pages: 132
8th Edition | February 2017 | Product Number: G14C08 | Price: $249.00

RP 14E
Recommended Practice for Design and Installation of Offshore Production Platform Piping Systems
Recommended minimum requirements and guidelines for the design and installation of new piping systems on offshore production platforms. Includes general recommendations on design and application of pipe, valves, and fittings for typical processes; general information on installation, quality control, and items related to piping systems such as insulation; and specific recommendations for the design of particular piping systems. Pages: 61
Product Number: G07185 | Price: $161.00

RP 14E *
Recommended Practice for Design and Installation of Offshore Production Platform Piping Systems—Chinese
Chinese translation of RP 14E.
Product Number: 811-07185 CN940 | Price: $161.00

RP 14F
Recommended Practice for Design, Installation, and Maintenance of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Division 1, and Division 2 Locations
Recommended minimum requirements and guidelines for the design, installation, and maintenance of electrical systems on fixed and floating petroleum facilities located offshore. For facilities classified as Zone 0, Zone 1, or Zone 2, reference RP 14FZ. These facilities include drilling, producing, and pipeline transportation facilities associated with oil and gas exploration and production. This RP is not applicable to Mobile Offshore Drilling Units (MODUs) without production facilities. This document is intended to bring together in one place a brief description of basic desirable electrical practices for offshore electrical systems. The recommended practices contained herein recognize that special electrical considerations exist for offshore petroleum facilities. Pages: 189
6th Edition | October 2018 | Product Number: G14F06 | Price: $171.00

RP 14FZ
Recommended Practice for Design, Installation, and Maintenance of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Zone 0, Zone 1, and Zone 2 Locations
Recommended minimum requirements and guidelines for the design, installation, and maintenance of electrical systems on fixed and floating petroleum facilities located offshore. For facilities classified as Division 1 or Division 2, reference RP 14F. These facilities include drilling, producing, and pipeline transportation facilities associated with oil and gas exploration and production. This recommended practice (RP) is not applicable to Mobile Offshore Drilling Units (MODUs) without production facilities. This document is intended to bring together in one place a brief description of basic desirable electrical practices for offshore electrical systems. The recommended practices contained herein recognize that special electrical considerations exist for offshore petroleum facilities. These include:
- inherent electrical shock possibility presented by the marine environment and steel decks;
- space limitations that require that equipment be installed in or near hazardous (classified) locations;
- corrosive marine environment;
- motion and buoyancy concerns associated with floating facilities. Pages: 177
2nd Edition | May 2013 | Reaffirmed: April 2020
Product Number: G14FZ02 | Price: $303.00

RP 14G
Recommended Practice for Design and Installation of Offshore Production Systems—Chinese
Chinese translation of RP 14G.
2nd Edition | May 2013 | Reaffirmed: April 2020
Product Number: G14G04 | Price: $135.00

RP 14J
Recommended Practice for Design and Hazards Analysis for Offshore Production Facilities
Provides useful procedures and guidelines for planning, designing, and arranging offshore production facilities and performing a hazards analysis on open-type offshore production facilities. Discusses several procedures that can be used to perform a hazards analysis, and presents minimum requirements for process safety information and hazards analysis that can be used for satisfying RP 75. Pages: 75
2nd Edition | May 2001 | Reaffirmed: September 2019
Product Number: G14J02 | Price: $128.00

Bull 91
Planning and Conducting Surface Preparation and Coating Operations for Oil and Natural Gas Drilling and Production Facilities in a Marine Environment
Worldwide, marine exploration, production, development, and decommissioning operations are conducted from a variety of structures. These installments must be inspected periodically and maintained in order to assure structural integrity and minimize pollution risks. Maintenance of an offshore structure, regardless of its classification, necessarily includes blasting and coating activities. The purpose of this publication is to establish practices and procedures that should be followed to minimize the discharge of spent blast abrasive, and paint overspray to the surrounding waters during these activities. Pages: 16
1st Edition | June 2007 | Product Number: G09101 | Price: $67.00

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FIBERGLASS AND PLASTIC PIPE

Spec 15HR ◆
High-Pressure Fiberglass Line Pipe
(includes Errata 1 dated August 2016 and Errata 2 dated January 2021)
Formulated to provide for the availability of safe, dimensionally, and functionally inter-changeable high-pressure fiberglass line pipe with a pressure rating from 500 lbf/in.² to 5000 lbf/in.² (3.45 MPa to 34.5 MPa), inclusive, in 250 lbf/in.² (1.72 MPa) increments for pipes ≤ than NPS 12 in. and 100 lbf/in.² (0.69 MPa) increments for pipes > than NPS 12 in. This specification is limited to mechanical connections and the technical content provides requirements for performance, design, materials, testing, marking, handling, storing, and shipping. Critical components are items of equipment having requirements specified in this document. This specification is applicable to rigid pipe components made from thermostetting resins and reinforced with glass fibers. Typical thermostetting resins are epoxy, polyester, vinyl ester, and phenolic. Thermoplastic resins are excluded from the scope of this specification. Any internal liners applied shall be made also from thermostetting resins. fiberglass line pipe for use in low-pressure systems are covered in Spec 15LR. This specification covers fiberglass pipe utilized for the production of oil and gas. Specific equipment covered by this specification is high-pressure line pipe and couplings, fittings, flanges, reducers, and adapters. Pages: 42
4th Edition | February 2016 | Effective Date: August 1, 2016
Reaffirmed: April 2021 | Product Number: G15HR4 | Price: $119.00

Spec 15HR *
High-Pressure Fiberglass Line Pipe—Russian
(includes Errata 1 dated August 2016 and Errata 2 dated January 2021)
Russian translation of Spec 15HR.
Product Number: G15HR4R | Price: $119.00

Spec 15LE ◆
Specification for Polyethylene Line Pipe (PE)
Covers polyethylene line pipe (PE) utilized for the production and transportation of oil, gas, mixed-phase fluids, and non-potable water. The piping is intended for use in new construction, insertion renewal, line extension, and repair of both aboveground and buried pipe applications. Pages: 35
5th Edition | September 2022 | Effective Date: March 1, 2023
Product Number: G15LE05 | Price: $110.00

Spec 15LF
Layflat Hose Assemblies for the Transport of Water in Oilfield Applications
Provides requirements for the manufacture and qualification of layflat hose assemblies in onshore oilfield water transfer applications. Also included are performance requirements for materials, hose, and couplings. These products consist of single or multiple layers of woven polymeric fibers lined with a polymeric material that is suitable for onshore oilfield water transfer service. The layflat hose assemblies addressed under this specification are capable of being spooled for storage, transport, and installation by both the original equipment manufacturer and the operator. Pages: 35
1st Edition | May 2021 | Product Number: G15LF1 | Price: $97.00

Spec 15LR ◆
Specification for Low Pressure Fiberglass Line Pipe
(includes Errata 1 dated June 2018 and Errata 2 dated April 2021)
Covers filament wound (FW) and centrifugally cast (CC) fiberglass line pipe and fittings for pipe in diameters up to and including 24 in. in diameter and up to and including 1000 psig cyclic operating pressures. In addition, at the manufacturer’s option, the pipe may also be rated for static operating pressures up to 1000 psig. It is recommended that the pipe and fittings be purchased by cyclic pressure rating. The standard pressure ratings range from 150 psig to 300 psig in 50 psig increments, and from 300 psig to 1000 psig in 100 psig increments, based on either cyclic pressure or static pressure. Pages: 25
7th Edition | August 2001 | Effective Date: February 1, 2002
Reaffirmed: October 2018 | Product Number: G15LR7 | Price: $105.00

Spec 15LR *
Specification for Low Pressure Fiberglass Line Pipe—Chinese
(includes Errata 1 dated June 2018 and Errata 2 dated April 2021)
Chinese translation of Spec 15LR.
7th Edition | August 2001 | Reaffirmed: October 2018
Product Number: G15LR7C | Price: $105.00

Spec 15PX
Specification for Crosslinked Polyethylene (PEX) Line Pipe
Covers PEX line pipe used for the production and transportation of oil, gas, and nonpotable water. This specification does not cover pipe for chlorinated water service. The piping is intended for use in new construction, structural pressure-rated liner, line, extension, and repair of both aboveground and buried-pipe applications. Equipment covered by this specification is listed as follows: PEX line pipe; fittings; and metallic flange couplers for field installations and PEX line flanges used as internal diameter adapters. Pages: 39
2nd Edition | February 2022 | Product Number: G15PX2 | Price: $108.00

Spec 15S
Spoolable Reinforced Plastic Line Pipe
(includes Addendum 1 dated August 2023)
Provides requirements for the manufacture and qualification of spoolable reinforced plastic line pipe in oilfield and energy applications, including transport of multiphase fluids, hydrocarbon gases, hydrocarbon liquids, oilfield production chemicals, and nonpotable water. Also included are performance requirements for materials, pipe, and fittings. Pages: 56
3rd Edition | April 2022 | Effective Date: October 2022
Product Number: G15S03 | Price: $143.00

RP 15SA
Integrity Management of Spoolable Reinforced Line Pipe
For integrity management of an existing API 15S asset including threat identification, identification of potential failure modes, risk assessment, testing requirements, initial and ongoing inspection practices, end-fitting and coupling inspection, potential mitigations, repair, and associated documentation. Pages: 28
1st Edition | February 2022 | Product Number: G15SA01 | Price: $75.00

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RP 15SH
Installation and Handling of Spoolable Reinforced Line Pipe
Establishes recommended practices for onshore installation and handling of spoolable reinforced plastic line pipe (API Spec 15S products) to prevent damage to pipe and field-fittings (couplings, connectors, and end-fittings) in the field environment and to assure assembly integrity prior to use. This document covers handling, layout planning, and installation by direct bury (trench and backfill), surface lay, directional drilling, plowing, and pull-through methods. Post-installation inspection and field testing are also covered. This recommended practice outlines and identifies the important items that should be considered by each manufacturer and installer in their detailed procedures. This document is not intended to serve as a procedure or checklist for the installation and handling of spoolable reinforced line pipe products nor is it inclusive of all items that may be required for the installation and handling of these products. Pages: 23
1st Edition | October 2021 | Product Number: G15SH1 | Price: $75.00

RP 15TL4
Recommended Practice for Care and Use of Fiberglass Tubulars
Provides information on packing, transporting, handling, storing, inspecting, and installing fiberglass tubulars in oilfield usage. Trouble-free service and maximum safety should result if this recommended practice is followed. Fiberglass tubulars differ in properties from metallic tubular goods, and different installation techniques are required. Pages: 34
3rd Edition | October 2022 | Product Number: G15TL403 | Price: $105.00

RP 15WT
Operations for Layflat Hose in Oilfield Water Applications
Provides guidelines and establishes recommended practices for the operation of layflat hose used for the transportation of water associated with onshore upstream oil and gas operations, to prevent damage of layflat hose and damage of layflat hose assemblies.
This document covers the transportation of formation water, injection water, brackish water, fresh water, and saline. The scope of this document excludes the initial and final connections of the layflat hose to the source and receiving points. Pages: 36
1st Edition | December 2019
Product Number: G15WT1 | Price: $105.00

DRILLING WELL CONTROL EQUIPMENT AND SYSTEMS

Spec 16A ◆
Specification for Drill-Through Equipment
(includes Errata 1 dated August 2017, Addendum 1 dated October 2017, Errata 2 dated November 2017, and Errata 3 dated April 2018)
Defines the requirements for performance, design, materials, testing and inspection, welding, marking, handling, storing, and shipping of drill-through equipment used for drilling for oil and gas.
Specifically, this document applies to the manufacture and testing of ram blowout preventers; ram blocks, packers, and top seals; annular blowout preventers; annular packing units; and associated connectors.
It also defines service conditions in terms of pressure, temperature, and wellbore fluids for which the equipment is designed.
Repair and remanufacture of 16A equipment is now covered in Std 16AR. This specification does not apply to field use or field. Pages: 122

Std 16AR
Standard for Repair and Remanufacture of Drill-Through Equipment
(includes Errata 1 dated August 2017)
Specifies requirements for repair and remanufacture of drill-through equipment built under API 16A. This standard also applies to repair and remanufacture of drill-through equipment manufactured to API 6A requirements and produced prior to the existence of API 16A. This standard also covers the testing, inspection, welding, marking, certification, handling, storing, and shipping of equipment repaired or remanufactured per this standard. Pages: 104
1st Edition | April 2017 | Product Number: G16AR01 | Price: $170.00

Spec 16C ◆
Choke and Kill Equipment
Identifies requirements for the performance, design, materials, testing, inspection, welding, marking, handling, storing, shipping, and purchasing of surface and subsea choke and kill equipment for use in the petroleum and natural gas industries. These requirements provide for safe and functionally interchangeable surface and subsea choke and kill system equipment. This specification does not apply to field use or field testing. This specification also does not apply to repair of choke and kill equipment, except for weld repair in conjunction with manufacturing. Pages: 121
3rd Edition | March 2021 | Product Number: G16C03 | Price: $186.00

Spec 16D ◆
Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment
(includes Addendum 1 dated July 2023)
Establishes design standards for systems used to control blowout preventers (BOPs) and associated valves that control well pressure during drilling operations. The design standards applicable to subsystems and components do not include material selection and manufacturing process details but may serve as an aid to the purchaser. Although diverters are not considered well control devices, their controls are often incorporated as part of the BOP control system and therefore are included in this specification. The requirements provided in this specification apply to the following control system categories: control systems for surface mounted BOP stacks; control systems for subsea BOP stacks (common elements); discrete hydraulic control systems for subsea BOP stacks; electro-hydraulic/multiplex control systems for subsea BOP stacks; control systems for diverter equipment; auxiliary equipment control systems and interfaces; emergency disconnect sequences; backup systems; special deepwater/harsh environment features. Pages: 144
3rd Edition | November 2018 | Effective Date: May 1, 2019
Product Number: G16D03 | Price: $205.00

Spec 16F ◆
Specification for Marine Drilling Riser Equipment
(includes Errata 1 dated February 2019 and Addendum 1 dated January 2021)
Establishes standards of performance and quality for the design, manufacture, and fabrication of marine drilling riser equipment used in conjunction with a subsea blowout preventer (BOP) stack. This specification applies to all riser system components that are in the primary load path during operation, running, and retrieval, including but not limited to riser couplings, riser main tube, riser adapters, riser external lines when used for load sharing, riser tensioner rings, telescopic joints, flex/ball joints, and special riser joints. Pages: 120
2nd Edition | November 2017 | Product Number: G16F02 | Price: $150.00

This publication is a new entry in this catalog. ◆ This publication is related to an API licensing, certification, or accreditation program.
Spec 16F *
Specification for Marine Drilling Riser Equipment—Russian
(includes Errata 1 dated February 2019, Addendum 1 dated January 2021, and Addendum 2 dated December 2022)

Russian translation of Spec 16F.

2nd Edition | November 2017 | Product Number: G16FO2R | Price: $150.00

TR 16G ●
Well Control Equipment Reliability Modeling
Documents methods of reliability analysis for well control equipment systems installed for drilling wells. Well control equipment systems are designed with components that provide wellbore pressure control in support of well operations. As an example, the following typical systems were modeled and analyzed: surface on-shore BOP systems; surface offshore BOP systems; subsea BOP systems with discrete hydraulic control system; offshore DP MODU with a subsea BOP system with electro-hydraulic/multiplex control system. Pages: 39

1st Edition | March 2023 | Product Number: G16G01 | Price: $86.00

Bull 16H
Automated Safety Instrumented Systems for Onshore Blowout Preventer Actuation
Provides a review of the equipment and interfaces to be considered for the automation of a blowout preventer to place the well in a safe state in an onshore environment. It also provides an overview of components that can be considered for future research into developing an automated well control actuation system. These technologies, once fully developed and implemented, can help automate and expand ways to mitigate unexpected events resulting in a loss of primary well control. Pages: 26

1st Edition | February 2022 | Product Number: G16H01 | Price: $75.00

RP 16Q
Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems
(includes Addendum 1 dated March 2023)

Pertains to the design, selection, operation, and maintenance of marine riser systems for floating drilling operations. Its purpose is to serve as a reference for designers, for those who select system components, and for those who use and maintain this equipment. For the purposes of this standard, a marine drilling riser system includes the tensioner system and all equipment between the top connection of the upper flex/ball joint and the bottom connection of the lower flex/ball joint. It specifically excludes the diverter, LMRP BOP stack, and hydraulic connectors. Pages: 90

2nd Edition | April 2017 | Product Number: G16Q02 | Price: $132.00

RP 16Q *
Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems—Russian
(includes Addendum 1 dated March 2023)

Russian translation of RP 16Q.

2nd Edition | April 2017 | Product Number: G16Q02R | Price: $132.00

Spec 16RCD ●
Specification for Rotating Control Devices
(includes Addendum 1 dated October 2022 and Addendum 2 dated November 2023)

Provides for the availability of safe and functionally interchangeable rotating control devices (RCDs) utilized in air drilling, drilling operations for oil and gas, and in geothermal drilling operations. Technical content provides requirements for design, performance, materials, tests and inspection, welding, marking, handling, storing, and shipping. This specification does not apply to field use or field testing of RCDs. Critical components are those parts having requirements specified in this document. Pages: 57

3rd Edition | June 2022 | Effective Date: December 1, 2022 | Product Number: G16RCD03 | Price: $168.00

RP 16ST
Coiled Tubing Well Control Equipment Systems
(includes Addendum 1 dated February 2022)

Addresses coiled tubing well control equipment assembly and operation as it relates to well control practices. This document covers well control equipment assembly and operations used in coiled tubing intervention and coiled tubing drilling/milling applications performed through: tree equipment constructed in accordance with API 6A or API 11IW or both; a surface flow head or surface test tree constructed in accordance with API 6A; a fracture stimulation wellhead assembly (with at least two gate valves installed for isolation); drill pipe or workstrings with connections manufactured in accordance with API 5CT, API 5DP or API 7-1, or a combination thereof. Pages: 131

2nd Edition | February 2021 | Product Number: G16ST02 | Price: $186.00

TR 16TR1
BOP Shear Ram Performance Test Protocol
(includes Errata 1 dated October 2018)

Outlines the standardized test protocol, including data and reporting requirements, for performing sealing and non-sealing blowout preventer (BOP) shear ram performance tests. This protocol determines the parameters that can support field system performance and confidence in successful shearing and sealing.

This document is not intended to be used for qualifying BOP shear rams or as a factory acceptance test procedure. Qualification and factory acceptance testing of BOP shear rams is per API 16A. Pages: 30

1st Edition | July 2018 | Product Number: G16TR11 | Price: $105.00

Std 53
Well Control Equipment Systems for Drilling Wells

Provides requirements on the installation and testing of blowout prevention equipment systems on land and marine drilling rigs (barge, platform, bottom-supported, and floating). Blowout preventer equipment systems are comprised of a combination of various components. The following components are required for operation under varying rig and well conditions: blowout preventers (BOPs); choke and kill lines; choke manifolds; control systems; auxiliary equipment. The primary functions of these systems are to confine well fluids to the wellbore, provide means to add fluid to the wellbore, and allow controlled volumes to be withdrawn from the wellbore. Pages: 86

5th Edition | December 2018 | Product Number: G05305 | Price: $164.00

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Exploration and Production

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**RP 59**
Recommended Practice for Well Control Operations
Provides information that can serve as a voluntary industry guide for safe well control operations. This publication is designed to serve as a direct field aid in well control and as a technical source for teaching well control principles. This publication establishes recommended operations to retain pressure control of the well under pre-kick conditions and recommended practices to be utilized during a kick. It serves as a companion to RP 53 and RP 64. Pages: 92
2nd Edition | May 2006 | Reaffirmed: December 2018
Product Number: G59002 | Price: $133.00

**RP 59** *
Recommended Practice for Well Control Operations—Kazakh
Kazakh translation of RP 59.
2nd Edition | May 2006 | Reaffirmed: December 2018
Product Number: G59002K | Price: $133.00

**RP 59** *
Recommended Practice for Well Control Operations—Russian
Russian translation of RP 59.
2nd Edition | May 2006 | Reaffirmed: December 2018
Product Number: G59002R | Price: $133.00

**Std 64**
Diverter Equipment Systems
Includes Errata 1 dated March 2018 and Addendum 1 dated December 2018
Provides information on the design, manufacture, quality control, installation, maintenance, and testing of the diverter system, and associated components. The diverter system provides a flow control system to direct or uncontrolled wellbore fluids away from the immediate drilling area for the safety of personnel and equipment. Pages: 69
3rd Edition | August 2017 | Product Number: G64003 | Price: $149.00

**SUBSEA PRODUCTION SYSTEMS**

**RP 17A**
Design and Operation of Subsea Production Systems—General Requirements and Recommendations
Provides general requirements and recommendations for the development and operation of subsea production/injection systems, from the concept development phase to decommissioning and abandonment. This document references other API 17-series documents, as well as various relevant industry documents. A complete subsea production/injection system comprises several subsystems necessary to produce hydrocarbons from one or more subsea wells and transfer them to a processing/host facility located offshore (fixed, floating, or subsea) or onshore, or to inject water/gas via subsea facilities and/or wells. Pages: 55
6th Edition | April 2002 | Product Number: G17A06 | Price: $108.00

**RP 17B**
Recommended Practice for Flexible Pipe
Provides guidelines for the design, analysis, manufacture, testing, installation, and operation of flexible pipes and flexible pipe systems for offshore, subsea, and marine applications. This recommended practice (RP) supplements Specs 17J and 17K, which specify minimum requirements for the design, material selection, manufacture, testing, marking, and packaging of unbonded and bonded flexible pipe, respectively. This RP applies to flexible pipe assemblies, consisting of segments of flexible pipe body with end fittings attached to both ends. Both bonded and unbonded pipe types are covered. In addition, this RP applies to flexible pipe systems, including ancillary components. The applications covered by this RP are sweet- and sour-service production, including export and injection applications. This RP applies to both static and dynamic flexible pipe systems used as flowlines, risers, and jumpers. This RP does cover, in general terms, the use of flexible pipes for offshore loading systems. This RP does not cover flexible pipes for use in choke and kill lines or umbilical and control lines. Pages: 268
5th Edition | May 2014 | Reaffirmed: March 2021
Product Number: G17B05 | Price: $249.00

**Spec 17D**
Specification for Subsea Wellhead and Tree Equipment (includes Addendum 1 dated December 2022)
Provides specifications for subsea wellheads, mudline wellheads, drill-through mudline wellheads, and both vertical and horizontal subsea trees. It specifies the associated tooling necessary to handle, test, and install the equipment. It also specifies the areas of design, material, welding, quality control [including factory acceptance testing (FAT)], marking, storing, and shipping for individual equipment, subassemblies, and subsea tree assemblies. Pages: 256
3rd Edition | October 2021 | Effective Date: October 2022
Product Number: G17D03 | Price: $222.00

**Spec 17E**
Specification for Subsea Umbilicals (includes Addendum 1 dated December 2017)
Specifies requirements and gives recommendations for the design, material selection, manufacture, design verification, testing, installation, and operation of subsea control systems, chemical injection, gas lift, utility and service umbilicals, and associated ancillary equipment for the petroleum and natural gas industries. This also applies to umbilicals containing electrical conductors, optical fibers, thermoplastic hoses, and metallic tubes, either alone or in combination, and applies to umbilicals that are for static or dynamic service, and with routings of surface-surface, surface-subsea, and subsea-subsea. Pages: 178

**Spec 17E** *
Specification for Subsea Umbilicals—Russian (includes Addendum 1 dated December 2017)
Russian translation of Spec 17E.

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Components manufactured from materials that may not ensure ductile failure modes (e.g., composite materials, titanium, and titanium alloys) are outside the scope of this standard.

Structural design methods and criteria given in API 17G are limited to ratings that exceed these limits, see API 17TR8.

Components manufactured from materials that ensure ductile failure modes (e.g., carbon steels, low-alloy steels, and corrosion-resistant alloys).

Intervention equipment, such as riserless light well intervention systems, either inside the marine riser (TBIRS) or open water (OWIRS).

The requirements in this standard apply to equipment whose rated working pressure (RWP) is less than or equal to 103.4 MPa (15,000 psi) or whose rated temperature is less than or equal to 177 °C (350 °F). For equipment ratings that exceed these limits, see API 17TR8.

Structural design methods and criteria given in API 17G are limited to components manufactured from materials that ensure ductile failure modes (e.g., carbon steels, low-alloy steels, and corrosion-resistant alloys). Components manufactured from materials that may not ensure ductile failure modes (e.g., composite materials, titanium, and titanium alloys) are outside the scope of this standard.

The standard covers equipment that is connected to a fluid conduit tieback riser, either inside the marine riser (TBIRS) or open water (OWIRS). Intervention equipment, such as riserless light well intervention systems, downline connected equipment, and remotely operated vehicle (ROV) intervention equipment, are outside the scope of this standard.

RP 17G1 Configuration and Operation for Subsea Well Intervention Systems
Provides guidance for the selection of a subsea well intervention system, defines minimum requirements of a subsea well intervention system for specific operation(s) and environments to ensure the selected system is fit for purpose. This RP applies to new and existing subsea well intervention systems irrespective of whether the equipment complies with the latest requirements of API 17G. All subsea well intervention systems are covered by this RP and the equipment typically included in (but not limited to) the system is described in the suite of API 17G intervention documents. Pages: 82
1st Edition | July 2022 | Product Number: G17G101 | Price: $137.00

RP 17G2 Recommended Practice for Subsea Pumping Well Intervention Systems
Provides recommendations for the design, manufacture, testing, and performance of SPWISs deployed from a mobile offshore work unit such as a multipurpose vessel. This document contains the system-level requirements and recommendations and where not found elsewhere, the information that applies to individual components. To the greatest extent possible, this document points the reader to the API document that is applicable to each system component or subsystem. This information is applicable to all new and existing SPWISs. SPWISs are intended to satisfy the requirements of API 17G and API 17G5, with modifications thereof as given in this document. Therefore, this document is not intended to be a standalone document. It is to be used in conjunction with API 17G (parent document), API 17G1, API 17G5, and end user requirements. Pages: 56
1st Edition | October 2023 | Product Number: G17G201 | Price: $117.00

RP 17G3 Design of Subsea Well Intervention Systems Using Non-Ferrous Alloys
Provides design guidelines for the use of non-ferrous materials in subsea intervention systems and components. Pages: 29
1st Edition | February 2021 | Product Number: G17G301 | Price: $93.00

RP 17G5 Subsea Intervention Workover Control Systems
Provides the requirements for the design, manufacture, and testing of intervention workover control system (IWOWCS) equipment typically used in a thru-blowout preventer intervention riser system and an open-water intervention riser system.

Some requirements in this document are specific to the execution of end user-defined safety functions. This document defines “safety class control functions” used to operate safety class devices. This document provides guidance on the determination of safety class control functions based on the end user-provided safety functions. Pages: 42
1st Edition | November 2019 | Product Number: G17G501 | Price: $86.00

RP 17G6 Global Analysis of Subsea Well Intervention Systems
Provides guidelines for global riser analysis (GRA) of subsea well workover/interception systems and is intended to serve as a common reference for designers. This recommended practice is not intended to replace existing API recommended practices and standards but rather to supplement them by illustrating accepted analysis practices and principles. The end users may elect to adopt a portion of or all the presented guidelines for global riser analysis, subject to their well-specific riser designs and any operational-related design constraints. Pages: 140
1st Edition | October 2023 | Product Number: G17G601 | Price: $156.00

RP 17H Remotely Operated Tools and Interfaces on Subsea Production Systems
Provides functional requirements and guidelines for ROV/ROT/AUV interfaces in subsea production fields for the petroleum and natural gas industries. It is applicable to both the selection and use of ROV/ROT/AUV interfaces related to subsea production equipment and provides guidance on design as well as the operational requirements for maximizing the potential of standardized equipment and design principles. This recommended practice (RP) identifies the issues to be considered when designing for ROV/ROT/AUV operations to interact with (or near) subsea production systems. The framework and specifications set out enables the user (whether they may be on the ROV/ROT/AUV side or production facility side) to design the appropriate interface for a specific application. These interfaces include subsea docking, recharging, data transfer, data harvesting, and mechanical intervention. Pages: 112
3rd Edition | July 2019 | Product Number: G17H03 | Price: $160.00
Spec 17J Specification for Unbonded Flexible Pipe

Defines the technical requirements for safe, dimensionally and functionally interchangeable flexible pipes that are designed and manufactured to uniform standards and criteria. Minimum requirements are specified for the design, material selection, manufacture, testing, marking, and packaging of flexible pipes, with reference to existing codes and standards where applicable. See RP 17B for guidelines on the use of flexible pipes and ancillary components. This specification applies to unbonded flexible pipe assemblies, consisting of segments of flexible pipe body with end fittings attached to both ends. This specification does not cover flexible pipes of bonded structure. This specification does not apply to flexible pipe ancillary components. Guidelines for bend stiffeners and bend restrictors are given in Annex B. This specification does not apply to flexible pipes that include non-metallic reinforcing layers, though no effort is made to address the specific and unique technological aspects of this product. Pages: 90

2nd Edition | June 2021 | Product Number: G17L04 | Price: $146.00

Spec 17K Specification for Bonded Flexible Pipe

Defines the technical requirements for safe, dimensionally and functionally interchangeable bonded flexible pipes that are designed and manufactured to uniform standards and criteria. Minimum requirements are specified for the design, material selection, manufacture, testing, marking, and packaging of bonded flexible pipes, with reference to existing codes and standards where applicable. This document applies to bonded flexible pipe assemblies, consisting of segments of flexible pipe body with end fittings attached to both ends. It does not cover flexible pipes of unbonded structure or to flexible pipe ancillary components. This document can be applied to flexible pipes that include non-metalic reinforcing layers, though no effort was made to address the specific and unique technological aspects of this product. Pages: 96

3rd Edition | August 2017 | Reaffirmed: January 2022
Product Number: G17K03 | Price: $147.00

Spec 17L1 Specification for Ancillary Equipment for Flexible Pipes and Subsea Umbilicals

Defines the technical requirements for safe, dimensionally and functionally interchangeable ancillary equipment that is designed and manufactured to uniform standards and criteria. Minimum requirements are specified for the design, material selection, manufacture, testing, documentation, marking, and packaging of ancillary equipment used in flexible pipe systems and subsea umbilical systems, with reference to existing codes and standards where applicable. See API 17L2 for guidelines on the use of ancillary equipment. Pages: 326

2nd Edition | June 2021 | Product Number: G17L02 | Price: $203.00

RP 17L2 Recommended Practice for Ancillary Equipment for Flexible Pipes and Subsea Umbilicals

Provides guidelines for the design, materials selection, analysis, testing, manufacture, handling, transportation, installation, and integrity management of ancillary equipment for flexible pipes and umbilicals. It presents the current best practice for design and procurement of ancillary equipment, and gives guidance on the implementation of the specification for standard ancillary products. In addition, this document presents guidelines on the qualification of prototype products. Pages: 285

2nd Edition | June 2021 | Product Number: G17L202 | Price: $203.00

RP 17N Recommended Practice on Subsea Production System Reliability, Technical Risk, and Integrity Management

Provides a structured approach that organizations can adopt to manage uncertainty throughout the life of a project. This may range from the management of individual project risk through to the identification and removal of potential failure modes in particular equipment. This recommended practice aims to provide operators, contractors, and suppliers with guidance on the implementation of reliability techniques to subsea projects within their scope of work and supply only. It is applicable to standard and nonstandard equipment, and all phases of projects, from feasibility studies to operation.

It does not prescribe the use of any specific equipment or limit the use of any existing installed equipment or recommend any action, beyond good engineering practice, where current reliability is judged to be acceptable. It is also not intended to replace individual company processes, procedures, document nomenclature, or numbering; it is a guide. However, this recommended practice may be used to enhance existing processes, if deemed appropriate.

Most organizations will find much that is familiar and recognized as good practice. Some annex sections may only be of interest to a reliability specialist. The basic approach, however, is simple and consistent, and when applied correctly, has the potential to greatly reduce the financial risk of designing, manufacturing, installing, and operating subsea equipment. Pages: 178

Product Number: G17O02 | Price: $131.00

RP 17N Recommended Practice on Subsea Production System Reliability, Technical Risk, and Integrity Management—Russian

Russian translation of RP 17N.

2nd Edition | June 2017 | Product Number: G17N02R | Price: $193.00

RP 17O Recommended Practice for Subsea High Integrity Pressure Protection Systems (HIPPS)

Addresses the requirements for the use of high integrity pressure protection systems (HIPPS) for subsea applications. RP 14C, IEC 61508, and IEC 61511 specify the requirements for onshore, topsides, and subsea safety instrumented systems (SIS) and are applicable to HIPPS, which are designed to autonomously isolate downstream facilities from overpressure situations. This document integrates these requirements to address the specific needs of subsea production. These requirements cover the HIPPS pressure sensors, logic solver, shutdown valves, and ancillary devices including testing, communications, and monitoring subsystems. Pages: 45

Product Number: G17O02 | Price: $131.00

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This recommended practice (RP) covers subsea manifolds and templates specification. Subsea injection services. Equipment within the scope of this RP includes production and injection manifolds; modular and integrated single satellite flowline riser bases and export riser bases (FRB, ERB); pipeline end manifolds (PLEM); pipeline end terminations (PLET); T- and Y-connections; subsea isolation valve structures (SSIV); subsea controls and distribution structures; and associated protection structures. Pages: 76

2nd Edition | January 2019 | Product Number: G17P02 | Price: $150.00

RP 17Q
Recommended Practice on Subsea Equipment Qualification

Provides suppliers, contractors, and operators with process-level guidance to qualify equipment intended for use in subsea applications. This document is intended to provide high-level guidance only, so that the petroleum and natural gas industry has a common set of principles to follow for equipment qualification. It is written to simplify the qualification process and to align described by the recommended practice can be applied to non-subsea equipment as well. Pages: 54

2nd Edition | May 2018 | Product Number: G17Q02 | Price: $145.00

RP 17R
Recommended Practice for Flowline Connectors and Jumpers

Addresses specific requirements and recommendations for subsea flowline connectors and jumpers within the frameworks set forth by recognized and accepted industry specifications and standards. As such, it does not supersede or eliminate any requirement imposed by any other industry specification.

This recommended practice (RP) covers subsea flowlines and templates used for pressure control in both subsea production of oil and gas, and subsea injection services. Equipment within the scope of this RP includes production and injection manifolds; modular and integrated single satellite and multwell templates; subsea processing and subsea boosting stations; flowliner bases and export riser bases (FRB, ERB); pipeline end manifolds (PLEM); pipeline end terminations (PLET); T- and Y-connections; subsea isolation valve structures (SSIV); subsea controls and distribution structures; and associated protection structures. Pages: 68

2nd Edition | December 2022 | Product Number: G17R02 | Price: $131.00

RP 17S
Recommended Practice for the Design, Testing, and Operation of Subsea Multiphase Flow Meters

Provides recommendations for the sizing, specification, system integration, testing and operation of in-line subsea multiphase flow meters (MPFM) for measurement of full stream, multiphase flow for well testing, allocation measurement, fiscal measurement, well management, and/or in flow assurance applications. This recommended practice includes wet gas flow meters as a subset of MPFM. Pages: 45

2nd Edition | April 2022 | Product Number: G17S02 | Price: $98.00

TR 17R1
Evaluation Standard for Internal Pressure Sheath Polymers for High Temperature Flexible Pipes

Defines the methodology and test procedures necessary for the evaluation of polymeric materials suitable for use as the internal pressure sheath of an unbonded flexible pipes in high temperature applications. It describes the processes by which the critical material properties, both static and dynamic, can be measured and evaluated against relevant performance criteria.

This document relates primarily to the properties necessary for an internal pressure sheath required for oil and gas production. These are most relevant to high temperature applications. Only thermoplastic materials are considered for the internal pressure sheath. Elastomeric materials, which are used in bonded flexible pipes, are not considered in this document. Pages: 47

1st Edition | March 2003 | Product Number: G17R11 | Price: $143.00

TR 17T1 *
Evaluation Standard for Internal Pressure Sheath Polymers for High Temperature Flexible Pipes—Russian

Russian translation of TR 17R1.

1st Edition | March 2003 | Product Number: G17T11R | Price: $143.00

TR 17T2
The Aging of PA-11 In Flexible Pipes

Provides comprehensive guidance on materials and pipe issues regarding the use and operation of PA-11 in flexible pipe applications and concentrates on the use of PA-11 in the internal sheath of flexible pipes.

The collective goal of this document is to prevent failure of the internal pressure sheath, as a result of aging and associated loss of mechanical properties, by determining and disseminating the necessary scientific and practical information. Pages: 31

1st Edition | June 2003 | Product Number: G17T21 | Price: $110.00

TR 17T3
An Evaluation of the Risks and Benefits of Penetrations in Subsea Wellheads Below the BOP Stack

Provides an evaluation of the risks and benefits of allowing penetrations in subsea wellheads below the blowout preventer (BOP) stack so annuli other than the production tubing (commonly referred to as the “A” annulus) could be monitored. Current industry standards (Spec 17D and ISO 13628-4) for the design of subsea wellheads prohibit penetrations below the (BOP) stack. In contrast, U.S. regulations (30 CFR 250.517) require that all annuli be monitored for sustained casing pressure and that every occurrence of sustained casing pressure be reported immediately. The study concludes that the risks outweigh the benefits since the risk of maintaining the pressure barrier using a wellhead with penetrations is approximately 2.5 times that of a system without penetrations.

The scope of this study is limited to completed subsea wells in the Gulf of Mexico (GOM). The risks were evaluated using fault tree analysis for three systems:

- wellhead system without penetrations,
- wellhead system with one penetration, and
- wellhead system with two penetrations.

Pages: 123

1st Edition | November 2004 | Product Number: G17T31 | Price: $143.00

TR 17T3 *
An Evaluation of the Risks and Benefits of Penetrations in Subsea Wellheads Below the BOP Stack—Russian

Russian translation of TR 17T3.

1st Edition | November 2004 | Product Number: G17T31R | Price: $143.00

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The impact of operation in deep water on the pressure rating of equipment is a special concern. The objective of this document is to foster a better understanding of the effects of simultaneous internal and external pressures on the internal pressure rating of well control equipment. Pages: 12

2nd Edition | May 2016 | Product Number: G17TR402 | Price: $71.00

TR 17TR4 * 
Subsea Equipment Pressure Ratings—Russian
Russian translation of TR 17TR4.
2nd Edition | May 2016 | Product Number: G17TR402R | Price: $71.00

TR 17TR5
Avoidance of Blockages in Subsea Production Control and Chemical Injection Systems
Addresses the avoidance of blockages in subsea production control and chemical injection systems (CIs). It includes requirements and gives recommendations for the design and operation of subsea production systems (SPSs) with the aim of preventing blockages in control and production chemical fluid (PCF) conduits and associated connectors/fittings. In the context of design, this covers not only installed subsea hardware (trees, manifolds, etc.) and the connecting linkages (jumper arrangements, umbilicals, systems, etc.) but also the fluids to be conveyed, initially from the fluid manufacturers’ facilities through to bunkering at the host facility and, ultimately, injection or usage at remote subsea locations.
The document also addresses the issues of topside equipment that provide the control and chemical injection (CI) services necessary for the operation and performance of a SPS. Pages: 44
1st Edition | March 2012 | Product Number: G17TR501 | Price: $107.00

TR 17TR6
Attributes of Production Chemicals in Subsea Production Systems
Identifies and specifies the essential attributes of production chemicals intended to be introduced to subsea oil and gas production systems. The document is intended for use by chemical suppliers to facilitate the provision of chemicals compatible with existing and intended subsea production systems (SPSs) although it is envisaged that use of the document for specification purposes by the operators of such processes will assist in ensuring the completeness of requests to supply. This document specifies parameters that address manufacture, storage, and transportation of the production chemical, as well as its deployment using the SPS chemical injection system. The document provides for two approaches, requiring that parameters be either:
• measured and reconciled with SPS design and operation, or
• meet, or exceed, acceptance criteria specified, either in this document or by manufacturers of production chemicals or equipment used to deliver production chemicals.
This document is intended to be applicable to all subsea developments, irrespective of whether the development is in shallow or deep water. Pages: 42
1st Edition | March 2012 | Product Number: G17TR601 | Price: $107.00

TR 17TR7
Verification and Validation of Subsea Connectors
Provides requirements and recommendations for the verification and validation of subsea connectors. It is intended to serve as a common reference for designers, manufacturers, and users to improve the performance assessment of subsea connectors and to improve the reliability and integrity of subsea systems.
This technical report is applicable to subsea connectors along the vertical centerline of subsea hardware (i.e. tree, tubing head, tree cap, tree running tool, well control package connectors, and EDP connectors), the subsea wellhead, and the completion/workover riser. The methodology provided herein may also be used in other connector designs. Connectors outboard of the vertical centerline are addressed in API 17R. Pages: 25
1st Edition | April 2017 | Product Number: G17TR71 | Price: $93.00

TR 17TR8
High-Pressure High-Temperature Design Guidelines
Provides design guidelines for oil and gas subsea equipment utilized in high-pressure high-temperature (HPHT) environments. For the purpose of the technical report, HPHT environments are intended to be one or a combination of the following well conditions: 1) the completion of the well requires completion equipment or well control equipment assigned a pressure rating greater than 15,000 psia (15 ksi, 103.5 MPa) or a temperature rating greater than 350 °F (177 °C); 2) the maximum anticipated surface pressure including shut-in tubing pressure is greater than 15,000 psia (15 ksi, 103.5 MPa) on the seafloor for a well with a subsea wellhead or at the surface for a well with a surface wellhead; or 3) the flowing temperature is greater than 350 °F (177 °C) on the seafloor for a well with a subsea wellhead or at the surface for a well with a surface wellhead. Pages: 113
3rd Edition | July 2022 | Product Number: G17TR803 | Price: $156.00

TR 17TR9
Umbilical Termination Assembly (UTA) Selection and Sizing Recommendations
identifies and describes:
• technical, commercial, and installation risks associated with high-functionality umbilicals and umbilical terminations [resulting in large and heavy umbilical termination assemblies (UTAs)], especially with respect to installation;
• implications of decisions made early in the umbilical and subsea umbilical termination (SUT) planning, selection, and design phases, to ease the manufacturing, handling, and final umbilical/UTA installation;
• guidance on specification and sizing of umbilical terminations, including overall size, weight, and handling requirements.
This document acts as a reference guide during the early field development planning stage to ensure that due consideration is given to the implications of the size of UTAs and possible consequences during installation. It is intended to be used as a reference guide by end users and operators, UTA and umbilical manufacturers, installers, and front-end engineering design (FEED) companies. The intention is that the document will enable the currently inherent installation difficulties to be addressed up front by the UTA designers, prior to commencing SUT design and functionality definition. It is also intended to be used as a reference document to enable reviews to be undertaken to ensure that installation risk has been properly considered as part of SUT design and operations reviews on a case-by-case basis. Pages: 53
1st Edition | August 2017 | Product Number: G17TR91 | Price: $113.00

*These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersedethe English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.
TR 17TR10
Subsea Umbilical Termination (SUT) Design Recommendations
Provides best practice technical guidance for subsea umbilical design (SUT) design, in order to aid in making informed choices during the design phase. This document was generated in response to the increasing difficulties in installation of high-functionality SUTs, due to their increasing size. This document is intended to be used as a reference guide by operators, umbilical termination assembly (UTA) and umbilical specifiers, installers, and front-end engineering design (FEED) companies. It is also intended to be used as a reference document to enable reviews to be undertaken to ensure that installation risk has been properly considered as part of SUT design and operation reviews.
Additionally, the document has been designed to be educational such that persons new to the industry, or, less experienced persons within the industry, can understand the implications of UTA design on installation feasibility.
This document aims at capturing the primary aspects impacting on the overall dimensions and weight of the UTA, and highlighting the consequences of design choices.
This document excludes multibore hub connection-type (MHC) UTAs that can connect the umbilical directly to other subsea hardware. Although MHC UTAs are out of scope, many of the guidelines in this document would apply.
Pages: 66
1st Edition | December 2015 | Product Number: G17TR101 | Price: $87.00

TR 17TR11
Pressure Effects on Subsea Hardware During Flowline Pressure Testing in Deep Water
Provides guidance to the industry on allowable pressure loading of subsea hardware components that can occur during hydrotesting of subsea flowlines and risers and during pre-commissioning leak testing of these systems. There are potential problems with confusion arising from high hydrostatic pressure in deep water, partially due to the variety of applicable test specifications and partly from the inconsistent use of a variety of acronyms for pressure terminology. Pages: 11
1st Edition | September 2015 | Product Number: G17TR111 | Price: $87.00

TR 17TR12
Consideration of External Pressure in the Design and Pressure Rating of Subsea Equipment
Addresses issues related to the effects of external pressure acting on subsea equipment installed in deepwater for containing or controlling wellbore fluids. External pressure at deepwater can significantly reduce the differential pressure acting on the wall of subsea equipment; therefore, this can improve its internal pressure containment capability. External pressure is typically ambient seawater pressure, but in some cases, external pressure may be due to the hydrostatic head of drilling mud, completion fluids, or other fluids contained within risers or other conduits that connect the subsea equipment to surface facilities.
This document provides guidance for subsea equipment designers/manufacturers to properly account for external pressure (or in some cases, differential pressure) when designing and validating subsea equipment. Additionally, this technical report provides guidance to equipment purchaser/end-user to appropriately select rated equipment for their subsea systems with consideration to the effects of external pressure in addition to internal pressure, including differential pressure across a closure mechanism, and other applied mechanical or structural loads under all potential operating scenarios and functionality criteria.
It is necessary that users of this technical report be aware of regulations from jurisdictional authority that may impose additional or different requirements to the consideration of external pressure or differential pressure in equipment designs. Pages: 28
1st Edition | March 2015 | Product Number: G17TR121 | Price: $103.00

TR 17TR13
General Overview of Subsea Production Systems
Subsea production systems can range in complexity from a single satellite well with a flowline linked to a fixed platform to several wells on a template producing and transferring via subsea processing facilities to a fixed or floating facility or directly to an onshore installation. The objectives of this document are to describe typical examples of the various subsystems and components that can be combined, in a variety of ways, to form complete subsea production systems; to describe the interfaces with typical downhole and topsides equipment that are relevant to subsea production systems; and to provide some basic design guidance on various aspects of subsea production systems. Pages: 100
1st Edition | March 2016 | Product Number: G17TR131 | Price: $131.00

TR 17TR16
Subsea Hydrocarbon Production Leak Detection Systems Using Process Data
Provides considerations and recommendations for design, operation, maintenance, and training related to leak detection on multiphase subsea production gathering systems and gas injection systems. The scope is limited to methods using internal process sensors to detect leaks that are identifiable from process data. This report does not cover leak detection for umbilical systems, subsea trees (upstream of subsea choke), well downhole tubing, water injection systems, and export pipelines. Pages: 31
1st Edition | December 2022 | Product Number: G17TR1601 | Price: $97.00

RP 17U
Recommended Practice for Wet and Dry Thermal Insulation of Subsea Flowlines and Equipment
Provides guidance for the performance, qualification, application, quality control, handling, and storage requirements of wet and dry thermal insulation for subsea applications in the petroleum and gas industries. This guideline also covers the inspection of the insulation, and the repair of insulation defects. Annex A specifies the minimum recommendations for the performance qualification testing and inspection testing requirements for wet insulation systems (insulations in direct contact with seawater). Annex B specifies the minimum recommendations for the performance qualification testing and inspection testing requirements for dry insulation systems (insulations not in direct contact with seawater). Pages: 33
2nd Edition | December 2023 | Product Number: G17U02 | Price: $81.00
RP 17V
Recommended Practice for Analysis, Design, Installation, and Testing of Safety Systems for Subsea Applications
(includes Errata 1 dated July 2015)

Presents recommendations for designing, installing, and testing a process safety system for subsea applications. The basic concepts of subsea safety systems are discussed and protection methods and requirements of the system are outlined. For the purposes of this document, "subsea system" includes all process components from the wellhead (and surface controlled subsurface safety valve [SCSSV]) to upstream of the boarding shutdown valve. For gas injection, water injection, and gas lift systems, the shutdown valve is within the scope of this document.

This document is a companion document to API 14C, which provides guidance for topsides safety systems on offshore production facilities. Some sections of this document refer to API 14C for safety system methodology and processes. This recommended practice illustrates how system analysis methods can be used to determine safety requirements to protect any process component. Actual analyses of the principal components are developed in such a manner that the requirements determined will be applicable whenever the component is used in the process. The safety requirements of the individual process components may then be integrated into a complete subsea safety system. The analysis procedures include a method to document and verify system integrity. The uniform method of identifying and symbolizing safety devices is presented in API 14C and adopted in this recommended practice. Pages: 63

1st Edition | February 2015 | Reaffirmed: June 2020
Product Number: G17V01 | Price: $152.00

RP 17V *
Recommended Practice for Analysis, Design, Installation, and Testing of Safety Systems for Subsea Applications—Russian
(includes Errata 1 dated July 2015)

Russian translation of RP 17V.

1st Edition | February 2015 | Product Number: G17V01R | Price: $152.00

RP 17W
Recommended Practice for Subsea Capping Stacks

Contains subsea capping stack recommended practices for designing, building, and using, as well as maintaining and testing during storage. This document focuses on recommended design parameters for subsea capping stacks; guidelines for subsea capping stack operations; and guidelines for storing, preserving, maintaining, and testing a subsea capping stack. Pages: 68

2nd Edition | March 2021 | Product Number: G17W02 | Price: $136.00

RP 17X
Recommended Practice for Subsea Pump Module Systems

Provides guidance for the design, manufacture, installation, and operation of subsea pumps, including rotary displacement and rotodynamic types for single phase, and multi-phase services. The recommended practice applies to all subsea pump modules placed at or above the mud line. This document describes subsea pump modules that are either directly designed or “marinized” for use in an offshore/marine environment. Potential applications include offshore use near subsea wells to boost production and enhance oil recovery (EOR) from partially depleted oil fields, or to boost flowline pressures to flow at higher rates or greater distances or when flowing subsea wells up to a surface facility. Pages: 80

1st Edition | February 2021 | Product Number: G17X01 | Price: $104.00

RP 17Y
Recommended Practice for Design, Testing, and Qualification of Subsea Chemical Injection Delivery Systems

Covers the design, specification, testing, qualification, installation, commissioning, and operation of subsea chemical injection delivery systems (excluding workover and subsurface equipment). It covers subsea chemical injection delivery systems from the chemical storage tank located on a host facility (onshore or offshore) to injection points subsea with a holistic approach. It discusses interfaces between topsides, subsea, and subsurface scopes, as well as between engineering, mechanical equipment, and controls. Pages: 62

1st Edition | April 2022 | Product Number: G17Y01 | Price: $104.00

COMPLETION EQUIPMENT

Spec 11D1
Packers and Bridge Plugs
(includes Addendum 1 dated April 2022)

Provides requirements and guidelines for packers and bridge plugs as defined herein for use in the petroleum and natural gas industry. This specification provides requirements for the functional specification and technical specification, including design, design verification and validation, materials, documentation and data control, repair, shipment, and storage. Pages: 82


Spec 14A
Specification for Subsurface Safety Valve Equipment
(includes Errata 1 dated July 2015 and Addendum 1 dated June 2017)

Provides the requirements for subsurface safety valves (SSSVs), and the secondary tools as defined herein necessary to operate the features included within them, including all components that establish tolerances and/or clearances that may affect performance or interchangeability of the SSSV components. It includes repair operations and the interface connections to control conduits and/or other equipment, but does not cover the connections to the primary well conduit. Pages: 140

Reaffirmed: July 2020 | Product Number: G14A12 | Price: $244.00

Spec 14L
Lock Mandrels and Landing Nipples

Provides the requirements for lock mandrels and landing nipples within the production/injection conduit for the installation of flow control or other equipment used in the petroleum and natural gas industries. It includes the interface connections to the flow control or other equipment, but does not cover the connections to the well conduit. Pages: 59

3rd Edition | June 2020 | Product Number: G14L03 | Price: $143.00

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Spec 19AC/ISO 14998:2013 ◆ Specification for Completion Accessories

Provides requirements and guidelines for completion accessories, as defined herein, for use in the petroleum and natural gas industry. This international standard provides requirements for the functional specification and technical specifications, including design, design verification and validation, materials, documentation and data control, quality requirements, redress, repair, shipment, and storage. This international standard covers the pressure-containing, non-pressure-containing, load-bearing, disconnect/reconnect, tubing-movement, and opening-a-port functionalities of completion accessories. Products covered under another API or international specification are not included. Also not included are other products such as liner/tubing hangers, downhole well test tools, inflow control devices, surface-controlled downhole chokes, downhole artificial lift equipment, control lines and fittings, and all functionalities relating to electronics or fiber optics. This international standard does not cover the connections to the well conduit. Installation, application, and operation of these products are outside the scope of this international standard.

This edition of Spec 19AC is the modified national adoption of ISO 14998:2013. Pages: 63

1st Edition | September 2016 | Reaffirmed: February 2022
Product Number: G19AC01 | Price: $121.00

RP 19B ◆ Evaluation of Well Perfomers
(includes Addendum 1 dated March 2023)

Describes standard procedures for evaluating the perforating equipment so that representations of this performance may be made to the industry under a standard practice. The purpose of this recommended practice is to specify the materials and methods used to evaluate objectively the performance of perforating systems or perforators. Pages: 78

3rd Edition | July 2021 | Product Number: G019B3 | Price: $153.00

Std 19C ◆ Measurement of and Specifications for Proppants Used in Hydraulic Fracturing and Gravel-Packing Operations

Provides standard testing procedures for evaluating proppants used in hydraulic fracturing and gravel-packing operations. The objective of this standard is to provide a consistent methodology for testing performed on hydraulic fracturing and/or gravel-packing proppants. These procedures have been developed to improve the quality of proppants delivered to the well site. They are for use in evaluating certain physical properties used in hydraulic fracturing and gravel-packing operations. Pages: 57

2nd Edition | August 2018 | Product Number: GX19C02 | Price: $122.00

Spec 19CI ◆ Downhole Chemical Injection Devices and Related Equipment

Provides requirements for chemical injection devices intended for use in the worldwide petroleum and natural gas industry. This includes requirements for specifying, selecting, design verification, validation testing, manufacturing, quality control, testing, and preparation for shipping of chemical injection devices. These requirements include in-line debris screen systems, single-use shearable/frangible devices, and information on performance testing and calibration procedures.

The installation and retrieval of chemical injection devices and systems is outside the scope of this document (see API 19G2 and API 19G3).

Pages: 118

1st Edition | June 2019 | Product Number: G19CI01 | Price: $162.00

RP 19D ◆ Measuring Conductivity of Proppants

Provides recommended testing procedures for evaluating proppants used in hydraulic fracturing and gravel-packing operations. The objective of the document is to provide consistent methodology for testing procedures used to measure performance of hydraulic-fracturing and/or gravel-packing proppants. The testing procedures in this document are not designed to provide values of proppant conductivity under downhole reservoir conditions.

Long-term test data have shown that temperature, elevated temperatures, fracturing fluid residues, cyclic stress loading, embedment, formation fines and other factors further reduce fracture proppant pack conductivity.

Pages: 45

2nd Edition | November 2021 | Product Number: GX19D02 | Price: $128.00

Spec 19G1 ◆ Side-Pocket Mandrels

Provides requirements for side-pocket mandrels used in the petroleum and natural gas industry. It covers specifying, selecting, designing, manufacturing, quality control, testing, and preparation for shipping of side-pocket mandrels.

This specification addresses standard side-pocket mandrel designs, as well as high-pressure and/or high-temperature (HPHT) equipment rated greater than 103.43 MPa (15,000 psi) and/or greater than 177 °C (350 °F) wellbore conditions as proffered by API 1PER15K-1. Pages: 62

2nd Edition | February 2019 | Product Number: G19G12 | Price: $113.00

Spec 19G2 ◆ Flow-Control Devices for Side-Pocket Mandrels

Provides requirements for subsurface flow-control devices used in side-pocket mandrels (hereafter called flow-control devices) intended for use in the worldwide petroleum and natural gas industry. This includes requirements for specifying, selecting, designing, manufacturing, quality control, testing, and preparation for shipping of flow-control devices.

Additionally, it includes information regarding performance testing and calibration procedures.

The installation and retrieval of flow-control devices is outside the scope of Spec 19G2. Additionally, Spec 19G2 is not applicable to flow-control devices used in center-set mandrels or with tubing-retrievable applications.

Spec 19G2 does not include requirements for side-pocket mandrels, running, pulling, and kick-over tools, and latches that might or might not be covered in other API/ISO specifications. Reconditioning of used flow-control devices is outside the scope of Spec 19G2.

Pages: 116

2nd Edition | September 2020
Product Number: GX19G22 | Price: $185.00

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Inflow Control Devices

Provides requirements and guidelines for inflow control devices (ICDs) for both production and injection, as defined herein, for use in the petroleum and natural gas industry. This specification provides requirements for the functional specification and technical specification, including design, design verification and validation, materials, documentation and data control, and quality requirements. Products covered by any other API specification, such as sand screens and sliding sleeves, are not included. Also not included are externally controlled downhole devices including interval control valves (ICVs). This specification does not cover the connections to the well conduit, the effects of corrosion, or ICDs designated for use in thermal recovery applications. Installation, application, and operation of these products are outside the scope of this specification. Pages: 58

1st Edition | May 2020 | Product Number: G19ICD01 | Price: $100.00

Spec 19ICV

Interval Control Valves

Provides the requirements for downhole interval control valves (ICVs) as they are defined herein for use in the petroleum and natural gas industries. Included are the minimum requirements for a functional specification, design verification, design validation of performance ratings, manufacturing, functional evaluations, shipping, handling, and storage. Also included are requirements for downhole control modules that are necessary for the defined operations of the ICV. Pages: 90

1st Edition | June 2023 | Product Number: G19ICV01 | Price: $105.00

Spec 19OH

Openhole Isolation Equipment

Covers requirements and guidelines for openhole isolation equipment and bridge plugs as defined herein. Openhole isolation equipment includes swellable packers, inflatable packers, expandable packers, and openhole packers that are designed for use in the petroleum and natural gas industries. This specification provides requirements for design verification, design validation, manufacturing, quality, shipping, handling, storage, and related supporting topics. Requirements for the end connections to the well conduit are not included in this specification. Also not covered are downhole anchoring devices (see API 11D1); cup-style packers; and requirements for the application, installation, and use of openhole isolation equipment. Equipment and technology covered by other API specifications and standards are exempted from this specification, such as:
• production packers,
• liner hanger systems,
• service tools,
• test tool packers.
Repairs, remanufacturing, and redress are excluded from this specification. Pages: 45

1st Edition | January 2018 | Product Number: G19OH1 | Price: $118.00

Spec 19G4/ISO 17078-4:2010

Practices for Side-Pocket Mandrels and Related Equipment

Provides informative documentation to assist the user/purchaser and the supplier.manufacturer in specification, design, selection, testing, calibration, reconditioning, installation, and use of side-pocket mandrels, flow-control devices, and associated latches and installation tools. The product-design and manufacturing-related requirements for these products are included within the other parts of ISO 17078. The content and coverage of several industry documents are compiled and refined within this part. This edition of RP 19G4 is the identical national adoption of ISO 17078-4:2010. Pages: 48


Running Tools, Pulling Tools and Kick-Over Tools and Latches for Side-Pocket Mandrels

Provides requirements and guidelines for running tools, pulling tools, kick-over tools, and latches used for the installation and retrieval of flow control devices and other devices to be installed in side-pocket mandrels for use in the petroleum and natural gas industries. This includes requirements for specifying, selecting, designing, manufacturing, quality control, testing, and preparation for shipping of these tools and latches. Additionally, it includes information regarding performance testing and calibration procedures. The processes of installation, retrieval, maintenance, and reconditioning of used running, pulling, and kick-over tools and latches are outside the scope of this specification. Pages: 43


Gas Lift Handbook

(includes Addendum 1 dated May 2023)

Presents information on the following topics related to gas lift equipment: the basic principles of gas lift; gas lift equipment selection; how various types of gas lift equipment work; and how a gas lift system should be designed. Information is also included on monitoring, adjusting, regulating, and troubleshooting gas lift equipment. It is intended to familiarize operating personnel with the use of gas lift as an artificial lift system. Pages: 285

1st Edition | June 2020 | Product Number: G19GLHB01 | Price: $167.00

Spec 19ICD

Inflow Control Devices

Provides requirements and guidelines for inflow control devices (ICDs) for both production and injection, as defined herein, for use in the petroleum and natural gas industries. This specification provides requirements for the functional specification and technical specification, including design, design verification and validation, materials, documentation and data control, and quality requirements. Products covered by any other API specification, such as sand screens and sliding sleeves, are not included. Also not included are externally controlled downhole devices including interval control valves (ICVs). This specification does not cover the connections to the well conduit, the effects of corrosion, or ICDs designated for use in thermal recovery applications. Installation, application, and operation of these products are outside the scope of this specification. Pages: 58

1st Edition | May 2020 | Product Number: G19ICD01 | Price: $100.00
Exploration and Production

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Spec 19OH *  
Openhole Isolation Equipment—Russian  
Russian translation of Spec 19OH.  
1st Edition | January 2018 | Product Number: G19OH1R | Price: $118.00

Spec 19PT  
Downhole Perforating Tools  
Provides requirements and guidelines for the design and use of downhole perforating tools and related equipment, as defined herein for use in the petroleum and natural gas industry. This specification provides the requirements for reporting and validating operational ratings of downhole perforating tools that are not addressed by any current standards or specifications. Thus, it provides well-defined operational ratings for functionality of downhole perforating tools as provided by the supplier/manufacturer, and defines levels of quality control (QC) for downhole perforating tools including validation requirements, acceptance testing, performance ratings, and service center requirements. Pages: 46  
1st Edition | May 2022 | Product Number: G19PT01 | Price: $86.00

Spec 19SS/ISO 17824:2009  
Sand Screens  
(includes Errata 1 dated November 2018)  
Provides the requirements and guidelines for sand screens for use in the petroleum and natural gas industry. Included are the requirements for design, design validation, manufacturing, quality, storage, and transport. The requirements of this International Standard are applicable to wire-wrap screens, pre-pack screens, and metal-mesh screens.  
The following items are outside the scope of this International Standard:  
- expandable and/or compliant sand screens, slotted liners, or tubing and accessory items, such as centralizers or bull plugs;  
- shunt screen technology, inflow control devices, downhole sensors, and selective isolation devices, even where they can be an integral part of the sand screen;  
- analysis for sand retention efficiency;  
- end connections of the basepipe.  
This edition of Spec 19SS is the modified national adoption of ISO 17824:2009. Pages: 79  
1st Edition | July 2018 | Product Number: G19SS01 | Price: $174.00

Spec 19TT  
Specification for Downhole Well Test Tools and Related Equipment  
Provides the requirements for downhole well test tools and related equipment as they are defined herein for use in the petroleum and natural gas industries. Included are the requirements for design, design validation, manufacturing, functional evaluation, quality, handling, storage, and service centers. Tools utilized in downhole well test operations include tester valves, circulating valves, well testing packers, safety joints, well testing safety valves, testing surface safety valves (TSSVs), slip joints, jars, work string tester valves, sampler carriers, gauge carriers, drain valves, related equipment, and tool end connections. This specification does not cover open hole well test tools, downhole gauges, samplers, surface equipment, subsea safety equipment, perforating equipment and accessories, pup joints external to well test tool assemblies, work string and its connections, conveyance or intervention systems, installation, control and monitoring conduits, and surface control systems. A downhole well test is an operation deploying a temporary completion in a well to safely acquire dynamic rates, formation pressure/temperature, and formation fluid data. Downhole well test tools are also used in operations of well perforating, well shut-ins, circulation control of fluids, and stimulation activities. This document covers the downhole tools used to perform these operations; however, the operational requirements of performing these operations are not included. Pages: 94  
1st Edition | October 2016 | Product Number: G19TT01 | Price: $143.00

Spec 19V  
Subsurface Completion Isolation (Barrier) Valves and Related Equipment  
(includes Errata 1 dated September 2019 and Addendum 1 dated September 2022)  
Provides the requirements for subsurface completion isolation (barrier) valves (SCIVs) and related equipment as they are defined herein for use in the petroleum and natural gas industries. Included are the requirements for design, design validation grades, quality levels, manufacturing, functional evaluation, repair, redress, handling, and storage. SCIVs provide a means of isolating the formation or creating a blockage in the tubular to facilitate the performance of pre-and/or post-production/injection operational activities in the well.  
Additional requirements for HPHT products are included in Annex I. Pages: 81  
2nd Edition | May 2019 | Effective Date: November 2019  
Product Number: G19V02 | Price: $185.00

**SUPPLY CHAIN MANAGEMENT**

Spec 20A  
Carbon Steel, Alloy Steel, Stainless Steel, and Nickel Base Alloy Castings for Use in the Petroleum and Natural Gas Industry  
(includes Addendum 1 dated September 2018 and Addendum 2 dated April 2020)  
Identifies requirements for the foundry qualification, production, design, marking, and documentation of carbon steel, alloy steel, stainless steel, and nickel-base alloy castings used in the petroleum and natural gas industries when referenced by an applicable API product standard or otherwise specified as a requirement for compliance.  
This specification applies to castings used in the manufacture of pressure containing, pressure-controlling, and primary load-bearing components. Castings manufactured in accordance with this API standard may be produced using any industry standard casting method. This specification provides manufacturers with a fixed methodology to examine a qualification casting and to compare the results of that examination to a defined set of acceptance criteria. The results of the qualification testing by material grouping are then used to establish a baseline Casting Specification Level (CSL) for subsequently produced castings.  
This specification also provides manufacturers with a fixed production testing methodology to determine if subsequently produced castings conform to the minimum requirements for the intended CSL. The intent is that the production castings meet the minimum CSL requirements established during qualification testing by material grouping and/or the minimum CSL specified by the purchaser. Pages: 39  
2nd Edition | August 2017 | Product Number: G20A02 | Price: $94.00

Spec 20A *  
Carbon Steel, Alloy Steel, Stainless Steel, and Nickel Base Alloy Castings for Use in the Petroleum and Natural Gas Industry—Chinese  
(includes Addendum 1 dated September 2018 and Addendum 2 dated April 2020)  
Chinese translation of Spec 20A.  
2nd Edition | August 2017 | Product Number: G20A02 | Price: $94.00

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Spec 20B ◆
Open Die Shaped Forgings for Use in the Petroleum and Natural Gas Industry

Specifies requirements for the qualification and production of open die shaped forgings for use in API service components in the petroleum and natural gas industries when referenced by an applicable equipment standard or otherwise specified as a requirement for compliance. This API standard is applicable to equipment used in the oil and natural gas industries where service conditions warrant the use of individually shaped open die forgings, including rolled rings. Examples include pressure containing or load bearing components. Forged bar, rolled bar, and forgings from which multiple parts are removed are beyond the scope of this specification.

This API standard establishes requirements for four forging specification levels (FSL). These four FSL designations define different levels of forged product technical, quality and qualification requirements. Pages: 26

2nd Edition | November 2020 | Product Number: G20B02 | Price: $102.00

Spec 20C ◆
Closed Die Forgings for Use in the Petroleum and Natural Gas Industry

Specifies requirements and gives recommendations for the design, qualification, and production of closed-die forgings for use in API service components in the petroleum and natural gas industries when referenced by an applicable equipment standard or otherwise specified as a requirement for compliance. Spec 20C is applicable to equipment used in the oil and natural gas industries where service conditions warrant the use of closed die forgings. Examples include pressure containing or load-bearing components. This standard establishes requirements for four forging specification levels (FSL). These FSL designations define different levels of forged product technical, quality and qualification requirements. Pages: 35

3rd Edition | April 2020 | Product Number: G20C03 | Price: $97.00

Std 20D
Qualification of Nondestructive Examination Services for Equipment Used in the Petroleum and Natural Gas Industry

Specifies requirements for the application of nondestructive examination (NDE) methods as well as the development and qualification procedures used in the manufacturing, servicing, and/or service of equipment for the petroleum and natural gas industries. This is applicable to suppliers providing NDE services for equipment used in the oil and natural gas industries. The requirements of this standard apply to magnetic particle, liquid penetrant, radiography, and ultrasonic methods of NDE. Pages: 30

2nd Edition | August 2019 | Product Number: G20D02 | Price: $101.00

Spec 20E ◆
Alloy and Carbon Steel Bolting for Use in the Petroleum and Natural Gas Industries

(includes Addendum 1 dated September 2018, Addendum 2 dated March 2019, and Errata 1 dated November 2021)

Specifies requirements for the qualification, production, and documentation of alloy and carbon steel bolting used in the petroleum and natural gas industries. This standard applies when referenced by an applicable API equipment standard or otherwise specified as a requirement for compliance. This standard establishes requirements for three bolting specification levels (BSL). These three BSL designations define different levels of technical, quality and qualification requirements, BSL-1, BSL-2, and BSL-3. The BSLs are numbered in increasing levels of requirements in order to reflect increasing technical, quality, and qualification criteria. This standard covers the following finished product forms, processes, and sizes:

- cold formed bolts, screws, and nuts with cut or cold formed threads (BSL-1 only);
- hot formed bolts and screws < 1.5 in. (38.1 mm) nominal diameter;
- hot formed bolts and screws ≥ 1.5 in. (38.1 mm) nominal diameter;
- roll threaded studs, bolts, and screws < 1.5 in. (38.1 mm) diameter;
- roll threaded studs, bolts, and screws ≥ 1.5 in. (38.1 mm) diameter;
- hot formed nuts < 1.5 in. (38.1 mm) nominal diameter;
- hot formed nuts ≥ 1.5 in. (38.1 mm) nominal diameter. Pages: 23

2nd Edition | April 2020 | Product Number: G20E02 | Price: $93.00

Spec 20F ◆
Corrosion-Resistant Bolting for Use in the Petroleum and Natural Gas Industries

(includes Errata 1 dated November 2020 and Addendum 1 dated November 2021)

Specifies requirements for the qualification, production, and documentation of corrosion-resistant bolting used in the petroleum and natural gas industries. This standard applies when referenced by an applicable API equipment standard or otherwise specified as a requirement for compliance. This standard establishes requirements for two bolting specification levels (BSLs). These two BSL designations define different levels of technical, quality, and qualification requirements: BSL-2 and BSL-3. The BSLs are numbered in increasing levels of requirements in order to reflect increasing technical, quality, and qualification criteria. BSL-2 and BSL-3 are intended to be comparable to BSL-2 and BSL-3 as found in API 20E. BSL-1 is omitted from this standard. Pages: 32

2nd Edition | April 2018 | Product Number: G20F02 | Price: $94.00

Std 20G
Welding Services for Equipment Used in the Petroleum and Natural Gas Industry

Specifies requirements for the qualification of suppliers of welding services used in the manufacturer of equipment for the petroleum and natural gas industry. The requirements of this standard apply to welding operations performed in a welding facility or in the field. Included are pressure-containing, pressure-controlling, overlay, and structural welds. Pages: 37

1st Edition | January 2020 | Product Number: G20G01 | Price: $86.00

Std 20H
Heat Treatment Services—Batch Type for Equipment Used in the Petroleum and Natural Gas Industry

Specifies requirements for the qualification of suppliers of heat treatment services used in the manufacture of equipment for the petroleum and natural gas industries. This standard is applicable to suppliers providing heat treatment services where API product standards require such services or otherwise specified as a requirement for conformance. The requirements of this standard apply to batch heat treatment operations that establish or affect the final mechanical properties and include stress relief operations. This standard applies to carbon steel, low-alloy steel, stainless steel, and nickel-base alloys. Case hardening, induction hardening, and flame hardening are not covered by this standard. This standard establishes the requirements for three heat treatment specification levels (HSLS). These HSL designations define different levels of heat treatment technical, quality, and qualification requirements. Pages: 26

2nd Edition | April 2020 | Product Number: G20H02 | Price: $78.00
Exploration and Production

To purchase individual API standards, visit apiwebstore.org

Std 20J
Qualification of Distributors of Metallic Materials for Use in the Petroleum and Natural Gas Industries

Specifies requirements for the qualification of distributors of metallic materials used in the petroleum and natural gas industries. This standard is applicable to distributors of metallic bar, plate, and tubular products where API product standards require such services or are otherwise specified as a requirement for conformance. Pages: 31

2nd Edition | April 2022 | Product Number: G20J02 | Price: $103.00

Std 20L
Qualification of Polymeric Seal Manufacturers for Use in the Petroleum and Natural Gas Industries

Specifies requirements for the qualification of manufacturers of polymeric seals used in the petroleum and natural gas industries. This standard is applicable to manufacturers of polymeric seals where API product standards require such services or are otherwise specified as a requirement for compliance. This standard does not consider entities that solely perform assembly of outside manufactured parts as a polymeric seal manufacturer. Pages: 28

1st Edition | April 2018 | Product Number: G20L01 | Price: $71.00

Std 20M
Qualification of Suppliers of Machining Services for Use in the Petroleum and Natural Gas Industries

Specifies requirements for the qualification of suppliers of machining services where API product standards require such services or are otherwise specified as a requirement for compliance. Compliance with this standard is not required to demonstrate compliance with any other API standard or specification. This API standard establishes the requirements for three machining qualification levels (MQL 1, MQL 2, and MQL 3). These three MQL designations define different levels of quality and qualification requirements. These MQLs are numbered in increasing levels of requirements in order to reflect increasing quality and qualification criteria. Final assembly, component testing (e.g., nondestructive examination, pressure testing) or a broker of machining services are outside the scope of this standard. This standard applies when specified by the customer or voluntarily followed by the machining services supplier. Pages: 27

1st Edition | October 2017 | Product Number: G20M01 | Price: $78.00

Std 20N
Heat Treatment Services—Continuous Line for Equipment Used in the Petroleum and Natural Gas Industry

Specifies requirements for the qualification of suppliers of continuous line heat treatment services used in the manufacture of equipment for the petroleum and natural gas industries. This standard is applicable to suppliers providing heat treatment services where API product standards specify this standard as a requirement for conformance. The requirements of this standard apply to continuous and semi-continuous heat treatment operations that can establish or affect the final mechanical properties. For batch type heat treatment, refer to API 20H. This standard is applicable to products in tubular, bar, plate, forgings, castings, and upset forged forms. Heat treat that imparts surface hardening or case hardening is outside the scope of this document. Pages: 27

1st Edition | August 2019 | Product Number: G20N01 | Price: $81.00

Std 20S
Additively Manufactured Metallic Components for Use in the Petroleum and Natural Gas Industries

Specifies requirements for qualification of the manufacturing process, production, marking, and documentation of additively manufactured metallic components used in the petroleum and natural gas industries when referenced by an applicable API equipment standard or otherwise specified as a requirement for conformance. This standard applies to additively manufactured metallic components produced by powder bed fusion (PBF), directed energy deposition (DED), and binder jetting (BJT) processes. This standard establishes requirements for three additive manufacturing specification levels (AMSL). These three AMSL designations—AMSL 1, AMSL 2, and AMSL 3—define increasing levels of additive manufacturing technical, quality, and qualification requirements. Pages: 47

1st Edition | October 2021 | Product Number: G20S01 | Price: $86.00

Std 20T
Additively Manufactured Polymer-Based Components for Use in the Petroleum and Natural Gas Industries

Specifies requirements for qualification of the manufacturing process, production, marking, and documentation of additively manufactured polymer-based components used in the petroleum and natural gas industries when referenced by an applicable API equipment standard or otherwise specified as a requirement for conformance. This standard applies to additively manufactured polymer-based components (including composites) produced by material extrusion (also referred to as fused filament fabrication (FFF) or fused deposition modeling (FDM) and fused granulate fabrication (FGF)) and powder bed fusion (also referred to as selective laser sintering (SLS) or multi jet fusion (MJF)). Additive manufacturing provides the natural gas and oil industry significant efficiency and productivity improvements, cuts lead times and supply chain stress, streamlines transportation and logistics, and can reduce emissions because additive manufacturing takes place near the point of use. Pages: 39

1st Edition | August 2022 | Product Number: G20T01 | Price: $86.00

TR 21TR1
Materials Selection for Bolting
(includes Addendum 1 dated April 2020, Addendum 2 dated June 2020, and Addendum 3 dated May 2022)

Provides guidance for the selection of materials and manufacturing processes for low-alloy steel bolting manufactured in accordance with API 20E and nickel-based and stainless alloys manufactured in accordance with 20E. Table 2 and Table 3 are provided as guidance for materials selection of fasteners. Pages: 37

1st Edition | August 2019 | Product Number: G21TR101 | Price: $94.00

TR 21TR2
S-N Fatigue Design Guidelines and Test Data for Low-Alloy Steel Bolts

New API-backed research on the fatigue life of bolts used in underwater natural gas and oil infrastructure—including critical blowout prevention equipment—resulted in the publication of this technical report, a key advancement in industry’s continued efforts to protect workers and the environment from potential problems associated with bolting fatigue in subsea structures. The test program detailed in this technical report was developed to obtain bolting material fatigue data required to perform design verification analysis of fatigue-sensitive bolts to assure accurate design life estimation. The bolting fatigue testing program provided S-N fatigue curves for three alternating stress ranges in air and saltwater with cathodic protection (CP) and for bolt sizes of 1 in., 2 in. (Grade L7), and 3 in. (Grade L43). S-N curves are used to determine the number of cycles (N) required to test a product to failure at a given stress (S). The results of these S-N fatigue tests allow the bolting design to be assessed for this type of fatigue through structural analysis using the nominal root area stresses in the bolt, avoiding the need to define stress and load concentrations in the bolt root radius of engaged threads. Pages: 32

1st Edition | March 2022 | Product Number: G21TR201 | Price: $94.00
DRILLING AND PRODUCTION OPERATIONS

RP 31A
Standard Form for Hardcopy Presentation of Downhole Well Log Data
Provides an improved standard format for hardcopy presentation of downhole well log data. Standardizing the log form and data presentation allows the user to more easily combine a broad range of log data in order to interpret well status and performance. Pages: 18
Product Number: G31A01 | Price: $105.00

RP 45
Recommended Practice for Analysis of Oilfield Waters
Provides analysis methods for the determination of dissolved and dispersed components in oilfield waters (produced water, injected water, aqueous workover fluids, and stimulation fluids). Also includes the applications of oilfield water analyses; the proper collection, preservation, and labeling of field samples; a description of the various analytical methods available, including information regarding interferences, precision, accuracy, and detection limits; as well as the appropriate reporting formats for analytical results. Pages: 60
Product Number: G45003 | Price: $154.00

RP 51
Onshore Oil and Gas Production Practices for Protection of the Environment
Provides environmentally sound practices to promote protection of the environment in domestic onshore oil and gas production operations. Production facilities, including produced water handling facilities, are covered. Coverage begins with design and construction of access roads and well locations and carries through to abandonment and site restoration activities. Pages: 17
3rd Edition | March 2001 | Reaffirmed: January 2013
Product Number: G51003 | Price: $56.00

RP 90-1
Annular Casing Pressure Management for Offshore Wells
Covers the management of annular casing pressure in existing offshore wells to maintain integrity and manage risk. It covers a range of casing annuli pressures including thermal casing pressure, sustained casing pressure (SCP), and operator-imposed pressure. This document also addresses monitoring, diagnostic testing, establishing maximum allowable wellhead operating pressure (MAWOP), and documentation of annular casing pressure for the various types of wells that occur offshore. Included is a discussion of risk assessment methodologies that can be used for the evaluation of individual well situations where the annular casing pressure is not within the MAWOP thresholds. This document includes information regarding annular casing pressure that is applicable to various offshore well types to include fixed platform wells, subsea wells, hybrid wells, and mudline suspension wells. Pages: 86
2nd Edition | August 2021 | Product Number: G90002 | Price: $227.00

RP 90-2
Annular Casing Pressure Management for Onshore Wells
Serves as a guide to monitor and manage annular casing pressure (ACP) in onshore wells, including production, injection, observation/monitoring, and storage wells. This document applies to wells that exhibit thermally induced, operator-imposed, or sustained ACP. It includes criteria for establishing diagnostic thresholds (DTs), monitoring, diagnostic testing, and documentation of ACP for onshore wells. Also included is a discussion of risk management considerations that can be used for the evaluation of individual well situations where the annular casing pressure falls outside the established diagnostic thresholds. This document recognizes that an ACP outside of the established DTs can result in a risk to well integrity. The level of risk presented by ACP depends on many factors, including the design of the well, the performance of barrier systems within the well, the source of the annular casing pressure, and whether there is an indication of annular flow exists. This document provides guidelines in which a broad range of casing annuli that exhibit annular casing pressure can be managed while maintaining well integrity. Pages: 60
1st Edition | August 2015 | Product Number: G90201 | Price: $197.00

Bull 92L
Drilling Ahead Safely with Lost Circulation in the Gulf of Mexico
Identifies items that should be considered to safely address lost circulation challenges when the equivalent circulating density (ECD) exceeds the fracture gradient. It addresses drilling margins and drilling ahead with mud losses, which are not addressed in Std B9-2. It provides guidance when lost circulation is experienced with either surface or subsea stack operations (excluding diverter operations). These practices may apply to other Outer Continental Shelf (OCS) environments such as offshore California and Florida. Lost circulation during drilling operations, in the form of both seepage and fracture losses, is a common occurrence in the Gulf of Mexico and other OCS environments. Through extensive practical experience, operators and drilling contractors have learned that with proper information, planning, and execution, lost circulation can be safely managed to allow well construction goals to be met. The methods used to repair or manage lost circulation are based on well location, geology, pore and fracture pressures, drilling depth, well design, hydraulics, mud properties, and available contingencies. Pages: 14
1st Edition | August 2015 | Product Number: G92L01 | Price: $76.00

RP 92M
Managed Pressure Drilling Operations with Surface Back-Pressure
Provides information for planning, installation, testing, and operation of wells drilled with surface back-pressure managed pressure drilling (MPD). This document applies only to drilling rigs with surface blowout preventers (BOPs). This document considers situations where the total drilling operation is performed balanced or overbalanced, including both hydrostatically overbalanced (no supplemental surface pressure needed to control inflow) and hydrostatically underbalanced (supplemental surface pressure needed to control inflow) systems. For underbalanced operations, refer to API 92U. This document does not cover MPD operations with subsea BOP stacks. Pages: 33
1st Edition | September 2017 | Product Number: G92M01 | Price: $107.00

RP 92P
Managed Pressure Drilling Operations—Pressurized Mud Cap Drilling with a Subsea Blowout Preventer
Addresses recommended practices for pressurized mud cap drilling (PMCD) from a floating rig with a subsea BOP stack. When massive lost circulation conditions are encountered, PMCD can be implemented to allow well construction operations to continue. Although this document only addresses PMCD, most of the equipment described may also be used for the surface back-pressure (SBP) method of managed pressure drilling. However, much of the equipment used for SBP is not required for PMCD and is beyond the scope of this document. Pages: 67
1st Edition | June 2019 | Product Number: G92P01 | Price: $117.00
Exploration and Production

To purchase individual API standards, visit apiwebstore.org

RP 92S
Managed Pressure Drilling Operations—Surface Back-Pressure with a Subsea Blowout Preventer
(includes Addendum 1 dated April 2023)
Provides information for planning, installation, testing, and operation of wells drilled with surface back-pressure (SBP) managed pressure drilling (MPD). This document applies only to drilling rigs with subsea blowout preventers (BOPs). This document considers situations where the total drilling operation is performed balanced or overbalanced, including both hydrostatically overbalanced (no supplemental surface pressure needed to control inflow) and hydrostatically underbalanced (supplemental surface pressure needed to control inflow) systems. Pages: 64
1st Edition | September 2018 | Product Number: G92S01 | Price: $132.00

RP 92U
Underbalanced Drilling Operations
(includes Addendum 1 dated November 2015)
Provides information that can serve as a guide for planning, installation, operation, and testing of underbalanced drilling equipment systems on land and offshore drilling rigs [barge, platform, bottom-supported, and floating with surface blowout preventers (BOPs) installed] thereby ensuring consideration of personnel safety, public safety, integrity of the underbalanced drilling (UBD) equipment, and preservation of the environment for onshore and offshore UBD operations (including tripping of drill string). Pages: 72
Product Number: G92U01 | Price: $114.00

RP 96
Deepwater Well Design and Construction
Provides engineers a reference for deepwater (DW) well design as well as drilling and completion operations. This recommended practice (RP) will also be useful to support internal reviews, internal approvals, contractor engagements, and regulatory approvals.

The scope of this RP is to discuss DW drilling and completion activities performed on wells that are constructed using subsea blowout preventers (BOPs) with a subsea wellhead. This document addresses the following:

• Identifies the appropriate barrier and load case considerations to maintain well control during DW well operations (drilling, suspension, completion, production, and abandonment).

• Supplements barrier documentation in Std 65-2 with a more detailed description of barriers and discussion of the philosophy, number, type, testing, and management required to maintain well control. This document also supplements the barrier documentation in RP 90 in regard to annular pressure buildup. Abandonment barrier requirements are described for use when designing the well.

• Discusses load assumptions, resistance assumptions, and methodologies commonly used to achieve well designs with high reliability. The load case discussion includes less obvious events that can arise when unexpected circumstances are combined.

• Describes the risk assessment and mitigation practices commonly implemented during DW casing and equipment installation operations.

The purpose of this document is to enhance safety and minimize the likelihood of loss of well control or damage to the environment. These practices are generally intended to apply to subsea wells drilled with subsea BOPs in any water depth. Some of the descriptions of rig hardware and operations, such as remotely operated vehicles, are less relevant in shallower water depths [e.g., less than 500 ft (152 m)]. In these shallower water depths the operator may substitute alternative hardware or operations that maintain safety and system reliability.

The following aspects of DW well design and construction are outside the scope of this document:

• Detailed casing design load case definitions (does not include specific casing designs or design factors). Individual companies combine differing severities of loads and resistances or differing calculation methods to achieve designs with similar high levels of reliability.

• Wells drilled and/or completed with a surface BOP and high pressure riser from a floating production system; however, considerations for wells predrilled with floating rigs to be completed to a floating production system are included.

• Well control procedures (refer to RP 59 for well control information).

• Managed pressure drilling operations (including dual gradient drilling).

• Production operations and fluids handling downstream of the tree (subsea facilities/subsea architecture and surface facilities/offloading hydrocarbons).

• Intervention operations.

• Quality assurance programs. Pages: 158
1st Edition | March 2013 | Product Number: G09601 | Price: $189.00

Bull 97
Well Construction Interface Document Guidelines
Contains the structure and contents of a well control interface document (WCID) that links the drilling contractor's safety case with the lease operator's safety management system. It includes well-specific information such as the basis of design, the well execution plan, and critical well activity risk assessment. This document exhibits how management of change and risk assessment processes will apply during well construction activities and assure personnel competency. A WCID also aligns all parties to assure their health, safety, and environment (HSE) standards are not compromised and all applicable regulatory requirements are met while undertaking shared activities. A WCID will assign or delineate specific responsibilities for the lease operator's personnel as well as provide a vehicle for the drilling contractor to intervene in the case that unsafe acts are identified. Pages: 18
1st Edition | December 2013 | Product Number: G09701 | Price: $71.00

RP 97L
Onshore Well Construction Interface Document
Provides guidance on information that is to be shared regarding onshore well construction and rig-specific operating guidelines. It is intended to align the lease operator's and drilling contractor's safety and environmental management systems (SEMS). The purpose of the well construction interface document (WCID) is to enhance the health and safety of the workers and protect the environment by facilitating communication between the lease operator and drilling contractor regarding well construction work (drilling, suspension, completion, testing, and abandonment). Pages: 24
1st Edition | December 2020 | Product Number: G97L01 | Price: $75.00

RP 98
Personal Protective Equipment Selection for Oil Spill Responders
Provides general information and guidance for the development of oil spill responder Personal Protective Equipment (PPE) control measures. Although an extensive amount of information has been developed on the topic of PPE for emergency responders, this document focuses on the PPE selection process as well as its technical evaluation based on the hazards present.

The purpose of this recommended practice is to assist users in developing effective PPE control measures for oil spill responses using a systematic approach. This recommended practice is intended for any company, organization, or agency that oversees or responds to oil spills. It is not a comprehensive “how-to” guide to selecting PPE for every type of situation that may be encountered; rather, it is a guidance document that discusses how proper PPE selection may be a useful control measure for responders when engineering and administrative controls may not be feasible or effective in reducing exposure to acceptable levels. Pages: 79
1st Edition | August 2013 | Product Number: G09801 | Price: $141.00
Community Engagement Guidelines

These guidelines outline what local communities and other key stakeholders can expect from operators. Oil and gas operators acknowledge the challenges associated with industry activities, which can include challenges important to a community. Principles of integrity, transparency and consideration for community concerns underpin responsible operations. Conscientious operators are committed to helping communities achieve positive and long-lasting benefits.

Both local stakeholders and operators can use this guidance. It is designed to acknowledge challenges and impacts that occur during the industry’s presence in a given region. It provides flexible and adaptable strategies, recognizing that application will vary from operator to operator and community to community. Many operators already apply similar guidelines or processes within their operations. These suggested guidelines are typical and reasonable and generally apply under normal operating circumstances. The use of these guidelines is at each individual operator’s discretion.

Operators recognize that stakeholders within the community can have different interests, issues and levels of concern. Some of these interests can be in direct conflict with one another. Working together with stakeholders to seek mutually agreeable solutions is an important aspect of community engagement. Operators can have different approaches to addressing the concerns and issues.

These guidelines are intended primarily to support onshore oil and gas projects in the United States for shale developments; however, they can be adapted to any oil and gas projects in the United States.

This document provides non-technical guidance only, and practices included herein cannot be applicable in all regions and/or circumstances. This document does not constitute legal advice regarding compliance with applicable legal and regulatory requirements.

1st Edition | Product Number: G09901 | Price: $87.00

1st Edition | October 2015 | Reaffirmed: August 2020
Product Number: G100101 | Price: $98.00

1st Edition | April 2014 | Product Number: G100301 | Price: $66.00

1st Edition | October 2015 | Reaffirmed: August 2020
Product Number: G100201 | Price: $105.00
**Exploration and Production**

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**Wireline Operations and Procedures**  
*Book 5 in the Vocational Training Series*

A handbook outlining to operators of oil and gas wells what applications are possible with wireline tools and equipment. Also a guide for field personnel. Surface equipment, service tools (standard and special), and subsurface equipment (both permanent and removable) are described and illustrated. Their various applications are included. Also presented is a general discussion of special problems that wireline operations and procedures may serve to eliminate, minimize, or control, and methods by which this may be accomplished. Pages: 60

Product Number: GT7053 | Price: $132.00

**RP T-1**  
Creating Orientation Programs for Personnel Going Offshore

Serves as a guide to develop orientation materials for personnel and visitors prior to their first trip offshore. The scope and applicability of this document concludes after check-in at the offshore facility and receipt of the facility-specific orientation. Pages: 18

5th Edition | November 2016 | Product Number: GT1005 | Price: $71.00

**RP T-2**  
Recommended Practice for Qualification Programs for Offshore Production Personnel Who Work with Safety Devices

Provides guidelines for the qualification of personnel engaged in installing, inspecting, testing, and routinely maintaining surface and subsurface devices that are used to insure safety and to prevent pollution during the production of oil and gas on offshore platforms. The guidelines provide expected candidate performance levels, instructional content, and recommendations for testing. The guidelines are divided into instructional and testing phases. Pages: 3

2nd Edition | December 2001 | Reaffirmed: January 2013  
Product Number: GT2002 | Price: $65.00

**RP T-4**  
Training of Offshore Personnel in Nonoperating Emergencies

Represents an industry guide for training of workers who work offshore. It provides recommendations for training personnel in handling nonoperating emergencies, such as fires, transportation emergencies, platform abandonment procedures, use of survival crafts, and water survival guidelines. Pages: 3

2nd Edition | October 1995 | Reaffirmed: June 2010  
Product Number: GT4002 | Price: $65.00

**RP T-6**  
Recommended Practice for Training and Qualification of Personnel in Well Control Equipment and Techniques for Wireline Operations on Offshore Locations

Provides criteria for the qualification of wireline personnel in well control equipment operations and techniques. Although it does include recommendations for training wireline personnel on general rig well control equipment and theory, it should be noted that the main focus for training should be those operations using a lubricator as the primary well control mechanism. Wireline personnel classifications to which this RP is applicable are the Helper/Assistant and Operator/Supervisor. Pages: 2

1st Edition | October 2002 | Reaffirmed: January 2013  
Product Number: GT6061 | Price: $65.00

**RP T-7**  
Training of Personnel in Rescue of Persons in Water

Applies to personnel who work offshore. It represents an industry guide for training personnel in techniques for rescuing persons from the water and using survival devices. It broadly identifies rescue devices, describes their operations, and presents recommendations for training personnel. Training recommendations are designed to develop personnel rescue proficiency while minimizing an individual’s exposure to injury or loss of life. Pages: 8

Product Number: GT7002 | Price: $62.00

**RP T-8**  
Fundamental Safety Training for Offshore Personnel

Provides guidance on the components of an effective training system related to offshore health, safety, and environment (HSE). A common safety training matrix is provided that outlines the fundamental recommended HSE training for offshore personnel. This matrix can be used in conjunction with other applicable recommended training and company-specific requirements. Pages: 24


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**COMMUNITY ENGAGEMENT**

**Community Matters: Community Outreach Guidance Manual for Exploration and Production Facilities**

This manual provides a model community outreach program to help oil and natural gas industry &P facilities improve their ties to their local communities. Community Matters offers a step-by-step guide for implementing a community outreach program and provides information on how to tailor outreach efforts to meet the needs of the facility and local community. Pages: 111

1st Edition | November 2000 | Product Number: G13660 | Price: $89.00

**Bull 100-3**  
Community Engagement Guidelines

These guidelines outline what local communities and other key stakeholders can expect from operators. Oil and gas operators acknowledge the challenges associated with industry activities, which can include challenges important to a community. Principles of integrity, transparency and consideration for community concerns underpin responsible operations. Conscientious operators are committed to helping communities achieve positive and long-lasting benefits.

Both local stakeholders and operators can use this guidance. It is designed to acknowledge challenges and impacts that occur during the industry’s presence in a given region. It provides flexible and adaptable strategies, recognizing that application will vary from operator to operator and community to community. Many operators already apply similar guidelines or processes within their operations. These suggested guidelines are typical and reasonable and generally apply under normal operating circumstances. The use of these guidelines is at each individual operator’s discretion.

Operators recognize that stakeholders within the community can have different interests, issues and levels of concern. Some of these interests can be in direct conflict with one another. Working together with stakeholders to seek mutually agreeable solutions is an important aspect of community engagement. Operators can have different approaches to addressing the concerns and issues.

These guidelines are intended primarily to support onshore oil and gas projects in the United States for shale developments; however, they can be adapted to any oil and gas projects in the United States.

This document provides non-technical guidance only, and practices included herein cannot be applicable in all regions and/or circumstances. This document does not constitute legal advice regarding compliance with legal or contractual requirements or risk mitigation. It is not intended to be all-inclusive. The operator is responsible for determining compliance with applicable legal and regulatory requirements.

1st Edition | July 2014 | Product Number: G100301 | Price: $66.00

HEALTH, ENVIRONMENT, AND SAFETY:
EXPLORATION AND PRODUCTION SAFETY STANDARDS

RP 54
Occupational Safety and Health for Oil and Gas Well Drilling and Servicing Operations
(includes Addendum 1 dated June 2021)

This recommended practice applies, in part or whole, to companies engaged in offshore operations. These recommendations are not intended to cover seismic drilling or water well drilling operations. These recommendations do not apply to site preparation and site remediation operations. Pages: 62

4th Edition | February 2019 | Product Number: G54004 | Price: $140.00

RP 67
Recommended Practice for Oilfield Explosives Safety

Applicable to chemical explosives used as an energy source to do work in oil- and gas-producing operations, and more specifically to explosives intended for use inside a wellbore. The purpose of this recommended practice (RP) is primarily to prevent the inadvertent initiation of these explosives under normal operating conditions, but also includes some recommendations for safe and secure storage and transportation and handling, as well as requirements for design and manufacture of selected equipment. While some chemicals intended for various nonexplosive applications can prove explosive when misused (such as lithium batteries), it is not the intent of this RP to address these materials. Pages: 85

3rd Edition | October 2019 | Product Number: G67003 | Price: $121.00

RP 74
Recommended Practice for Occupational Safety for Onshore Oil and Gas Production Operation

Provides companies engaged in offshore operations with a framework for the establishment, implementation, and maintenance of a Safety and Environmental Management System (SEMS) to manage and reduce risks associated with safety and the environment to prevent incidents and events. This recommended practice applies, in part or whole, to companies engaged in offshore operations, from lease evaluation through decommissioning. This document is not intended to be prescriptive or limiting on the expectations of each SEMS element; rather, it allows flexibility appropriate to the size, scope, and risk of a Company's assets and operations. It is advised that users of this document review and comply with applicable legal and regulatory requirements, and conform with applicable industry codes and standards. Consideration may be given to using this document to help systematically manage other aspects of operations, such as security and health. Pages: 34


RP 75
Safety and Environmental Management System for Offshore Operations and Assets

Provides companies engaged in offshore operations with a framework for the establishment, implementation, and maintenance of a Safety and Environmental Management System (SEMS) to manage and reduce risks associated with safety and the environment to prevent incidents and events. This recommended practice applies, in part or whole, to companies engaged in offshore operations, from lease evaluation through decommissioning. This document is not intended to be prescriptive or limiting on the expectations of each SEMS element; rather, it allows flexibility appropriate to the size, scope, and risk of a Company's assets and operations. It is advised that users of this document review and comply with applicable legal and regulatory requirements, and conform with applicable industry codes and standards. Consideration may be given to using this document to help systematically manage other aspects of operations, such as security and health. Pages: 34


Bull 75L
Guidance Document for the Development of a Safety and Environmental Management System for Onshore Oil and Natural Gas Production Operations and Associated Activities

Provides general information and guidance for the development of a safety and environmental management system (SEMS) for onshore oil and natural gas operations, including drilling, production, and well servicing activities. Although there is an extensive amount of information that has been developed on the topic of safety and environmental management systems, this document focuses on this industry sector to help foster continuous improvement in our industry's safety and environmental performance. It is recognized that many onshore oil and natural gas companies have effective SEMS in place; however, the intent of this document is to provide an additional tool that can assist these and especially other operators in taking the next step toward implementing a complete system at a pace that complements their business plan. For those who already have a mature SEMS in place, this document can be used for continuous improvement of the system. Pages: 12

1st Edition | November 2007 | Product Number: G75L01 | Price: $37.00

RP 76
Contractor Safety Management for Oil and Gas Drilling and Production Operations

Intended to assist operators, contractors, and subcontractors (third parties) in the implementation of a contractor safety program and improve the overall safety performance while preserving the independent contractor relationship. It is intended for the Upstream Segment of the petroleum industry; however, since the operator requirements and the contractor work are different, this publication may not be applicable to all operations at each company or to all contract work performed in those operations. Many oil and gas exploration and production companies contract for equipment and personnel services for a wide range of activities, including drilling production, well servicing, equipment repair, maintenance, and construction. Certain activities of contractors have the potential to take place either contractor and/or operator personnel and/or equipment at risk. It is important that operations are carried out in a safe manner. Operators and contractors need to provide safe work places and to protect the safety of their work places and to protect the safety of their workforces and the public. When they work together to improve safety, both benefit. Pages: 60


RP 77
Risk-Based Approach for Managing Hydrocarbon Vapor Exposure During Tank Gauging, Sampling, and Maintenance of Onshore Production Facilities

Covers recommended risk assessment and risk management practices to reduce the potential for acute worker hydrocarbon exposures and related atmospheric risks (i.e., potential oxygen deficiency). Specifically, this recommended practice is limited to onshore production tanks (including flowback tanks) during gauging and sampling, open-top tank sampling, and select tank maintenance activities involving removal or opening of tank appurtenances. While the tools and practices recommended in this document can be useful in other operations, this recommended practice does not specifically apply to downstream, refining, or offshore tank applications. Pages: 30

1st Edition | June 2018 | Product Number: G07701 | Price: $93.00
Exploration and Production

To purchase individual API standards, visit apiwebstore.org

Bull D16
Suggested Procedure for Development of a Spill Prevention Control and Countermeasure Plan
Assists the petroleum industry in understanding the SPCP regulation in light of the latest rule (40 CFR Part 112) and to offer guidance for developing SPCP plans wherever they are needed. Included is a template for developing SPCP plans (i.e. onshore excluding production; onshore oil production, oil drilling or workover; or offshore oil drilling, production, or workover) in accordance with the regulation and guidance, instruction, and clarification for completing each section of the template. The purpose of this rulemaking was to establish procedures, methods, and equipment to prevent and contain discharges of oil from non-transportation-related onshore and offshore facilities, thus preventing pollution of navigable waters of the United States. The development of this bulletin was commissioned by API and performed by O’Brien’s Response Management Inc. The purchase of D16 includes; Bulletin D16, the Plan Template, and a CD-ROM with the Microsoft® Word version of the Plan Template.

5th Edition | April 2011 | Product Number: GD1605
Price: $279.00 | Template Only: Price: $103.00

HEALTH, ENVIRONMENT, AND SAFETY: GENERAL

A. Achieving Common Sense Environmental Regulation: Oil and Gas Exploration & Production
Discusses proposals to achieve a balanced approach to environmental regulation of the oil and gas exploration and production industry that protects the environment as well or better than the current system and does the job more efficiently. Pages: 36
May 1996 | Product Number: G13715 | Price: Free*

Bull E1
Generic Hazardous Chemical Category List and Inventory for the Oil and Gas Exploration and Production Industry (Superfund Amendments and Reauthorization Act of 1986, Emergency Planning and Community Right-to-Know Act) (includes Errata 1 dated September 1991)
Under Sections 311 and 312 of the Superfund Amendments and Reauthorization Act of 1986, owners and operators of oil and gas exploration and production facilities must provide to state and local emergency response agencies information on hazardous chemicals they produce or use. This bulletin provides a simplified means of compliance with these regulations. Pages: 86
Product Number: G11000 | Price: $154.00

Bull E4
Environmental Guidance Document: Release Reporting for the Oil and Gas Exploration and Production Industry as Required by the Clean Water Act, the Comprehensive Environmental Response, Compensation and Liability Act, and the Emergency Planning and Community
Developed to provide the oil and gas production industry guidance on reporting releases of hazardous substances and petroleum to water as required by the Clean Water Act (CWA) and reporting releases of hazardous substances into the environment as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Emergency Planning and Community Right-to-Know Act (EPCRA). Also covers the reporting of what most in the industry consider “emergency” releases, which are unplanned and typically are not covered under a permit issued by a government agency. Pages: 106
2nd Edition | May 2003 | Product Number: GE4002 | Price: $183.00

RP 1145
Preparation of Response Plans for Oil Spills from Offshore Facilities
Provides information and guidance for the development of Oil Spill Response Plans for the offshore U.S. oil and gas exploration, production, and transportation (pipeline) industry. The general plan concepts, layout, and content recommended in this document are also applicable to other types of coastal/marine assets, both in the U.S. and international locations.
This RP is intended to provide plan developers and writers with information and guidance for effective and functional Oil Spill Response Plans that fulfill the expectations of plan holders, responders, regulators, response officials, stakeholders, and the general public. This RP may be informative for any company, organization, or public agency that oversees or responds to oil spills.
Although plans prepared or modified using this RP can be used to replace existing response plans required by regulation, the RP is not intended to be a regulatory compliance guideline or to supersede current regulations. Pages: 140
2nd Edition | February 2018 | Product Number: D11452 | Price: $131.00

Publ 4702
Technologies to Reduce Oil and Grease Content of Well Treatment, Well Completion, and Workover Fluids for Overboard Disposal
Technologies to reduce oil and grease content of well treatment, well completion, and workover fluids for overboard disposal. Pages: 54
March 2001 | Product Number: I47020 | Price: $133.00

HEALTH, ENVIRONMENT, AND SAFETY: NATURALLY OCCURRING RADIOACTIVE MATERIALS

Bull E2
Management of Naturally Occurring Radioactive Materials (NORM) in Oil and Gas Production
Naturally occurring radioactive materials (NORM) are present in oil and gas operations at some locations and can deposit in well tubulars, surface piping, vessels, pumps, and other producing and processing equipment. The purpose of this document is to inform oil and gas operators of the possible presence of NORM and to provide relevant information on protecting workers, the public, and the environment. The objective of this document is to provide general information to users so that they have an understanding of the fundamental radiation issues associated with the management of NORM. Issues where the advice of a professional health physicist, industrial hygienist, or other technical expert may be useful are identified and guidance provided. Readers are advised to contact their state regulatory office and work very closely with that office on all NORM issues. Pages: 50
2nd Edition | March 2006 | Product Number: GE2002 | Price: $133.00

Publ 7100
A Naturally Occurring Radioactive Material (NORM) Disposal Cost Study
Details the reported quantities of NORM that have accumulated over the years and the annual rate of NORM production for 1993 from U.S. oil and gas condensate production. The document also determines the 1992 cost of available NORM disposal options and the annual costs of complying with existing and proposed NORM regulations. Pages: 59
1st Edition | November 1996 | Product Number: G71001 | Price: $124.00
Exploration and Production

To purchase individual API standards, visit apiwebstore.org

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**Publ 7101**
A National Survey on Naturally Occurring Radioactive Material (NORM) in Petroleum Producing and Gas Processing Facilities
Defines the general occurrence of NORM in the United States based on statistical analysis of gamma measurements taken external to certain petroleum producing and gas processing equipment. Pages: 265
October 1997 | Product Number: G71011 | Price: $124.00

**Publ 7102**
Methods for Measuring Naturally Occurring Radioactive Materials (NORM) in Petroleum Production Equipment
The use and capabilities of common field-survey equipment are characterized for measuring NORM in sludges and scales accumulated in oil and gas production equipment. A correlation between radium concentrations in accumulated scales and sludges and measured external radiation is presented. Pages: 85
October 1997 | Product Number: G71021 | Price: $124.00

**Publ 7103**
Management and Disposal Alternatives for Naturally Occurring Radioactive Material (NORM) Wastes in Oil Production and Gas Plant Equipment
Presents radiological analyses of disposal alternatives that will protect against elevated radiation exposures and facilitate cost-effective precautions that are proportionate to any hazards posed by the NORM. Four waste forms and 12 waste disposal alternatives were analyzed. Pages: 65
October 1997 | Product Number: G71031 | Price: $124.00

**Publ 7104**
Proceedings of the 1995 API and GRI Naturally Occurring Radioactive Material (NORM) Conference
A compilation of 17 papers presented at the 1995 API/GRI NORM Conference. Subjects include measurement and survey; regulatory issues and activities; management and disposal; and scale prediction and control. Pages: 225
October 1997 | Product Number: G71041 | Price: $124.00

**Publ 7105**
Probabilistic Estimates of Dose and Indoor Radon Concentrations Attributable to Remediated Oilfield Naturally Occurring Radioactive Material (NORM)
Evaluates the concentration limit of 30 pCi/g Ra-226 in pipe scale and sludge left near the surface of remediated oilfield sites and returned to unrestricted public use. Includes an extensive bibliography of NORM research. Pages: 97
October 1997 | Product Number: G71051 | Price: $124.00

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**HEALTH, ENVIRONMENT, AND SAFETY: WASTE**

**Guidelines for Commercial Exploration and Production Waste Management Facilities**
Provides guidelines for the design and operations of commercial E&P waste management facilities to allow operators to identify areas where their facility could have impacts on the surrounding community and environment, and gives options for preventing/reducing those impacts. The guidelines are not meant to supersede any applicable local, state, or federal requirements. Pages: 80

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**PROTECTING LIVESTOCK**

**Protecting Livestock: Answers to Frequently Asked Questions about Livestock Exposure to Crude Oil in Oilfield Operations**
Describes ways livestock might be significantly exposed to petroleum hydrocarbons via a conceptual site model and outlines how to make a screening level determination of whether or not livestock are at risk from the exposure. Pages: 8
2006 | Product Number: IOPL06 | For a free copy, please visit http://www.api.org/-/media/Files/EHS/Environmental_Performance/LIVESTOCK_EXPOSURE_BROCHURE_FINAL.pdf

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**RP 70**
Security for Offshore Oil and Natural Gas Operations
Intended to assist the offshore oil and natural gas drilling and producing operators and contractors in assessing security needs during the performance of oil and natural gas operations. Pages: 16
1st Edition | March 2003 | Reaffirmed: September 2010
Product Number: G07001 | Price: $62.00

**RP 70I**
Security for Worldwide Offshore Oil and Natural Gas Operations
Intended to assist the offshore oil and natural gas drilling and producing operators and contractors in assessing security needs during the performance of oil and natural gas operations worldwide. Pages: 14
1st Edition | April 2004 | Reaffirmed: January 2012
Product Number: G70I03 | Price: $67.00

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[This publication is a new entry in this catalog.] [This publication is related to an API licensing, certification, or accreditation program.]
**Chapter 2.2A**

**Measurement and Calibration of Upright Cylindrical Tanks by the Manual Tank Strapping Method**

Describes the procedures for calibrating upright cylindrical tanks used primarily for the storage of petroleum liquids. Chapter 2.2A first addresses procedures for making necessary measurements to determine total and incremental tank volumes, then presents the recommended procedures for computing incremental volumes at each liquid level. This includes improving existing calculation procedures as deemed necessary. In terms of determining the average inside radius at each liquid level, this standard is focused on the manual tank strapping method. While other parts of Chapter 2.2 cover methods to determine the average radius at each liquid level by alternate means, this standard is the reference standard for those parts (e.g., 2.2A, 2.2B, 2.2C, 2.2D and 2.2G). All aspects (e.g. physical bottom surveys) not covered in the other parts of Chapter 2 are covered by this standard. Pages: 91

2nd Edition | November 2019
Product Number: H022A2 | Price: $200.00

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**Chapter 2.2B**

**Calibration of Upright Cylindrical Tanks Using the Optical Reference Line Method**

(Includes Addendum 1 dated October 2019)

Describes measurement and calculation procedures for determining the diameters of upright, welded (lap/butt) cylindrical tanks, or vertical cylindrical tanks, with a smooth outside surface and either floating or fixed roofs. The optical reference line method is an alternative to the manual tank strapping method for determining tank diameter. Ch. 2.2B should be used in conjunction with Ch. 2.2A. Pages: 8

1st Edition | March 1989 | Reaffirmed: March 2019
Product Number: H30023 | Price: $90.00

**Chapter 2.2C/ISO 7507-3:1993**

**Calibration of Upright Cylindrical Tanks Using the Optical-Triangulation Method**

(ANSI/API MPMS Ch. 2.2C-2002)

Describes the calibration of vertical cylindrical tanks by means of optical triangulation using theodolites. The method is an alternative to other methods such as strapping (Ch. 2.2A) and the optical-reference-line method (Ch. 2.2B).

This edition of Ch. 2.2C is the modified national adoption of ISO 7507-3:1993. Pages: 19

1st Edition | January 2002 | Reaffirmed: September 2018
Product Number: H022C1 | Price: $90.00

**Chapter 2.2D/ISO 7507-4:1995**

**Calibration of Upright Cylindrical Tanks Using the Internal Electro-Optical Distance Ranging Method**

(ANSI/API MPMS Ch. 2.2D-2003)

Specifies a method for the calibration of upright cylindrical tanks having diameters greater than 5 m by means of internal measurements using an electro-optical distance-ranging instrument, and for the subsequent compilation of tank capacity tables.

This edition of Ch. 2.2D is the modified national adoption of ISO 7507-4:1995. Pages: 13

Product Number: H022D1 | Price: $90.00

**Chapter 2.2E/ISO 12917-1:2002**


(ANSI/API MPMS Ch. 2.2E)

Specifies manual methods for the calibration of nominally horizontal cylindrical tanks, installed at a fixed location. It is applicable to horizontal tanks up to 4 m (13 ft) in diameter and 30 m (100 ft) in length. The methods are applicable to insulated and non-insulated tanks, either when they are above-ground or underground. The methods are applicable to pressurized tanks, and to both knuckle-dish-end and flat-end cylindrical tanks as well as elliptical and spherical head tanks. This chapter is applicable to tanks inclined by up to 10% from the horizontal provided a correction is applied for the measured tilt. For tanks over and above these dimensions and angle of tilt, appropriate corrections for tilt and appropriate volume computations should be based on the “Coats” equation.

This edition of Ch. 2.2E is the national adoption of ISO 12917-1:2002. Pages: 18

Product Number: HX202E01 | Price: $96.00

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Chapter 2.2F/ISO 12917-2:2002
Petroleum and Liquid Petroleum Products—Calibration of Horizontal Cylindrical Tanks—Part 2: Internal Electro-Optical Distance-Ranging Method
(ANSI/API MPMS Ch. 2.2F)

Describes the method for the calibration of horizontal cylindrical tanks having diameters greater than 2 m (6 ft) by means of internal measurements using an electro-optical distance-ranging instrument, and for the subsequent compilation of tank-capacity tables. This method is known as the internal electro-optical-distance-ranging (EODR) method.

This edition of Ch. 2.2F is the national adoption of ISO 12917-2:2002.

1st Edition | April 2004 | Reaffirmed: September 2014
Product Number: H202F01 | Price: $83.00

Chapter 2.7
Calibration of Barge Tanks
(includes Addendum 1 dated September 2021)
Describes three methods for determining the total incremental volumes of liquids in barge tanks for coastal and inland waterway service that have integral hull tanks. The three methods are as follows.

• Liquids calibration.
• Calibration by linear measurement.
• Calibration from vessel drawings.

This document and Ch. 2.8A supersede the previous Std 2553. A joint API/Energy Institute (EI) standard, it also carries the EI designation Hydrocarbon Management, HM2 Section 5A.

Product Number: H30044 | Price: $65.00

Chapter 2.8A
Calibration of Tanks on Ships and Oceangoing Barges
Three methods for determining the total and incremental volumes of liquids in tanks, oceangoing barges, and integrated tug barge units that have integral hull tanks. The three methods include liquid calibration, calibration by linear measurement, and calibration from vessel drawings.

This document and Ch. 2.7 supersede the previous Std 2553. A joint API/Energy Institute (EI) standard, it also carries the EI designation Hydrocarbon Management, HM2 Section 5B.

Product Number: H30049 | Price: $97.00

Chapter 2.8B
Recommended Practice for the Establishment of the Location of the Reference Gauge Point and the Gauge Height of Tanks on Marine Tank Vessels
Recommended practice, for use in conjunction with Ch. 2.7 and Ch. 2.8A. Establishes reference gauge heights during calibration of marine tank vessels. A reference gauge point is necessary for converting ullage to image, and when determining the volume of the quantities remaining on board. A reference gauge point is also used for wedge formulas and establishing wedge tables.

Product Number: H028B1 | Price: $105.00

Chapter 3
Tank Gauging
Standardized procedures for gauging liquid hydrocarbons in various types of tanks, containers, and carriers.

Chapter 3.1A
Standard Practice for the Manual Gauging of Petroleum and Petroleum Products
(includes Errata 1 dated January 2021)
Describes the following:

• the procedures for manually gauging the liquid level of petroleum and petroleum products in non-pressure fixed-roof, floating-roof tanks and marine tank vessels,
• procedures for manually gauging the level of free water that may be found with the petroleum or petroleum products,
• methods used to verify the length of gauge tapes under field conditions and the influence of bob weights and temperature on the gauge tape length, and
• the influences that may affect the position of gauging reference point (either the datum plate or the reference gauge point).

Throughout this standard the term petroleum is used to denote petroleum, petroleum products, or the liquids normally associated with the petroleum industry.

The method used to determine the volume of tank contents determined from gauge readings is not covered in this standard. The determination of temperature, API gravity, and suspended sediment and water of the tank contents are not within the scope of this standard.

3rd Edition | August 2013 | Reaffirmed: December 2018
Product Number: H301A03 | Price: $109.00
Chapter 3.1A *
(includes Errata 1 dated January 2021)
Spanish translation of Ch. 3.1A.
3rd Edition | August 2013 | Reaffirmed: December 2018
Product Number: H301A03S | Price: $109.00

Chapter 3.1B
Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging
Covers the level measurement of liquid hydrocarbons in stationary, aboveground, atmospheric storage tanks using automatic tank gauges (ATGs). The standard discusses automatic tank gauging in general, accuracy, installation, commissioning, calibration, and verification of ATGs that measure either innage or ullage. It also covers both intrusive and non-intrusive ATGs used for either custody transfer or inventory control, as well as the requirements for data collection, transmission, and receiving. Pages: 27
4th Edition | October 2021 | Product Number: H301B4 | Price: $175.00

Chapter 3.1B *
Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.1B.
4th Edition | October 2021 | Product Number: H301B4S | Price: $175.00

Chapter 3.2
Standard Practice for Gauging Petroleum and Petroleum Products in Tank Cars
Provides method for measuring liquids and liquefied gases in tank cars by liquid level measurement. Measurement of both vapor space and liquid level are covered. Gauging and temperature measurement equipment used in both open and closed measurement systems are described in this standard. These procedures reduce variability in the results of measurement and sampling operations when comparing loading terminal data to unloading terminal data. Pages: 20
1st Edition | August 1995 | Reaffirmed: May 2013
Product Number: H03021 | Price: $105.00

Chapter 3.2 *
Standard Practice for Gauging Petroleum and Petroleum Products in Tank Cars—Spanish
Spanish translation of Ch. 3.2.
1st Edition | August 1995 | Reaffirmed: May 2013
Product Number: H03021S | Price: $105.00

Chapter 3.3
Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Pressurized Storage Tanks by Automatic Tank Gauging
Provides guidance on the installation, calibration, and verification of automatic tank gauges used in custody transfer for measuring the level of liquid hydrocarbons having a Reid vapor pressure of 15 psi (103 kPa) or greater, stored in stationary, pressurized storage tanks. This standard also provides guidance on the requirements for data collection, transmission, and receiving. Pages: 10
1st Edition | June 1996 | Reaffirmed: December 2022
Product Number: H03031 | Price: $90.00

Chapter 3.3 *
Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Pressurized Storage Tanks by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.3.
1st Edition | June 1996 | Reaffirmed: December 2022
Product Number: H03031S | Price: $90.00

Chapter 3.4
Standard Practice for Level Measurement of Liquid Hydrocarbons on Marine Vessels by Automatic Tank Gauging
Provides guidance on the selection, installation, calibration, and verification of automatic tank gauges for measuring the level of liquid hydrocarbons having a Reid vapor pressure less than 15 psi (103 kPa), transported aboard marine vessels (tankers and barges). This standard also provides guidance on the requirements for data collection, transmission, and receiving. This standard supersedes all applicable sections of Std 2545. Pages: 10
1st Edition | April 1995 | Reaffirmed: August 2021
Product Number: H03041 | Price: $90.00

Chapter 3.4 *
Standard Practice for Level Measurement of Liquid Hydrocarbons on Marine Vessels by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.4.
1st Edition | April 1995 | Reaffirmed: August 2021
Product Number: H03041SP | Price: $90.00

Chapter 3.5
Standard Practice for Level Measurement of Light Hydrocarbon Liquids Onboard Marine Vessels by Automatic Tank Gauging
Covers the standard practice for level measurement of light hydrocarbon liquids onboard marine vessels by automatic tank gauges. This publication covers pressurized and refrigerated light hydrocarbon liquids. The light hydrocarbon liquids covered include: liquefied petroleum gas (LPG), natural gas liquid (NGL), and other petrochemical liquids where the storage and transportation requirements and the methods of measurement are similar to that for LPG and NGL gauging. This standard also covers the requirements for data collection, transmission, and receiving. Pages: 8
Product Number: H03051 | Price: $90.00

Chapter 3.5 *
Standard Practice for Level Measurement of Light Hydrocarbon Liquids Onboard Marine Vessels by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.5.
Product Number: H03051S | Price: $90.00

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Petroleum Measurement

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Chapter 3.6
Measurement of Liquid Hydrocarbons by Hybrid Tank Measurement Systems
(includes Errata 1 dated September 2005)
Covers selection, installation, commissioning, calibration, and verification of hybrid tank measurement systems for the measurement of level, static mass, observed and standard volume, and observed and reference density in tanks storing petroleum and petroleum products for custody transfer and/or inventory control purposes. Pages: 26
1st Edition | February 2001 | Reaffirmed: December 2022
Product Number: H03061 | Price: $104.00

Chapter 4
Proving Systems
Serves as a guide for the design, installation, calibration, and operation of meter proving systems.

Chapter 4.1
Introduction
General introduction to the subject of proving. The requirements in Ch. 4 are based on customary practices that evolved for crude oils and products covered by Ch. 11.1. The prover and meter uncertainties should be appropriate for the measured fluids and should be agreeable to the parties involved. Pages: 4
3rd Edition | February 2005 | Reaffirmed: June 2014
Product Number: H04013 | Price: $89.00

Chapter 4.1 *
Introduction—Spanish
Spanish translation of Ch. 4.1.
3rd Edition | February 2005 | Reaffirmed: June 2014
Product Number: H40101S | Price: $89.00

Chapter 4.2
Displacement Provers
(includes Addendum 1 dated February 2015)
Outlines the essential elements of provers that accumulate meter pulses as a displacing element within the prover travels between detector switches. It provides design and installation details for the types of displacement provers that are currently in use. The provers discussed are designed for proving measurement devices under dynamic operating conditions with single-phase liquid hydrocarbons. Pages: 46
3rd Edition | September 2003 | Reaffirmed: December 2022
Product Number: H04023 | Price: $134.00

Chapter 4.2 *
Displacement Provers—Russian
(includes Addendum 1 dated February 2015)
Russian translation of Chapter 4.2.
3rd Edition | September 2003 | Reaffirmed: December 2022
Product Number: H40023R | Price: $134.00

Chapter 4.4
Tank Provers
Specifies the characteristics of tank provers that are in general use and the procedures for their calibration. This standard does not apply to weir-type, vapor-condensing, dual-tank water-displacement, or gas-displacement provers. Pages: 11
Product Number: H04042 | Price: $90.00

Chapter 4.5
Master Meter Provers
Covers the use of displacement, turbine, Coriolis, and ultrasonic meters as master meters. The requirements in this standard are intended for single-phase liquid hydrocarbons. Meter proving requirements for other fluids should be appropriate for the overall custody transfer accuracy and should be agreeable to the parties involved. This document does not cover master meters to be used for the calibration of provers. For information concerning master meter calibration of provers, see Ch. 4.9.3. Pages: 24

Chapter 4.6
Pulse Interpolation
Describes how the double-chronometry method of pulse interpolation, including system operating requirements and equipment testing, is applied to meter proving. Pages: 25
3rd Edition | October 2021 | Product Number: H04063 | Price: $110.00

Chapter 4.7
Field Standard Test Measures
Details the essential elements of field standard test measures by providing descriptions, construction requirements, as well as inspection, handling, and calibration methods. Bottom-neck scale test measures and prover tanks are not addressed in this document. The scope of this standard is limited to the certification of “delivered volumes” of test measures. Pages: 19
3rd Edition | April 2009 | Reaffirmed: June 2014
Product Number: H40703 | Price: $94.00

Chapter 4.8
Operation of Proving Systems
Provides information for operating meter provers on single-phase liquid hydrocarbons. It is intended for use as a reference manual for operating proving systems. The requirements of this chapter are based on customary practices for single-phase liquids. This standard is primarily written for hydrocarbons, but much of the information in this chapter may be applicable to other liquids. Specific requirements for other liquids should be agreeable to the parties involved. Pages: 47
3rd Edition | July 2021 | Product Number: H04083 | Price: $150.00

Chapter 4.9.1
Methods of Calibration for Displacement and Volumetric Tank Provers, Part 1—Introduction to the Determination of the Volume of Displacement and Tank Provers
Covers all the procedures required to determine the field data necessary to calculate a base prover volume (BPV) of either displacement provers or volumetric tank provers. It will enable the user to perform all the activities necessary to prepare the prover, conduct calibration runs, and record all the required data necessary to calculate the base volumes of displacement and tank provers. Evaluation of the results and troubleshooting of many calibration problems are also discussed. This component, Ch. 4.9.1, is the introduction and contains all those relevant aspects that are general in nature, yet essential and applicable to all the different methods of calibration. Therefore, each subsequent part, which describes a specific method of prover calibration, shall be used with Part 1. Together, the two parts contain all the information that is essential to complete the required method of calibration. Pages: 35
2nd Edition | April 2022 | Product Number: H409012 | Price: $127.00

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Chapter 4.9.2

Methods of Calibration for Displacement and Volumetric Tank Provers, Part 2—Determination of the Volume of Displacement and Tank Provers by the Waterdraw Method of Calibration

All prover volumes used to calibrate meters shall be determined by calibration and not by theoretical calculation. Volumetric provers have an exact reference volume, which has been determined by a recognized method of calibration. Techniques for the determination of this reference volume include the waterdraw, master meter, and gravimetric methods of calibration. This standard describes only the waterdraw method of calibration, which is used to accurately determine the calibrated volume of both displacement and tank provers. Pages: 92

Product Number: H409021 | Price: $197.00

Chapter 4.9.2 *

Methods of Calibration for Displacement and Volumetric Tank Provers, Part 2—Determination of the Volume of Displacement and Tank Provers by the Waterdraw Method of Calibration—Spanish

Spanish translation of Ch. 4.9.2.
Product Number: H4.9.201S | Price: $197.00

Chapter 4.9.3

Methods of Calibration for Displacement and Volumetric Tank Provers, Part 3—Determination of the Volume of Displacement Provers by the Master Meter Method of Calibration

Covers the procedures required to determine the field data necessary to calculate a base prover volume (BPV) of a field displacement prover by the master meter method for calibration. This standard applies to liquids that are typically determined by contract, regulatory requirement, the manufacturer, or the user’s calibration program. Throughout this document issues of traceability are addressed by references to National Institute of Standards and Technology (NIST). However, other appropriate national metrology institutes can be referenced. There is no intent to cover safety aspects of conducting the work described in this standard, and it is the duty of the user to be familiar with all applicable safe work practices. It is also the duty of the user to comply with all existing federal, state, or local regulations (e.g., the Occupational Safety and Health Administration (OSHA)) that govern the types of activities described in this standard, and to be familiar with all such safety and health regulations. Pages: 38

1st Edition | October 2010 | Reaffirmed: September 2021
Product Number: H4090401 | Price: $90.00

Chapter 4.9.3 *

Methods of Calibration for Displacement and Volumetric Tank Provers, Part 3—Determination of the Volume of Displacement Provers by the Master Meter Method of Calibration—Spanish

Spanish translation of Ch. 4.9.3.
1st Edition | April 2010 | Reaffirmed: March 2015
Product Number: H409031 | Price: $80.00

Chapter 4.9.4

Methods of Calibration for Displacement and Volumetric Tank Provers, Part 4—Determination of the Volume of Displacement and Tank Provers by the Gravimetric Method of Calibration (includes Errata 1 dated August 2016)

Covers the specific procedures, equipment, and calculations required to determine the base prover volume of both tank and displacement provers by the gravimetric method of calibration. This standard presents both USC and SI units and may be implemented in either system of units. The presentation of both units is for the convenience of the user and is not necessarily the exact conversions. The system of units to be used is typically determined by contract, regulatory requirement, the manufacturer, or the user’s calibration program. Throughout this document issues of traceability are addressed by references to National Institute of Standards and Technology (NIST). However, other appropriate national

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Chapter 5.2 *
Measurement of Liquid Hydrocarbons by Displacement Meters—Spanish

Spanish translation of Ch. 5.2.
33rd Edition | October 2005 | Reaffirmed: December 2020
Product Number: H50203SP | Price: $95.00

Chapter 5.3
Measurement of Liquid Hydrocarbons by Turbine Meters
(includes Addendum 1 dated July 2009)

Defines the application criteria for turbine meters and discusses appropriate considerations regarding the liquids to be measured. Discusses the installation of a turbine metering system and the performance, operation, and maintenance of turbine meters in liquid hydrocarbon service. Includes "Selecting a Meter and Accessory Equipment" and information on the recommended location for proper connections. Pages: 11
Product Number: H50305 | Price: $115.00

Chapter 5.3 *
Measurement of Liquid Hydrocarbons by Turbine Meters—Russian
(includes Addendum 1 dated July 2009)

Russian translation of Ch. 5.3.
Product Number: H50305R | Price: $115.00

Chapter 5.3 *
Measurement of Liquid Hydrocarbons by Turbine Meters—Spanish
(includes Addendum 1 dated July 2009)

Spanish translation of Ch. 5.3, including Addendum 1 dated July 2009.
Product Number: H50305SP | Price: $115.00

Chapter 5.4
Accessory Equipment for Liquid Meters
(includes Errata 1 dated May 2015)

Describes the characteristics of accessory equipment used with displacement and turbine meters in liquid hydrocarbon service. Includes guidance on the use of electronic flow computers. Pages: 8
Product Number: H05044 | Price: $102.00

Chapter 5.4 *
Accessory Equipment for Liquid Meters—Russian
(includes Errata 1 dated May 2015)

Russian translation of Ch. 5.4.
Product Number:H05044R | Price: $102.00

Chapter 5.4 *
Accessory Equipment for Liquid Meters—Spanish
(includes Errata 1 dated May 2015)

Spanish translation of Ch. 5.4.
Product Number:H05044SP | Price: $102.00

Chapter 5.5 *
Fidelity and Security of Flow Measurement Pulsed-Data Transmission Systems

Serves as a guide for the selection, operation, and maintenance of various types of pulsed-data, cabled transmission systems for fluid metering systems to provide the desired level of fidelity and security of transmitted flow pulse data. This publication does not endorse or advocate the preferential use of any specific type of equipment or systems, nor is it intended to restrict future development of such equipment. Pages: 8
Product Number: H50502 | Price: $76.00

Chapter 5.5 *
Fidelity and Security of Flow Measurement Pulsed-Data Transmission Systems—Spanish

Spanish translation of Ch. 5.5.
Product Number: H50502SP | Price: $76.00

Chapter 5.6
Measurement of Liquid Hydrocarbons by Coriolis Meters

Provides guidance for the specification, installation, verification, and operation of Coriolis meters used to dynamically measure liquid hydrocarbons. The document also includes information that will assist in troubleshooting and improving the performance of the meters. Pages: 65
2nd Edition | December 2021
Product Number: H05062 | Price: $250.00

Chapter 5.8
Measurement of Liquid Hydrocarbons by Ultrasonic Flow Meters
(includes Errata 1 dated February 2014)
(ANSI/API MPMS Ch. 5.8-2011)

Defines the application criteria for ultrasonic flowmeters (UFMs) and addresses the appropriate considerations regarding the liquids to be measured. This document addresses the installation, operation, and maintenance of UFMs in liquid hydrocarbon service. The field of application of this standard is the dynamic measurement of liquid hydrocarbons. While this document is specifically written for custody transfer measurement, other acceptable applications may include allocation measurement, check meter measurement, and leak detection measurement. This document only pertains to spool type, multi-path ultrasonic flow meters with permanently affixed acoustic transducer assemblies. Pages: 23
2nd Edition | November 2011 | Reaffirmed: May 2017
Product Number: H050802 | Price: $94.00

Chapter 5.8 *
Measurement of Liquid Hydrocarbons by Ultrasonic Flow Meters—Russian
(ANSI/API MPMS Ch. 5.8-2011)

Russian translation of Ch. 5.8.
2nd Edition | November 2011 | Reaffirmed: May 2017
Product Number: H050802R | Price: $94.00

Chapter 5.8 *
Measurement of Liquid Hydrocarbons by Ultrasonic Flow Meters—Spanish
(ANSI/API MPMS Ch. 5.8-2011)

Spanish translation of Ch. 5.8.
2nd Edition | November 2011 | Reaffirmed: May 2017
Product Number: H050802SP | Price: $94.00

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Chapter 6
Metering Assemblies
Discussion of the design, installation, and operation of metering systems for coping with special situations in hydrocarbon measurement.

Chapter 6.1A
Metering Assemblies—General Considerations
Part of a set of documents that detail the design, installation, calibration, and operation of a liquid flow metering system comprised of equipment used for the custody transfer of liquid hydrocarbons; Ch. 6.1A is common to all sections of API MPMS Ch. 6 and specifies the common requirements for system criteria. Pages: 27

Chapter 6.2
Loading Rack Metering Systems
Serves as a guide in the selection, installation, and operation of loading rack metering systems for petroleum products, including liquefied petroleum gas. This standard does not endorse or advocate the preferential use of any specific type of metering system or meter. Pages: 30

Chapter 6.2 *
Loading Rack Metering Systems—Spanish
Spanish translation of Ch. 6.2.

Chapter 6.3A
Metering Assemblies—Pipeline and Marine Loading/Unloading Measurement Systems
Part of a set of documents that detail the minimum requirements for the design, selection, and operation of pipeline and marine loading and unloading metering systems for single phase liquid hydrocarbons. Pages: 45

Chapter 6.4A ■
Lease Automatic Custody Transfer (LACT) Systems
(supersedes Ch. 6.1 and Ch. 6.7)
Part of a set of documents that detail the minimum requirements for metering systems in single-phase liquid applications. This standard details the specific requirements for the design, selection, and operation of lease automatic custody transfer (LACT) metering systems. Pages: 30

Chapter 6.5
Metering Systems for Loading and Unloading Marine Bulk Carriers
Deals with the operation and special arrangements of meters, provers, manifolding, instrumentation, and accessory equipment used for measurement during loading and unloading of marine bulk carriers. Pages: 6

Chapter 6.6
Pipeline Metering Systems
Provides guidelines for selection of the type and size of meters to be used to measure pipeline oil movements, as well as the relative advantages and disadvantages of the methods of proving meters by tank prover, conventional pipe prover, small volume prover, and master meter. It also includes discussion on obtaining the best operating results from a pipeline-meter station. Pages: 9

Chapter 7.1
Liquid-In-Glass Thermometers
Describes how to correctly use various types of liquid-in-glass thermometers to accurately determine the temperatures of hydrocarbon liquids. Other methods, equipment, and procedures for temperature determination are described in the other sub-sections of Ch. 7. This chapter describes the methods, equipment, and procedures for manually determining the temperature of liquid petroleum and petroleum products with liquid-in-glass thermometers. This chapter discusses temperature measurement requirements in general for custody transfer, inventory control, and marine measurements. The actual method and equipment selected for temperature determination are left to the agreement of the parties involved. Pages: 37

Chapter 7.2
Portable Electronic Thermometers
(includes Errata 1 dated January 2021 and Errata 2 dated June 2023)
Describes the methods, equipment, and procedures for manually determining the temperature of liquid petroleum and petroleum products by use of a portable electronic thermometer (PET). This chapter discusses temperature measurement requirements in general for custody transfer, inventory control, and marine measurements. The actual method and equipment selected for temperature determination are left to the agreement of the parties involved. The manual method covers:

- nonpressurized tanks and nonpressurized marine vessels;
- gas-blanketed tanks and gas-blanketed marine vessels.

It does not cover hydrocarbons under pressures in excess of 21 kPa (3 psi gauge) or cryogenic temperature measurement, unless the tank is equipped with a thermowell. Pages: 30

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petroleum systems and cryogenic liquids. However, such systems require the use of an automatic method. Automatic temperature measurement is discussed for custody transfer and inventory control for both onshore and marine measurement applications.

The application of this standard is restricted to automatic methods for the determination of temperature using fixed automatic tank thermometers (ATTs) for hydrocarbons having a Reid vapor pressure at or below 101.325 kPa (14.696 psia).

Although not included in the scope, requirements in this standard can be used for other fluids and other applications including petroleum liquids having Reid vapor pressures in excess of 101.325 kPa (14.696 psia) and inert gas systems and cryogenic liquids. However, such applications can require different performance and installation specifications.

### Chapter 7.3
#### Fixed Automatic Tank Temperature Systems

Describes the methods, equipment, and procedures for determining the temperature of petroleum and petroleum products under static conditions by the use of an automatic method. Automatic temperature measurement is discussed for custody transfer and inventory control for both onshore and marine measurement applications.

Temperatures of hydrocarbon liquids under static conditions can be determined by measuring the temperature of the liquid at specific locations. Examples of where static temperature determination is required include storage tanks, ships, and barges.

The application of this standard is restricted to automatic methods for the determination of temperature using fixed automatic tank thermometers (ATTs) having a Reid vapor pressure at or below 101.325 kPa (14.696 psia).

Although not included in the scope, requirements in this standard can be used for other fluids and other applications including petroleum liquids having Reid vapor pressures in excess of 101.325 kPa (14.696 psia) and inert gas systems and cryogenic liquids. However, such applications can require different performance and installation specifications.

### Chapter 7.4
#### Dynamic Temperature Measurement

Describes methods, equipment, installation, and operating procedures for the proper determination of the temperature of hydrocarbon liquids under dynamic conditions in custody transfer applications. This standard describes the accuracy requirement and the calibration of the temperature measurement equipment.

This standard does not cover dynamic temperature measurement of refrigerated, light hydrocarbon fluids or cryogenic liquids.

### Chapter 7.5/ISO 8310:2012
#### Automatic Tank Temperature Measurement Onboard Marine Vessels Carrying Refrigerated Hydrocarbon and Chemical Gas Fluids

(ANSI/API MPMS Ch. 7.5)

Specifies the essential requirements and verification procedures for automatic tank thermometers (ATTs) consisting of platinum resistance thermometers (PRT) and an indicating device used for custody transfer measurement of liquefied natural gas, liquefied petroleum, and chemical gases on board ships. Temperature detectors other than PRT are considered acceptable for use in the custody transfer service of liquefied gases if they meet the performance requirements of this document and are approved by national regulations.

This standard does not cover dynamic temperature measurement of refrigerated, light hydrocarbon fluids or cryogenic liquids.

### Chapter 8
#### Sampling

Covers standardized procedures for sampling petroleum and petroleum products.

### Chapter 8.1
#### Standard Practice for Manual Sampling of Petroleum and Petroleum Products

(ASTM D4057)

Covers procedures and equipment for manually obtaining samples of liquid petroleum and petroleum products, crude oils, and intermediate products from the sample point into the primary container. The practice also provides additional specific information about sample container selection, preparation, and sample handling.


### Chapter 8.2
#### Standard Practice for Automatic Sampling of Petroleum and Petroleum Products

(ASTM D4177)

Describes general procedures and equipment for automatically obtaining samples of liquid petroleum and petroleum products, crude oils, and intermediate products from the sample point into the primary container. The practice also provides additional specific information about sample container selection, preparation, and sample handling.


### Chapter 8.3
#### Standard Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products

Covers handling, mixing, and conditioning procedures that are required to ensure that a representative sample of the liquid petroleum or petroleum product is delivered from the primary sample container or container or both into the analytical apparatus or into intermediate containers.

2nd Edition | September 2019 | Product Number: H08032 | Price: $69.00

### Chapter 8.3 *
#### Standard Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products—Russian

Russian translation of Ch. 8.3.

2nd Edition | September 2019 | Product Number: H08032R | Price: $69.00

### Chapter 8.4
#### Standard Practice for Sampling and Handling of Fuels for Volatility Measurement

(ASTM D5842)

Covers procedures and equipment for obtaining, mixing, and handling representative samples of volatile fuels for the purpose of testing for compliance with the standards set forth for volatility related measurements applicable to light fuels. The applicable dry vapor pressure equivalent range of this practice is 13 to 110 kPa (2 to 16 psia).

This practice is applicable to the sampling, mixing, and handling of reformulated fuels including those containing oxygenates. This practice is not applicable to crude oil. For the sampling of crude oil, refer to Ch. 8.1, Ch. 8.2, and Ch. 8.3.

5th Edition | May 2020 | Product Number: H80405 | Price: $50.00

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Chapter 8.4 *
Standard Practice for Sampling and Handling of Fuels for Volatility Measurement—Russian
(ASTM D5842)
Russian translation of Ch. 8.4.
5th Edition | May 2020 | Product Number: H08045R | Price: $50.00

Chapter 8.5
(ASTM D8009)
Includes the equipment and procedures for obtaining a representative sample of “live” or high vapor pressure crude oils, condensates, and/or liquid petroleum products from low pressure sample points, where there is insufficient sample point pressure to use a Floating Piston Cylinder (FPC).
2nd Edition | September 2022 | Product Number: H8.502 | Price: $60.00

Chapter 8.6/ISO 8943
Refrigerated Light Hydrocarbon Fluids—Sampling of Liquefied Natural Gas—Continuous and Intermittent Methods
(ANSI/API MPMS Ch. 8.6-2020)
Specifies methods for the continuous and the intermittent sampling of liquefied natural gas (LNG) while it is being transferred through an LNG transfer line.
This edition of Ch. 8.6 is the modified national adoption of ISO 8943.
Pages: 31
1st Edition | May 2020 | Product Number: H08061 | Price: $110.00

Chapter 8.6/ISO 8943 *
Refrigerated Light Hydrocarbon Fluids—Sampling of Liquefied Natural Gas—Continuous and Intermittent Methods—Spanish
(ANSI/API MPMS Ch. 8.6-2020)
Spanish translation of Ch. 8.6.

Chapter 9
Density Determination
Describes the standard methods and apparatus used to determine the specific gravity of crude oil and petroleum products normally handled as liquids.

Chapter 9.1
Standard Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
(ASTM D1298)
Covers the laboratory determination, using a glass hydrometer in conjunction with a series of calculations, of the density, relative density, or API gravity of crude petroleum, petroleum products, or mixtures of petroleum and nonpetroleum products normally handled as liquids and having a Reid vapor pressure of 101.325 kPa (14.696 psi) or less. Values are determined at existing temperatures and corrected to 15 °C or 60 °F by means of a series of calculations and international standard tables.
The initial hydrometer readings obtained are uncorrected hydrometer readings and not density measurements. Readings are measured on a hydrometer at either the reference temperature or at another convenient temperature, and readings are corrected for the meniscus effect, the thermal glass expansion effect, alternate calibration temperature effects, and to the reference temperature by means of volume correction factors; values obtained at other than the reference temperature being hydrometer readings and not density measurements.
Readings determined as density, relative density, or API gravity can be converted to equivalent values in the other units or alternate reference temperatures by means of Interconversion Procedures (Ch. 11.5) or volume correction factors (Ch. 11.1), or both, or tables, as applicable. Pages: 8
3rd Edition | December 2012 | Reaffirmed: May 2017
Product Number: H09013 | Price: $45.00

Chapter 9.2
Standard Test Method for Density or Relative Density of Light Hydrocarbons by Pressure Hydrometer
(ASTM D1657)
Covers the determination of the density or relative density of light hydrocarbons including liquefied petroleum gases (LPG) having Reid vapor pressures exceeding 101.325 kPa (14.696 psi). Pages: 13

Chapter 9.3
(ASTM D6822)
Covers the determination, using a glass thermohydrometer in conjunction with a series of calculations, of the density, relative density, or API gravity of crude petroleum, petroleum products, or mixtures of petroleum and nonpetroleum products normally handled as liquids and having a Reid vapor pressures of 101.325 kPa (14.696 psi) or less.
Values are determined at existing temperatures and corrected to 15 °C or 60 °F by means of a series of calculations and international standard tables.
The initial thermohydrometer readings obtained are uncorrected hydrometer readings and not density measurements. Readings are measured on a thermohydrometer at either the reference temperature or at another convenient temperature, and readings are corrected for the meniscus effect, the thermal glass expansion effect, alternate calibration temperature effects, and to the reference temperature by means of calculations and volume correction factors (Ch. 11.1).
Readings determined as density, relative density, or API gravity can be converted to equivalent values in the other units or alternate reference temperatures by means of Interconversion Procedures (Ch. 11.5) or volume correction factors (Ch. 11.1), or both, or tables, as applicable. Pages: 10
3rd Edition | December 2012 | Reaffirmed: May 2017
Product Number: H09033 | Price: $45.00

Chapter 9.4
Continuous Density Measurement Under Dynamic (Flowing) Conditions
(supersedes Ch. 14.6)
Covers the continuous on-line determination and application of flowing liquid densities for custody transfer. This standard covers liquid and dense phase fluids, including: natural gas liquids, refined products, chemicals, crude oil, and other liquid products commonly encountered in the petroleum industry. This document does not apply to the density measurement of natural gas, LNG, multiphase mixtures, semi-solid liquids such as asphalt, and solids such as coke and slurries. This standard also provides criteria and procedures for designing, installing, operating, and proving continuous on-line density measurement systems for custody transfer. This standard also discusses the different levels and requirements of accuracy for various applications. Pages: 135
1st Edition | January 2018 | Product Number: H09041 | Price: $168.00

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Chapter 10

Sediment and Water
Describes methods for determining the amount of sediment and water, either together or separately in petroleum products. Laboratory and field methods are covered.

Chapter 10.1
(ANSI/ASTM D473)
covers the determination of sediment in crude oils and fuel oils by extraction with toluene. The precision applies to a range of sediment levels from 0.01% to 0.40% mass, although higher levels may be determined. Pages: 13

Chapter 10.2
Standard Test Method for Water in Crude Oil by Distillation
(ASTM D4006)
Covers the determination of water in crude oil by distillation. The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard. Pages: 19
5th Edition | December 2022 | Product Number: H10.205 | Price: $63.00

Chapter 10.3
Standard Test Method for Water and Sediment in Crude Oil by the Centrifuge Method (Laboratory Procedure)
(ASTM D4007)
Describes the laboratory determination of water and sediment in crude oil by means of the centrifuge procedure. This centrifuge method for determining water and sediment in crude oil is not entirely satisfactory. The amount of water detected is almost always lower than the actual water content. When a highly accurate value is required, the revised procedures for water by distillation, Test Method D4006 (API MPMS Ch. 10.2), and sediment by extraction, Test Method D473 (API MPMS Ch. 10.1), shall be used. Pages: 21
5th Edition | December 2022 | Product Number: H10.305 | Price: $63.00

Chapter 10.4
Determination of Water and/or Sediment in Crude Oil by the Centrifuge Method (Field Procedure)
Describes the field centrifuge method for determining both water and sediment or sediment only in crude oil. This method may not always produce the most accurate results, but it is considered the most practical method for field determination of water and sediment. This method may also be used for field determination of sediment. Pages: 34
5th Edition | August 2020 | Product Number: H100405 | Price: $120.00

Chapter 10.5
Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation
(ASTM D95)
Covers the determination of water in the range from 0 to 25% volume in petroleum products, tars, and other bituminous materials by the distillation method. Volatile water-soluble material, if present, may be measured as water. The specific products considered during the development of this test method were asphalt, bitumen, tar, fuel oil, lubricating oil, lubricating oil additives, and greases. For bituminous emulsions refer to ASTM Test Method D244. For crude oils, refer to Ch. 10.2. Pages: 6
5th Edition | September 2013 | Reaffirmed: September 2018
Product Number: H100505 | Price: $45.00

Chapter 10.6
Standard Test Method for Water and Sediment in Fuel Oils by the Centrifuge Method (Laboratory Procedure)
(ASTM D1796)
Describes the laboratory determination of water and sediment in fuel oils in the range from 0% to 30% volume by means of the centrifuge procedure. Pages: 15

Chapter 10.8
Standard Test Method for Sediment in Crude Oil by Membrane Filtration
(ASTM D4807)
Covers the determination of sediment in crude oil by membrane filtration. This test method has been validated for crude oils with sediments up to approximately 0.15 mass%. The accepted unit of measure for this test method is mass%, but an equation to convert to volume% is provided. Pages: 5
Product Number: H100802 | Price: $42.00

Chapter 10.9
Standard Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration
(ASTM D4928)
Covers the determination of water in the range from 0.02 to 5.00 mass% or volume% in crude oils. Mercaptan (RSH) and sulfide (S¯ or H2S) as sulfur are known to interfere with this test method, but at levels of less than 500 μg/g (ppm(m)), the interference from these compounds is insignificant. This test method can be used to determine water in the range of 0.005 to 0.02 mass% range, but the effects of the mercaptan and sulfide interference at these levels has not been determined. For the range 0.005 to 0.02 mass%, there is no precision or bias statement. This test method is intended for use with standard commercially available coulometric Karl Fischer reagent. Pages: 6
3rd Edition | May 2013 | Reaffirmed: June 2018
Product Number: H10093 | Price: $45.00

Chapter 10.9 *
Standard Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration—Spanish
(ASTM D4928)
Spanish translation of Ch. 10.9.
3rd Edition | May 2013 | Reaffirmed: June 2018
Product Number: H10093SP | Price: $45.00

TR 2570
Continuous On-Line Measurement of Water Content in Petroleum (Crude Oil and Condensate)
Provides guidance for the application, installation, operation, verification, and proving of on-line water devices (OWDs) for use in the non-custody transfer measurement of water in crude oil and condensate. A joint API/Energy Institute (EI) standard, it also carries the EI designation Hydrocarbon Management, HM56. Pages: 17
1st Edition | October 2010 | Reaffirmed: January 2016
Product Number: H25701 | Price: $79.00

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Petroleum Measurement

To purchase individual API standards, visit apiwebstore.org

TR 2573
Standard Guide for Sediment and Water Determination in Crude Oil (ASTM D7829)
Covers a summary of the water and sediment determination methods from Ch. 10 for crude oils. The purpose of this guide is to provide a quick reference to these methodologies such that the reader can make the appropriate decision regarding which method to use based on the associated benefits, uses, drawbacks, and limitations. Pages: 7
1st Edition | September 2013 | Reaffirmed: September 2018
Product Number: H257301 | Price: $45.00

Chapter 11
Physical Properties Data (Volume Correction Factors)
Ch. 11 is the physical data that has direct application to volumetric measurement of liquid hydrocarbons. It is presented in equations relating volume to temperature and pressure, and computer subroutines. The subroutines for Ch. 11.1 are available in electronic form. These standards are not included in the complete set of measurement standards. Each element of Ch. 11 must be ordered separately.

Chapter 11.1
Standard Document and API 11.1 VCF Application
(the 2004 edition of this standard also supersedes Ch. 11.2.1 and Ch. 11.2.1M)
Provides the algorithm and implementation procedure for the correction of temperature and pressure effects on density and volume of liquid hydrocarbons that fall within the categories of crude oil, refined products, or lubricating oils. Natural gas liquids and liquefied petroleum gases are excluded from consideration in this standard. This document is distributed electronically in Portable Document Format (PDF) or as a hard copy, printed document.

An API 11.1 VCF Application for calculating VCF is also available. This Windows-based standalone application allows users to calculate volumes and densities at observed (RHOobs), base (RHOb), and alternate (RHOtp) conditions, combined (CPTL) and independent correction factors for temperature (CTL) and pressure (CPL). The application supports both U.S. Customary (API, °F, and psig) and SI (kg/m³, °C, kPag, and Barg) units of measure, Thermal Expansion Factor (alpha) regression calculator and a Table Generator. The API 11.1 VCF Application is distributed on flash drive or can be electronically downloaded.

The PDF or hard copy, printed document are sold without the VCF application through the API websites.
The API 11.1 VCF windows based standalone application and the standard in PDF or print are available to purchase by phone or email. Please contact Quorum Software at +1 (713) 430-8600 or send an e-mail to APIstandards@qbsol.com.

May 2004 | Product Number: H11013 | Reaffirmed: August 2018
2-Year Extension: March 2017
11.1 Standard Document | $260.00 per document
11.1 VCF Application | $568.00 per single user license
11.1 Standard Document + 11.1 VCF Application | $704.00
(15% discount when purchased together)
See the listing for “Chapter 11.1-1980” on page 179 of this Catalog for more information on the previous edition of the standard(s).

Chapter 11.1
Add-In Program for Microsoft® Excel
A Microsoft® Windows compatible 32-bit add-in for Microsoft® Excel that provides callable functions for density, correction for temperature and pressure of a liquid (CTPL), and compressibility coefficient (Fp). These functions allow calculating density at base conditions or at alternate conditions, CTPL correction factor used to transform volume and density data to base or desired conditions, and the scaled compensation factor for transformation from alternate to base conditions or from observed to base conditions for generalized crude oils, refined products and lubricating oils. They support the following process variables: density (API gravity, relative density, and kg/m³), temperature (°F and °C), and pressure (psig, bar, and kPa).

To order, contact Quorum Software at +1 (713) 430-8600 or send an e-mail to APIstandards@qbsol.com.

XL Add-In—installed on less than 15 standalone computers or ran on a network with less than 15 nodes | Price: $5,408.00
XL Add-In—installed on less than 50 standalone computers or ran on a network with less than 50 nodes | Price: $8,111.00
XL Add-In—installed on an unlimited number of standalone computers or ran on a network with unlimited nodes | Price: $11,897.00

Chapter 11.1
Dynamic Link Library (DLL)
The DLL is compiled from source code written in the C programming language. The DLL provides subroutines that can be called from applications written in C or other programming languages. These subroutines are subdivided into three groups (density, volume correction factors, and scaled compressibility factor) for generalized crude oils, refined products, and lubricating oils.
- The density subroutines have two sets of density functions allowing calculations at base conditions or at alternate conditions.
- The volume correction factor subroutines calculate a correction for the effect of temperature and pressure on a liquid (CTPL), correction for the effect of temperature on liquid (CPL), and correction for the effect of pressure on liquid (CPL), which are used to transform volume and density data to base or desired conditions.
- The scaled compressibility factor subroutines will convert from alternate to base conditions or from observed to base conditions.
The DLL supports the following process units, densities in API gravity, relative density, and kg/m³; temperatures in °F and °C, and pressures in psig, bar, and kPa. This version is compatible with and can coexist with the 1980 version DLL.

To order, contact Quorum Software at +1 (713) 430-8600 or send an e-mail to APIstandards@qbsol.com.

DLL—installed on less than 50 standalone computers or ran on a network with less than 50 nodes | Price: $16,223.00
DLL—installed on an unlimited number of standalone computers or ran on a network with unlimited nodes | Price: $21,630.00
DLL—compiled as part of an application for distribution (software distributor) Price: $32,445.00
Chapter 11.1
Source Code
ANSI C-Code used to compile the dynamic link libraries (DLLs). The source code may be compiled into user programs to calculate temperature and pressure volume correction factors for generalized crude oils, refined products, and lubricating oils.

NOTE An experienced C programmer will be needed to implement the C-Code subroutines. API does not directly provide technical support for the C-Code; however, a support program is available from Flow-Cal, Inc.

To order, contact Quorum Software at +1 (713) 430-8600 or send an e-mail to APIstandards@qbsol.com.

C-Code–compiled to run on a network with less than 50 nodes
Price: $24,334.00

C-Code–compiled to run on a network with unlimited nodes
Price: $32,445.00

C-Code–compiled as part of an application for distribution (software distributor) | Price: $48,668.00

Chapter 11.1
Source Code, DLL & XL Add-In—Combined
To order, contact Quorum Software at +1 (713) 430-8600 or send an e-mail to APIstandards@qbsol.com.

C-Code, DLL, and XL Add-In–compiled to run on a network with less than 50 nodes | Price: $29,741.00

C-Code, DLL, and XL Add-In–compiled to run on a network with unlimited nodes | Price: $40,016.00

C-Code, DLL, and XL Add-In–compiled as part of an application for distribution (software distributor) | Price: $56,650.00

Chapter 11.2
Data File of Chapters 11.2.2 and 11.2.2M
This package includes a data file of tables found in Ch. 11.2.2 and Ch. 11.2.2M. The tables, presented in both U.S. customary (USC) and metric (SI) units, cover compressibility factors for light hydrocarbons.

1st Edition | August 1984 | Product Number: H27320 | Price: $321.00

Chapter 11.2.2
Compressibility Factors for Hydrocarbons: 0.350-0.637 Relative Density (60 °F/60 °F) and -50 °F to 140 °F Metering Temperature
Provides tables to correct hydrocarbon volumes metered under pressure for the metered temperature. Contains compressibility factors related to the meter temperature and relative density (60 °F/60 °F) of the metered material. Pages: 246

2nd Edition | October 1986 | Reaffirmed: September 2017
Product Number: H27307 | Price: $185.00

Chapter 11.2.2M
Compressibility Factors for Hydrocarbons: 350–637 Kilograms per Cubic Meter Density (15 °C) and -46 °C to 60 °C Metering Temperature
Provides tables to correct hydrocarbon volumes metered under pressure to corresponding volumes at equilibrium pressure for the metered temperature. The standard contains compressibility factors related to the meter temperature and density (15 °C) of the metered material. Pages: 264

1st Edition | October 1986 | Reaffirmed: September 2017
Product Number: H27309 | Price: $185.00

Chapter 11.2.2M *
Compressibility Factors for Hydrocarbons: 350–637 Kilograms per Cubic Meter Density (15 °C) and -46 °C to 60 °C Metering Temperature—Russian
Russian translation of Ch. 11.2.2M.
1st Edition | October 1986 | Reaffirmed: September 2017
Product Number: H27309R | Price: $185.00

Chapter 11.2.4
Temperature Correction for the Volume of NGL and LPG Tables 23E, 24E, 53E, 54E, 59E, 60E (GPA 8217)
Consists of the implementation procedures for the correction of temperature effects on density and volume of natural gas liquids and liquefied petroleum gas. Sample tables, flow charts, and specific examples created from a computerized version of these implementation procedures are included. The examples provide guidance and checkpoints for those who wish to implement a computerized procedure to represent the standard, however these are not part of the actual standard.

This standard covers a 60 °F relative density range of 0.3500 to 0.6880, which nominally equates to a density at 15 °C of 351.7 kg/m 3 to 687.8 kg/m 3 and a density at 20 °C of 331.7 kg/m 3 to 683.6 kg/m 3. The temperature range of this standard is -50.8 °F to 199.4 °F (-46 °C to 93 °C). At all conditions, the pressure is assumed to be at saturation conditions (also known as bubble point or saturation vapor pressure).

Pages: 155

2nd Edition | June 2019 | Product Number: H1102042 | Price: $205.00

Chapter 11.2.4 *
Temperature Correction for the Volume of NGL and LPG Tables 23E, 24E, 53E, 54E, 59E, 60E—Russian
(GPA 8217)
Russian translation of Ch. 11.2.4.

Chapter 11.2.5
A Simplified Vapor Pressure Correlation for Commercial NGLs
(includes Errata 1 dated October 2023)
This revised standard is effective upon the date of publication and supersedes all previous revisions of the standard, including API MPMS 11.2.2A/GPA TP-15. Two methods used for calculation of the correction factor for pressure effects (Fp) were standardized by API: MPMS Chapter 11.2.1-1984 (now superseded by Chapter 11.1-2004 and MPMS Chapter 11.2.2-1986. These methods require a knowledge of the equilibrium bubble point pressure (vapor pressure) at the measured conditions. However, the vapor pressure of the process liquid is generally not measured. The vapor pressure can also be calculated from compositional information, but the composition is not always measured for natural gas liquids (NGLs). This document provides a simplified correlation for the vapor pressure of NGLs based upon normally measured. Pages: 32

2nd Edition | December 2020 | Product Number: H1102052 | Price: $110.00

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Chapter 11.3.2.1
Ethylene Density

Identifies an equation of state (EOS) suitable for use in custody transfer measurement of pure ethylene (>99 %) in the gaseous, liquid, and super critical phases. Given flowing temperature and pressure, an EOS is capable of calculating density and other thermodynamic properties used to calculate mass and volumetric flow of ethylene to custody transfer accuracy. All accuracy and uncertainty statements in this standard are limited to the EOS results and do not include the uncertainty added by the primary and secondary measuring equipment. Pages: 4

2nd Edition | May 2013 | Product Number: H1132102 | Price: $66.00

Chapter 11.3.3
Miscellaneous Hydrocarbon Product Properties—Denatured Ethanol Density and Volume Correction Factors

Covers density and volume correction factors for denatured fuel ethanol. Annex E of the Third Edition presents a method to determine the compressibility factor for ethanol. The actual standard consists of the explicit implementation procedures set forth in this document. Sample tables and other examples created from a computerized version of this implementation procedure are presented as examples only, and do not represent the standard.

This standard is applicable at any operating temperature to bulk (e.g. tank trucks, tank cargos, barges) denatured 95 % to 99 % fuel ethanol containing D4806 allowed denaturants (natural gasoline, gasoline blend stocks, and unleaded gasoline) and denatured 99+ % fuel ethanol containing less than 1 % denaturant. This standard does not apply to undenatured ethanol of any purity. Annex E extends the range of application to –40 to 60 °C (–40 to 140 °F) over the pressure range of 0 to 15 MPa (0 to 2200 psi). Pages: 29

3rd Edition | May 2019 | Product Number: H1103033 | Price: $160.00

Chapter 11.3.3 *
Miscellaneous Hydrocarbon Product Properties—Denatured Ethanol Density and Volume Correction Factors—Spanish

Spanish translation of Ch. 11.3.3.


Chapter 11.3.3.2
Propylene Compressibility

An electronic FORTRAN Source Code text file on CD-ROM that will produce a table of values applicable to liquid propylene in the following ranges: temperature, 30 °F to 165 °F, and saturation pressure to 1600 psia. It compiles the following two values: density (pounds per cubic foot) at flowing temperature and pressure, and ratio of density at flowing conditions to density at 60 °F and saturation pressure. A documentation file is also included.

January 1974 | Reaffirmed: October 2017

Product Number: H25656 | Price: $321.00

Chapter 11.3.4
Miscellaneous Hydrocarbon Product Properties—Denatured Ethanol and Gasoline Component Blend Densities and Volume Correction Factors

Covers density and volume correction factors for blends of denatured ethanol and gasoline blend components ranging from 0 % to 95 % denatured ethanol based upon calculation methods defined in API MPMS Chapter 11.1 and Chapter 11.3.3. Calculation of blends and denatured ethanol containing more than 95 % ethanol should use the calculation procedures within API MPMS Chapter 11.3.3.

The standard consists of correlations and algorithms for estimating the blend volume change at base conditions and for calculating volume correction factors of denatured ethanol and gasoline component blends.

This standard also provides the algorithms to estimate certain blend properties in blending situations where some of the required parameters are not measured.

This standard is applicable to blends containing denatured ethanol and gasoline blend components with 15.5 °C (60 °F) densities ranging from 680 to 800 kg/m³ (45.2 to 76.4 °API) containing between 0 % and 95 % by volume denatured ethanol over the temperature range of –40 °C to 50 °C (–40 °F to 122 °F) and pressure range of 0 to 10.34 MPa (0 to 1508 psig). Pages: 60

1st Edition | May 2019 | Product Number: H11030401 | Price: $180.00

TR 2580
Documentation Report and Data Files for: API MPMS Chapter 11.3.3 and API MPMS Chapter 11.3.4

Assembles and makes available the various foundational data and materials used in the development of API MPMS Chapter 11.3.3 and API MPMS Chapter 11.3.4. It includes the historical reports and spreadsheets used as is, without update or reconciliation for any later changes. This document does not extend, modify, or otherwise change anything in the standards as published by API.

Users should not attempt to develop their own implementations of the standard calculations from this document.

The user is directed to the published implementations in the standards. This document contains only the background materials, not the standards, nor any computer implementation of the standards. Only the final versions of materials have been included. Some graphs within the spreadsheets may not appear the same as in published documents because the authors may have changed settings or data filters in the spreadsheets subsequent to copying the graphs for publication.

Annex A through Annex G materials are available in files for download from API Publications for purchasers of this document. Annex H is included in this document. Pages: 33

1st Edition | May 2019 | Product Number: H258001 | Price: $220.00

Chapter 11.4.1

Specifies the density of water to be used in all applicable API MPMS standards. It also specifies the volume correction factor equation for water and demonstrates its use for water calibration of volumetric provers. Pages: 25

2nd Edition | July 2018 | Reaffirmed: August 2023

Product Number: H11412 | Price: $81.00

Chapter 11.4.1 *

Spanish translation of Ch. 11.4.1.

2nd Edition | July 2018 | Reaffirmed: August 2023

Product Number: H11412S | Price: $81.00

Chapter 11.5
Density/Weight/Volume Intraconversion

[includes Errata 1 dated September 2011 (updated September 2013)]

[replaces Ch. 11.1-1980 Volumes XI/XII (ASTM D1250-80, IP 200/80)]

These intraconversion tables are applicable to all crude oils, petroleum products, and petrochemicals. These standards are intended for application to bulk liquid quantities. Ch. 11.5, Parts 1 to 3 are available collectively on one CD-ROM.

1st Edition | March 2009 | Reaffirmed: March 2015

Product Number: H1105CD | Price: $268.00

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Chapter 11.5.1
Part 1—Conversions of API Gravity at 60 °F
Provides implementation procedures for conversion of API gravity at 60 °F to equivalent densities in both in vacuo and in air values. This standard gives the following equivalents for any value of API gravity at 60 °F:

- relative density at 60 °F (old Table 3);
- absolute density at 60 °F;
- absolute density at 15 °C (old Table 3);
- pounds per U.S. gallon at 60 °F in vacuo and in air (old Table 8);
- U.S. gallons per pound at 60 °F in vacuo and in air (old Table 8);
- short tons per 1000 U.S. gallons at 60 °F in vacuo and in air (old Table 9);
- U.S. gallons per short ton at 60 °F in vacuo and in air (old Table 10);
- short tons per barrel at 60 °F in vacuo and in air (old Table 9);
- barrels per short ton at 60 °F in vacuo and in air (old Table 10);
- long tons per 1000 U.S. gallons at 60 °F in vacuo and in air (old Table 11);
- U.S. gallons per long ton at 60 °F in vacuo and in air (old Table 12);
- long tons per barrel at 60 °F in vacuo and in air (old Table 11);
- barrels per long ton at 60 °F in vacuo and in air (old Table 12);
- metric tons per 1000 U.S. gallons at 60 °F in vacuo and in air (old Table 13);
- metric tons per barrel at 60 °F in vacuo and in air (old Table 13);
- barrels per metric ton at 60 °F in vacuo and in air;
- cubic metres per short ton at 15 °C in vacuo and in air (old Table 14);
- cubic metres per long ton at 15 °C in vacuo and in air (old Table 14).

While not related to API gravity, the following are included for user convenience:

- U.S. gallons at 60 °F to litres at 15 °C (old Table 4);
- barrels at 60 °F to litres at 15 °C (old Table 4).

Chapter 11.5.2
Part 2—Conversions for Relative Density (60/60 °F)
Provides implementation procedures for conversion of relative density (60/60 °F) to equivalent densities in both in vacuo and in air values. This standard gives the following equivalents for any value of relative density (60/60 °F):

- API gravity at 60 °F (old Table 21);
- absolute density at 60 °F;
- absolute density at 15 °C (old Table 21);
- pounds per U.S. gallon at 60 °F in and in air (old Table 26);
- U.S. gallons per pound at 60 °F in vacuo and in air (old Table 26);
- short tons per 1000 U.S. gallons at 60 °F in vacuo and in air (old Table 27);
- U.S. gallons per short ton at 60 °F in vacuo and in air (old Table 28);
- short tons per barrel at 60 °F in vacuo and in air (old Table 27);
- barrels per short ton at 60 °F in vacuo and in air (old Table 28);
- long tons per 1000 U.S. gallons at 60 °F in vacuo and in air (old Table 29);
- U.S. gallons per long ton at 60 °F in vacuo and in air (old Table 30);
- long tons per barrel at 60 °F in vacuo and in air (old Table 29);
- barrels per long ton at 60 °F in vacuo and in air (old Table 30);
- metric tons per 1000 U.S. gallons at 60 °F in vacuo and in air;
- metric tons per barrel at 60 °F in vacuo and in air;
- barrels per metric ton at 60 °F in vacuo and in air;
- cubic metres per short ton at 15 °C in vacuo and in air (old Table 31);
- cubic metres per long ton at 15 °C in vacuo and in air (old Table 31).

While not related to relative density, the following are included for user convenience:

- U.S. gallons at 60 °F to litres at 15 °C (old Table 22);
- barrels at 60 °F to litres at 15 °C (old Table 22, Table 52).

Chapter 11.5.3
Part 3—Conversions for Absolute Density at 15 °C
Provides implementation procedures for conversion of absolute density at 15 °C to equivalent densities in both in vacuo and in air values. This standard gives the following equivalents for any value of absolute density at 15 °C:

- relative density at 15 °C;
- absolute density at 60 °F;
- relative density at 60 °F (old Table 51);
- API gravity at 60 °F (old Table 51);
- density at 15 °C (similar to old Table 56);
- conversion of apparent density at 15 °C to absolute density at 15 °C;
- cubic metres per metric ton at 15 °C in vacuo and in air (similar to old Table 56);
- cubic metres per short ton at 15 °C in vacuo and in air;
- cubic metres per long ton at 15 °C in vacuo and in air;
- pounds per U.S. gallon at 60 °F in vacuo and in air;
- U.S. gallons per pound at 60 °F in vacuo and in air;
- short tons per 1000 litres (cubic metres) at 15 °C in vacuo and in air (old Table 57);
- short tons per 1000 U.S. gallons at 60 °F in vacuo and in air;
- U.S. gallons per short ton at 60 °F in vacuo and in air;
- short tons per barrel at 60 °F in vacuo and in air;
- barrels per short ton at 60 °F in vacuo and in air;
- long tons per 1000 litres (cubic metres) at 15 °C in vacuo and in air (old Table 57);
- U.S. gallons per metric ton at 60 °F in vacuo and in air (old Table 58);
- barrels per metric ton at 60 °F in vacuo and in air;
- long tons per barrel at 60 °F in vacuo and in air;
- barrels per long ton at 60 °F in vacuo and in air.

While not related to relative density, the following are included for user convenience:

- litres at 15 °C to U.S. gallons at 60 °F;
- cubic metres at 15 °C to barrels at 60 °F (old Table 52).
Chapter 12
Calculation of Petroleum Quantities

Describes the standard procedures for calculating net standard volumes, including the application of correction factors and the importance of significant figures. The purpose of standardizing the calculation procedure is to achieve the same result regardless of which person or computer does the calculating.

Chapter 12.1.1
Calculation of Static Petroleum Quantities, Part 1—Upright Cylindrical Tanks and Marine Vessels

Guides the user through the steps necessary to calculate static liquid quantities, at atmospheric conditions, in upright cylindrical tanks and marine tank vessels. It defines terms employed in the calculation of static petroleum quantities. This document also specifies equations that allow the values of some correction factors to be computed. Fundamental to this process is the understanding that, in order for different parties to be able to reconcile calculations, they must start with the same basic information (tank capacity table, levels, temperatures, and so forth) regardless of whether the information is gathered automatically or manually. Pages: 52

Chapter 12.1.2
Calculation of Static Petroleum Quantities, Part 2—Calculation Procedures for Tank Cars

Describes the standardized method for calculating target loading quantities and actual loading quantities of liquids in tank cars. Also explained are the factors required for the calculations. This information is applicable to all crude oils, petroleum products, and petrochemicals (including LPGs and other liquefied gases) transported by rail tank car. It does not cover any products loaded or measured as solids. It defines the terms required to understand the calculations and provides instructions for their use; includes 13 calculation examples in Appendix E. Pages: 62
2nd Edition | February 2018 | Product Number: H121222 | Price: $128.00

Chapter 12.2
Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Correction Factors

(supersedes Ch. 12.2.1, Ch. 12.2.2, and Ch. 12.2.3)

Presents the calculation procedures for dynamic measurement tickets (meter tickets), and meter proving of devices with volumetric outputs. This document provides standardized calculation methods for the quantification of liquids and the determination of base prover volumes under defined conditions, regardless of the point of origin or destination or the units of measure required by governmental customs or statute. The criteria contained in this document allow different entities using various computer languages on different computer hardware (or manual calculations), to arrive at identical results using the same standardized input data. Pages: 69
2nd Edition | July 2021 | Product Number: H122022 | Price: $200.00

Chapter 12.2.5
Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Correction Factors, Part 5—Base Prover Volume Using Master Meter Method

(includes Ch. 12 Addendum 1 dated August 2007 and Errata 1 dated July 2009)

Provides standardized calculation methods for the quantification of liquids and the determination of base prover volumes under defined conditions, regardless of the point of origin or destination or units of measure required by governmental customs or statute. The criteria contained in this document allow different entities using various computer languages on different computer hardware (or manual calculations) to arrive at identical results using the same standardized input data. Pages: 108
Product Number: H12025 | Price: $184.00

Chapter 12.3
Calculation of Volumetric Shrinkage from Blending Light Hydrocarbons with Crude Oils

(includes Ch. 12 Addendum 1 dated August 2007)

Provides background, theory, calculation examples, and tables to correct for volumetric shrinkage resulting when blending volatile hydrocarbons with crude oil. The tables are entered with density differentials at standard conditions and percentage light hydrocarbon in total mix. This standard supersedes and replaces Bull 2509C, 2nd Edition, 1967. Pages: 110
1st Edition | July 1996 | Reaffirmed: July 2022
Product Number: H12031 | Price: $97.00

Chapter 12.4.1
Calculation of Petroleum Quantities—Base Prover Volume Determination—Waterdraw Volumetric Method

(supersedes Ch. 12.2.4)

Provides standardized calculation methods for the quantification of liquids and the determination of base prover volumes (BPVs) under defined conditions by waterdraw method, regardless of the point of origin or destination or units of measure required by governmental organizations. The criteria contained in this document allows different individuals, using various computer languages on different computer hardware (or manual calculations), to arrive at identical results using the same standardized input data. Pages: 97
1st Edition | September 2023
Product Number: H124101 | Price: $185.00

Chapter 13
Statistical Aspects of Measuring and Sampling

The more accurate petroleum measurement becomes, the more its practitioners stand in need of statistical methods to express residual uncertainties. This chapter covers the application of statistical methods to petroleum measurement and sampling.

Chapter 13.2
Methods of Evaluating Meter Proving Data

Establishes the basic concepts and procedures to estimate and report meter performance uncertainty in consistent and comparable ways. Pages: 40
2nd Edition | April 2018 | Product Number: H13022 | Price: $105.00

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Petroleum Measurement

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Ch. 13.3
Measurement Uncertainty
Establishes a methodology to develop uncertainty analyses for use in writing API Manual of Petroleum Measurement Standards (MPMS) documents that are consistent with the ISO GUM and NIST Technical Note 1297. This standard also supersedes Ch. 13.1, 1st Edition, 1985, which is withdrawn. Pages: 75

2nd Edition | December 2017 | Reaffirmed: December 2022
Product Number: H130302 | Price: $122.00

Chapter 13.3 *
Measurement Uncertainty—Spanish
Spanish translation of Ch. 13.3.

2nd Edition | December 2017 | Reaffirmed: December 2022
Product Number: H130302S | Price: $122.00

Chapter 14
Natural Gas Fluids Measurement
Standardizes practices for measuring, sampling, and testing natural gas fluids.

Chapter 14.1
Collecting and Handling of Natural Gas Samples for Custody Transfer (GPA 2166)
Provides comprehensive guidelines and procedures for properly extracting, collecting, conditioning, and handling a sample from a flowing natural gas stream at or above its dew point temperature and that represents the composition of the vapor-phase portion of the source fluid. This standard considers spot, composite, continuous, online, and mobile sampling systems and does not include sampling of liquid or multiphase streams. Pages: 110

8th Edition | September 2022
Product Number: H14.108 | Price: $294.00

Chapter 14.3.1
Provides a single reference for engineering equations, uncertainty estimations, construction and installation requirements, and standardized implementation recommendations for the calculation of flow rate through concentric, square-edged, flange-tapped orifice meters. Both U.S. customary (USC) and international system of units (SI) units are included. The mass flow rate and base (or standard) volumetric flow rate equations are discussed, along with the terms required for solution of the flow equation. The empirical equations for the coefficient of discharge and expansion factor are also presented. This revision includes a change to the empirical expansion factor calculation for flange-tapped orifice meters. Pages: 58

Product Number: H1403014 | Price: $196.00

Chapter 14.3.2
Outlines the specification and installation requirements for the measurement of single-phase, homogeneous Newtonian fluids using concentric, square-edged, flange-tapped orifice meters. It provides specifications for the construction and installation of orifice plates, meter tubes, and associated fittings when designing metering facilities using orifice meters. Pages: 74

5th Edition | March 2016 | Product Number: H1403025 | Price: $204.00

Chapter 14.3.3
Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids—Concentric, Square-Edged Orifice Meters, Part 3: Natural Gas Applications (ANSI/API MPMS Ch. 14.3.3-2013) (AGA Report No. 3, Part 3)
Developed as an application guide for the calculation of natural gas flow through a flange-tapped, concentric orifice meter, using the U.S. customary (USC) inch-pound system of units. It also provides practical guidelines for applying Ch. 14.3, Parts 1 and 2, to the measurement of natural gas. Pages: 54

4th Edition | June 2021
Product Number: H1403034 | Price: $239.00

Chapter 14.3.4
Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids—Concentric, Square-Edged Orifice Meters Part 4—Background, Development, Implementation Procedure, and Example Calculations (AGA Report No. 3, Part 4)
Describes the background and development of the equation for the coefficient of discharge of flange-tapped square-edged concentric orifice meters and recommends a flow rate calculation procedure. The recommended procedures provide consistent computational results for the quantification of fluid flow under defined conditions, regardless of the point of origin or destination, or the units of measure required by governmental customs or statute. The procedures allow different users with different computer languages on different computing hardware to arrive at almost identical results using the same standardized input data. Pages: 112

4th Edition | October 2019 | Product Number: H1403044 | Price: $186.00

Chapter 14.4
Converting Mass of Natural Gas Liquids and Vapors to Equivalent Liquid Volumes (GPA 8173-17)
Prescribes a method for calculating liquid volumes at equilibrium pressures and at temperatures of 60 °F, 15 °C, and 20 °C from the mass of a natural gas fluid (liquid or vapor) measured at operating conditions, in conjunction with a representative compositional analysis and published values for each component’s molar mass and absolute density. Pages: 24

2nd Edition | June 2017 | Product Number: H140402 | Price: $71.00
Chapter 14.5 Calculation of Gross Heating Value, Relative Density, Compressibility and Theoretical Hydrocarbon Liquid Content for Natural Gas Mixtures for Custody Transfer (GPA 2172-09)

Chapter 14.12 Measurement of Gas by Vortex Meters

Chapter 14.7 Mass Measurement of Natural Gas Liquids and Other Hydrocarbons (GPA 8182-18)

Chapter 14.13 Simplified Metering System Design and Performance-Based Methodology for Non-Custody Gas Measurement

Chapter 14.9 Measurement of Natural Gas by Coriolis Meter (AGA Report No. 11)

Chapter 14.10 Measurement of Flow to Flares

Chapter 15 Guidelines for the Use of Petroleum Industry-Specific International System (SI) Units
Chapter 17

Marine Measurement

Provides guidelines for the measurement and reporting of hydrocarbons including but not limited to crude oil or petroleum product for transfers by shore terminal operators, vessel personnel, and other parties involved in cargo transfer measurement and accountability operations.

Chapter 17.1

Guidelines for Marine Cargo Inspection

Specifies the policy and minimum recommended practices for the manual and automatic measurement, sampling, and accounting for bulk quantities of crude oil (including spiked, blended, and reconstituted crude oil), petroleum products, and chemicals that are transported on marine vessels. The activities described in these guidelines include actions by producers, buyers, sellers, terminal operators, vessel owners and their crews, customs authorities, independent inspectors, and other parties with an interest in measurements. The purchase of this document includes Excel® spreadsheets of the Sample Forms in Annex A (including “Voyage Analysis Report,” which is available in API MPMS Ch. 17.5). The sample forms are designed to provide a guideline for recording and reporting essential data obtained during the marine cargo inspection procedure. Pages: 55

7th Edition | February 2022 | Product Number: H170107 | Price: $180.00

Chapter 17.1 *

Guidelines for Marine Cargo Inspection—Spanish

Spanish translation of Ch. 17.1.

7th Edition | February 2022 | Product Number: H170107S | Price: $180.00

Chapter 17.2

Measurement of Cargoes On Board Tank Vessels

The determination of the quantity and quality of cargo on board marine tank vessels is frequently complex. It is necessary to accurately gauge, ascertain the temperature of, collect samples of, and calculate the amount of all materials contained in the vessel’s lines, cargo tanks, and slop tanks. Other spaces on the vessel may also contain cargo, such as ballast tanks, double bottoms, cofferdams, and numerous other nondesignated cargo spaces, all of which have to be checked, and any volumes to be taken, the containers to be used, the care and distribution of the samples, and the analytical procedures of use in identifying sources of free water associated with marine petroleum cargo movements. Pages: 47


Chapter 17.3

Guidelines for Identification of the Source of Free Waters Associated with Marine Petroleum Cargo Movements

Provides guidelines for identifying the source of free waters associated with marine petroleum cargo movements. The presence of free water is a factor in marine custody transfers of bulk petroleum, especially in the case of crude oil cargoes. This standard recommends the water samples and volumes to be taken, the containers to be used, the care and distribution of the samples, and the analytical procedures of use in identifying sources of free water associated with marine petroleum cargoes. Pages: 29

2nd Edition | December 2016 | Reaffirmed: July 2021

Product Number: H170302 | Price: $131.00

Chapter 17.4

Method for Quantification of Small Volumes on Marine Vessels (OBQ/ROB)

Provides a method for determining the small volumes of on board quantity prior to loading a vessel or material remaining on board a vessel upon completion of discharge. This standard applies only to quantification by manual gauging of small volumes on marine vessels prior to loading or upon completion of discharge. It does not address clingage, hydrocarbon vapors, cargoes in transit, or cargo pumpability. Refer to Ch. 3. Pages: 25

2nd Edition | September 2016

Product Number: H170402 | Price: $119.00

Chapter 17.5

Guidelines for Voyage Analysis and Reconciliation of Cargo Quantities

Covers guidelines for the reconciliation of marine cargo quantities. These guidelines are intended to provide a basis for analyzing and reconciling the quantity differences (gains/losses) resulting from marine custody transfer movement(s) of petroleum and petroleum product cargoes. As such, the guidelines are complementary to, but do not replace, normal inspection procedures. The purchase of this document includes a spreadsheet for determining voyage analysis and reconciliation of cargo quantities. Pages: 48

4th Edition | July 2019

Product Number: H170504 | Price: $180.00

Chapter 17.6

Guidelines for Determining Fullness of Pipelines Between Vessels and Shore Tanks

Describes procedures for determining or confirming the fill condition of pipeline systems used for the transfer of liquid cargoes before and/or after the liquid is loaded onto or discharged from marine vessels. While this standard primarily addresses pipelines between vessels and marine terminals, it can also be applied to pipelines involved in shore-to-shore transfers. It includes descriptions of methods and procedures that apply to crude oil and petroleum products. Pages: 18

3rd Edition | September 2022

Product Number: H17.603 | Price: $183.00

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Chapter 17.8
Guidelines for Pre-Loading Inspection of Marine Vessel Cargo Tanks and Their Cargo-Handling Systems

Specifies procedures for determining that the cargo tanks and associated cargo-handling system of marine vessels are in a suitably clean condition to receive the intended cargo. This applies to the loading of crude oil, petroleum products, and petrochemical cargoes. The extent of pre-loading inspection will vary depending on the nature of the cargo to be loaded. These guidelines recommend the extent of inspection that should be instituted for certain general types of cargoes and an example of a format that may be used for reporting the findings of tank inspections. Because of the wide variety of conditions that may exist when performing pre-loading tank inspections, this guideline is not intended to restrict the judgment of the person performing the inspection. Pages: 18
2nd Edition | August 2016 | Reaffirmed: January 2022
Product Number: H170802 | Price: $117.00

Chapter 17.8 *
Guidelines for Pre-Loading Inspection of Marine Vessel Cargo Tanks and Their Cargo-Handling Systems—Spanish

Spanish translation of Ch. 17.8.
2nd Edition | August 2016 | Reaffirmed: January 2022
Product Number: H170802S | Price: $117.00

Chapter 17.9
Vessel Experience Factor (VEF)

Provides a recommended practice for the calculation and application of a vessel experience factor (VEF). This standard provides guidelines for data compilation, data maintenance, data validation, and recommendations on the appropriate use of a VEF involving marine vessels. It also provides instruction for parcel tankers, compartmental VEFs, and vessel-to-vessel transfers. The methods are applicable to liquid bulk cargoes including crude oil, petroleum products, chemicals, and liquid petroleum gases. Pages: 30
3rd Edition | July 2019 | Product Number: H170903 | Price: $185.00

Chapter 17.10.1/ISO 10976:2015
Refrigerated Light Hydrocarbon Fluids—Measurement of Cargoes on Board Marine LNG Carriers
(ANSI/API MPMS Ch. 17.10.1)

Establishes all of the steps needed to properly measure and account for the quantities of cargoes on liquefied natural gas (LNG) carriers. This includes, but is not limited to, the measurement of liquid volume, vapor volume, temperature and pressure, and accounting for the total quantity of the cargo on board. This document describes the use of common measurement systems used on board LNG carriers, the aim of which is to improve the general knowledge and processes in the measurement of LNG for all parties concerned. This document provides general requirements for those involved in the LNG trade on ships and onshore. Pages: 64
2nd Edition | June 2021 | Product Number: HH171012 | Price: $180.00

Chapter 17.10.2
Measurement of Cargoes On Board Marine Gas Carriers, Part 2—Liquefied Petroleum and Chemical Gases
(includes Errata 1 dated March 2021)

Provides guidance to vessel and shore personnel regarding accepted methods for determining quantities of liquefied petroleum and chemical gas cargoes (excluding LNG) on board refrigerated and/or pressurized carriers. This standard covers all measurement systems commonly used on refrigerated and/or pressurized gas carriers designed to carry those types of cargoes and includes recommended methods for measuring, sampling, documenting, and reporting quantities on board these vessels. Pages: 80
2nd Edition | March 2016 | Product Number: H171022 | Price: $163.00

Chapter 17.11
Measurement and Sampling of Cargoes On Board Tank Vessels Using Closed and Restricted Equipment
(includes Errata 1 dated March 2017)

Provides guidance on the use, maintenance, and calibration of restricted and closed measurement and sampling equipment. It also provides guidance on preferred size and positioning for gauging and sampling fittings on vessels. A joint API/Energy Institute (EI) standard, it also carries the EI designation Hydrocarbon Management, HMS2. Pages: 19
2nd Edition | August 2016 | Product Number: H170112 | Price: $117.00

Chapter 17.11 *
Measurement and Sampling of Cargoes On Board Tank Vessels Using Closed and Restricted Equipment—Spanish
(includes Errata 1 dated March 2017)

Spanish translation of Ch. 17.11.
2nd Edition | August 2016 | Product Number: H170112S | Price: $117.00

Chapter 17.12
Procedures for Bulk Liquid Chemical Cargo Inspections

Provides systematic cargo measurement procedures for use primarily by cargo inspectors and to specify procedures directed at minimizing cargo contamination and losses, in the absence of, or in conjunction with, specific client guidelines. This document should be considered a summary of best practices used within the industry. A joint API/Energy Institute (EI) standard, it also carries the EI designation Hydrocarbon Management, HMS1. Pages: 66
2nd Edition | August 2015 | Product Number: H170122 | Price: $177.00

Chapter 17.12 *
Procedures for Bulk Liquid Chemical Cargo Inspections—Spanish

Spanish translation of Ch. 17.12.
2nd Edition | August 2015 | Product Number: H170122S | Price: $177.00

Chapter 17.14.1
Measurement of Bulk Cargoes by Draft Survey, Part 1: Ocean-Going Vessels

Describes the procedure for determining the transferred quantity of non-liquid petroleum products loaded onto or discharged from ocean-going vessels by draft survey. This procedure is not an alternative where effective static or dynamic liquid measurement methods can be used. Pages: 38
1st Edition | October 2019 | Product Number: H1714101 | Price: $160.00

*These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersede the English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.
Chapter 17.14.2
Measurement of Bulk Cargoes by Draft Survey, Part 2: Inland Barges
Describes the procedure for determining the transferred quantity of non-
liquid petroleum products loaded onto or discharged from inland barges
by draft survey.
This procedure is not an alternative where effective static or dynamic liquid
measurement methods can be used. Pages: 29
1st Edition | October 2019 | Product Number: H1714201 | Price: $150.00

Chapter 18
Custody Transfer
Covers application of other measurement standards to unique custody
transfer situations.

Chapter 18.1
Measurement Procedures for Crude Oil Gathered from Lease Tanks
by Truck
Contains procedures that are organized into a recommended sequence of
steps for manually gauging and determining the quantity and quality of crude
oil being gathered from lease tanks by truck. These procedures apply to the
custody transfer from lease storage tanks to the transporting truck. Pages: 24
3rd Edition | May 2018 | Reaffirmed: September 2023
Product Number: H180103 | Price: $131.00

Chapter 18.2
Custody Transfer of Crude Oil from Lease Tanks Using Alternative
Measurement Methods
Defines the minimum equipment and methods used to determine the
quantity and quality of crude oil being loaded from a lease tank to a truck
without requiring direct access to a lease tank gauge hatch. Methods and equipment described are grouped by tank zone, trailer zone,
and the transition zone between the two. The equipment used for measurement is dependent on the existing design of the lease equipment,
and the transition zone between the two. The equipment used for measurement is dependent on the existing design of the lease equipment,
the equipment used to transport the product, or a combination of the two.
Some sites may require measurements from multiple zones in order to
arrive at an accurate load quantity and quality.
This publication integrates by reference the API Manual of Petroleum
Measurement Standards (MPMS) for sampling, temperature determination, gauging, and quality testing into a framework that may be
applied during custody transfer of crude oil from lease tanks to a tank truck
without requiring direct access to a tank truck gauge hatch. Many of the
individual standards have guidelines defining the frequency and
tolerances for installation, verification, and calibration of the specified
equipment under controlled or ideal conditions allowing for uncertainty
within custody transfer requirements. However, with the conditions
encountered in many of today's applications, the installation, verification,
and calibration of measurement devices may have higher uncertainties
due to the operational characteristics and limited access available at the
lease site. In the interest of safety and environmental concerns, these
higher uncertainties may still provide acceptable measurement for custody
transfer of crude oil from lease tanks using the defined alternate methods.
The alternate measurement methods discussed in this standard are
intended to minimize uncertainty and bias while encouraging consistent
measurement and testing practices using existing technologies within API
standards. Pages: 29

Chapter 18.2 *
Custody Transfer of Crude Oil from Lease Tanks Using Alternative
Measurement Methods—Spanish
Spanish translation of Ch. 18.2.

Chapter 19
Evaporation Loss Measurement
Covers methods for estimating hydrocarbon evaporation losses from
various types of tanks.
NOTE Chapter 19 is not included in the complete set of measurement standards.

Chapter 19.1
Evaporative Loss from Fixed-Roof Tanks
(previously Publ 2518)
Contains methodologies for estimating the total evaporative losses of
hydrocarbons from fixed-roof tanks. The methodologies provide loss
estimates for general equipment types based on laboratory, test-tank, and
field-tank data.
Types of fixed-roof tanks and roof fittings described are for information
only. The equations estimate average annual losses from uninsulated
fixed-roof tanks for various liquid stocks, stock vapor pressures, tank sizes,
meteorological conditions, and operating conditions. The following special
cases are addressed.
• Horizontal tanks.
• Higher volatility stocks (true vapor pressure greater than 0.1 psia).
• Vent settings higher than 0.03 pounds (0.5 oz) per square inch.
The estimation may be improved by using detailed field information,
including climatic data and operational data for the appropriate time
period.
The equations are not intended to be used in the following applications.
• To estimate losses from unstable or boiling stocks or from petroleum
liquids or petrochemicals for which the vapor pressure is not known or
cannot readily be predicted (to calculate emissions from tanks that
contain material at or above their boiling point or the point at which
material starts to flash, the API model E&P Tank (Publ 4697) can be
used).
• To estimate losses from fixed-roof tanks which have an internal floating
roof. Ch. 19.2 and TR 2569 address these.
• To estimate losses from fixed-roof tanks which have either roof or shell
insulation.
• To estimate losses from cleaning fixed-roof tanks. TR 2568 addresses
this. Pages: 38
5th Edition | June 2017 | Reaffirmed: July 2022
Product Number: H190105 | Price: $168.00

Chapter 19.1D
Documentation File for API Manual of Petroleum Measurement
Standards Chapter 19.1—Evaporative Loss from Fixed-Roof Tanks
(previously Bulletin 2518)
(includes Errata 1 dated June 1994)
Presents information on the development of theoretical equations;
comparisons with test data; a sensitivity analysis of the loss equation; and
other pertinent information that was developed during the preparation of
Ch. 19.1. Pages: 190
1st Edition | March 1993 | Product Number: H30553 | Price: $185.00

*These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersede the English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.
Chapter 19.2
Evaporative Loss from Floating-Roof Tanks
(Preceding Publ 2517 and Publ 2519)
Contains methodologies for estimating the total evaporative losses of hydrocarbons from external floating-roof tanks (EFRTs), freely vented internal floating-roof tanks (IFRTs), and domed external floating-roof tanks (domed EFRTs). The methodologies provide loss estimates for general equipment types based on laboratory, test-tank, and field-tank data. Types of floating roofs, rim-seal systems, and deck fittings are described for information only.

The equations estimate average annual losses from floating-roof tanks for various types of tank construction, floating-roof construction, rim-seal systems, and deck fittings, as well as for various liquid stocks, stock vapor pressures, tank sizes, and wind speeds (EFRTs).

The equations were developed for:

- stocks with a true vapor pressure greater than approximately 0.1 psia,
- average wind speeds ranging from 0 miles per hour (mph) to 15 mph (EFRTs), and
- tank diameters greater than 20 ft.

The estimation techniques become more approximate when these conditions are not met.

When this standard is used to estimate losses from non-freeely vented (closed vent) internal or domed external floating-roof tanks (tanks vented only through a pressure-vacuum relief vent, blanketed with an inert gas, vented to a vapor processing unit, or otherwise restricted from being freely vented), refer to the methodology in TR 2569.

The equations are not intended to be used in the following applications:

- To estimate losses from unstable or boiling stocks (i.e., stocks with a true vapor pressure greater than the atmospheric pressure at the tank location) or from petroleum liquids or petrochemicals for which the vapor pressure is not known or cannot readily be predicted.
- To estimate losses from tanks in which the materials used in the rim seal, deck fittings, or deck seams have either deteriorated or been significantly permeated by the stored stock.
- To estimate losses from storage tanks that do not have a floating roof.
- To estimate losses from landing floating roofs (TR 2567 addresses this).
- To estimate losses from cleaning storage tanks (TR 2568 addresses this).

The 3rd Edition of Ch. 19.4 was published following a revision that was carried out concurrently with revisions to Ch. 19.1, published as the 4th Edition, and Ch. 19.2, published as the 3rd Edition. Primary changes are as follows:

- Consolidation of common material in Ch. 19.4. Material that had previously been included in both Ch. 19.1 and Ch. 19.2 has been moved to Ch. 19.4. Ch. 19.4, which was previously Recommended Practice for Speciation of Evaporative Losses, now has the title Evaporative Loss Reference Information and Speciation Methodology. This chapter had already contained reference information on the properties of chemicals and typical petroleum liquids, and this information has now been removed from Ch. 19.1 and Ch. 19.2. In addition, meteorological data have been moved from Ch. 19.1 and Ch. 19.2 to Ch. 19.4. In the revised documents:
  - meteorological data are found in Ch. 19.4;
  - calculation of storage tank temperatures is found in Ch. 19.1 and Ch. 19.2 (in that fixed-roof tanks involve calculation of the vapor space temperature in order to determine vapor density, whereas this step is not involved in estimating emissions from floating-roof tanks); and
  - calculation of true vapor pressure is found in Ch. 19.4 (in that this is now calculated in the same manner for both fixed- and floating-roof tanks). Pages: 110
Chapter 19.3, Part H
Specification for Establishing Evaporative Loss Factors for Floating-Roof Tank Devices

Illustrates how other standards of the API MPMS Ch. 19.3 series are integrated into an overall loss factor development program to enable the user to develop a loss factor for a given floating-roof device. This standard presents procedures for the evaluations to be performed under such a program, including preparation for protocol testing of individual devices, monitoring of the tests, and analysis and reporting of test results for the purposes of establishing evaporative loss factors. Pages: 69

2nd Edition | April 2022 | Product Number: H1903H02 | Price: $146.00

Chapter 19.4
Evaporative Loss Reference Information and Speciation Methodology

Provides methodology to estimate emissions of individual hydrocarbon species using the total emissions of multicomponent hydrocarbon mixtures (such as crude oils and gasoline) estimated from Ch. 19.1 for fixed-roof tanks, Ch. 19.2 for floating-roof tanks, Ch. 19.5 for marine vessels, and many other methods used for total hydrocarbon emission estimates. This process is referred to as speciation. Emission of hydrocarbon mixtures accounts for the higher evaporation rate of the more volatile components, resulting in a different composition of the mixture in the vapor phase than in the liquid phase. The methodology presented in this standard assumes that there is sufficient liquid present such that the chemical composition at the liquid surface may be considered to not change as a result of the evaporative loss. This standard also contains reference information used for estimating emissions in accordance with Ch. 19.1 and Ch. 19.2, and Ch. 19.5. Pages: 135


Chapter 19.5
Atmospheric Hydrocarbon Emissions from Marine Vessel and Land-Based Transfer Operations

Provides methods for estimating evaporative loss from marine vessel transfer operations. Specifically, this standard addresses loading stock into ship or ocean barges or shallow draft barges, and loading ballast water into ship or ocean barges from which crude oil has been unloaded. Pages: 64

2nd Edition | July 2023 | Product Number: H190502 | Price: $208.00

Chapter 19.6.1
Evaporative Loss from Storage Tank Floating-Roof Landings
(formerly TR 2567)

Investigates storage tank emissions that may result from landing and subsequently refloating a floating roof. The existing emission factors for floating-roof tanks are based on the assumption that the floating roof is continuously floating on the stored stock liquid. Additional emissions may occur, however, if the tank is emptied such that the floating roof is no longer floating. This study sought to quantify these floating-roof landing loss emissions. Pages: 38

1st Edition | February 2017 | Reaffirmed: December 2022
Product Number: H1906011 | Price: $136.00

Chapter 19.6.2
Evaporative Loss from the Cleaning of Storage Tanks

Provides guidance for estimating emissions that result from forced ventilation of storage tanks such as may occur while removing the liquid heel (free-standing stock liquid) and cleaning the remaining deposits of stock liquid mixed with residue and water (sludge) from the bottoms of aboveground storage tanks.

The emissions addressed in this report are those that leave the tank during forced ventilation. This standard does not address:

- the fate of vapors after they have left the tank (other than accounting for the efficiency of a control device, as discussed in Section 8);
- the fate of sludge after it has left the tank (or emissions that may occur during sludge treatment or disposal); or
- emissions that may be expelled by the vacuum pump of a vacuum truck or suction pump, if such devices are used in the tank cleaning process.

Pages: 88

1st Edition | September 2019 | Product Number: H1906021 | Price: $150.00

Publ 2524
Impact Assessment of New Data on the Validity of American Petroleum Institute Marine Transfer Operation Emission Factors

Consultant CH2M Hill confirmed the validity of the model used in Publ 2514A by comparing emission test data with predictive emission models developed by API, ARCO, and Exxon. The study found that the API model adequately predicts emissions for tanks ranging in size from 17,000 to 35,000 dead weight tons and for tanks being loaded within the lower-48 states. The model does not appear to apply to crude oil loading of tankers in Valdez, Alaska, because of unique local operating conditions. However, no known test data invalidates the model for predicting crude oil loading emissions from carriers smaller than very large crude carriers in the lower-48 states. Pages: 194

July 1992 | Product Number: H25240 | Price: $171.00

Publ 2558
Wind Tunnel Testing of External Floating-Roof Storage Tanks

Presents the results of a wind tunnel study to determine the local wind velocities, wind directions, and roof pressures on external floating roof tanks. Pages: 13

1st Edition | June 1993 | Product Number: H25580 | Price: $212.00

TR 2558
Evaporative Loss from the Cleaning of Storage Tanks

Provides guidance for estimating emissions that result from removing the liquid heel (free-standing stock liquid) and cleaning the remaining deposits of stock liquid mixed with residue and water (sludge) from the bottoms of aboveground storage tanks. The emissions addressed in this report are those that leave the tank during the tank cleaning process. This report does not address:

- the fate of vapors after the have left the tank (other accounting for the efficiency of the control device),
- the fate of sludge after it has left the tank (or emissions that may occur during sludge treatment or disposal), or
- emissions that may be expelled by the vacuum pump of a vacuum truck or suction pump, if such devices are used in the tank cleaning process.

In other words, this report addresses the estimation of the mass of volatile organic compounds that leave the tank as vapor during the tank cleaning process. It does not address emissions that may result from the handling of liquids or sludge after such materials have been removed from the tank. This report is intended to reduce the effort required to generate a good faith estimate of tank cleaning emissions, and to result in more uniformity in the resulting emissions estimates. Pages: 47


TR 2559
Evaporative Loss from Closed-Vent Internal Floating-Roof Storage Tanks

Addresses evaporative loss from internal floating-roof tanks (IFRTs) with closed vents. When the vents in the fixed roof of an IFRT are closed, rather than open, estimation of emissions is shown to be highly complex. This subject is not covered in other API standards such as Ch. 19.1, which specifically excludes fixed-roof tanks that have an internal floating roof, and Ch. 19.2, which specifically excludes closed internal floating-roof tanks (that is, tanks vented only through a pressure-vacuum relief vent, blanketed with an inert gas, vented to a vapor processing unit, or otherwise restricted from being freely vented). Pages: 26

1st Edition | August 2008 | Product Number: H25590 | Price: $116.00

This publication is related to an API licensing, certification, or accreditation program.
This document provides guidance with respect to the major factors that could contribute to measurement uncertainty for single-phase devices used in production allocation. It is not intended to prescribe a particular meter type or allocation method. Allocation methodologies are addressed in Ch. 20.1. Pages: 33

1st Edition | November 2016 | Product Number H200201 | Price: $135.00

Chapter 20.2 *
Production Allocation Measurement Using Single-Phase Devices—Spanish
Spanish translation of Ch. 20.2.

1st Edition | November 2016 | Product Number H2002015 | Price: $135.00

Chapter 20.3 Measurement of Multiphase Flow (supersedes RP 86)
Addresses multiphase flow measurement in the production environment, upstream of the custody transfer (single-phase) measurement point, where allocation measurement for onshore, offshore, or subsea is applied. For other multiphase flow measurement applications such as reservoir management, well tests, and flow assurance, the standard can be used as a reference or guide. However, the focus of this standard is on those applications where the accuracy of multiphase flow measurement for allocation systems is required.

This document refers to existing standards and recommended practices to supplement the guidance it provides in this subject area. The document addresses principles used in multiphase flow measurement, multiphase metering types and classifications, assessment of expected performance, and selecting and operating multiphase measurement systems. Operational requirements or constraints are addressed, including expectations for flow meter acceptance, calibration criteria, flow loop and in situ verifications, and other guidance specific to different multiphase flow metering applications. The document does not address specific meter configurations. Pages: 72

1st Edition | January 2013 | Reaffirmed: October 2018
Product Number: H200301 | Price: $195.00

Chapter 20.3 * Measurement of Multiphase Flow—Russian (supersedes RP 86)
Russian translation of Chapter 20.3.

1st Edition | January 2013 | Reaffirmed: October 2018
Product Number: H200301R | Price: $195.00

Chapter 20.5 Recommended Practice for Application of Production Well Testing in Measurement and Allocation (includes Errata 1 dated August 2023)
Establishes a framework to conduct and apply production well testing for well rate determination in measurement and allocation. Production well testing addressed in this document refers to measurement of gas, oil, and water quantities from a single well during a specified length of time under controlled operational conditions. The intent of this document is to provide operators with a consistent and transparent approach for conducting, applying, and managing production well testing within an upstream measurement and allocation system. It is not intended to prescribe a particular production well test method, or particular application of production well test data use in allocation.

This document provides recommendations and guidelines for the application of production well testing in production measurement and allocation. The recommendations and guidelines apply to conducting a production well test, calculating production well test volumes and rates, and the application of production well test data for use in measurement.
and allocation. This includes production well testing preparation, initiation, measurement, validation, and volume and rate calculations for separator, multiphase flow meter, and tank production well test systems. Additionally, this document addresses the proration of production well test results for use in allocation, the application of production well tests for validation and update of well flow models and virtual flow metering, and the adjustment of gas well continuous measurement results with production well test data. This document also provides recommendations and guidelines for the application of well flow modeling and virtual flow metering in production measurement and allocation.

Allocation methodologies are addressed in Ch. 20.1. Pages: 123
1st Edition | December 2017 | Reaffirmed: March 2023
Product Number: H200501 | Price: $202.00

Draft Standard
Application of Hydrocarbon Phase Behavior Modeling in Upstream Measurement and Allocation Systems

Provides requirements and guidelines for the application of hydrocarbon phase behavior modeling in upstream measurement and allocation systems. The requirements and guidelines apply to the development, implementation, and performance management of a process simulation model (PSM) incorporating an equation of state (EOS) description of phase behavior. This includes functional specifications, validation, and maintenance of the PSM, EOS specification and implementation, and fluid compositional specification and validation.

This document establishes a framework to develop, implement, and manage the application of hydrocarbon phase behavior modeling. The applied phase behavior modeling addressed in this document refers to PSM incorporating EOS description of the phase behavior, or pressure, volume, temperature (PVT) properties, of the fluids within the modeled process. The intent of this document is to provide operators with a consistent and transparent approach for applying and managing an EOS-based PSM within an upstream measurement and allocation system. It is not intended to prescribe a particular mathematical phase estimation (i.e. EOS), process simulation (i.e. PSM), or allocation method. Allocation methodologies are addressed in Ch. 20.1. Pages: 47
1st Edition | August 2016 | Product Number: H200401D | Price: $98.00

RP 87
Recommended Practice for Field Analysis of Crude Oil Samples Containing from Two to Fifty Percent Water by Volume

Provides the user with recommended “field” methods of sampling, sample handling, and analysis for high water content streams up to 50 % water on a volumetric basis. In particular, this RP was developed giving consideration to offshore installations (both floating and fixed platforms). These installations are generally subject to motion and vibrations, have minimal laboratory equipment, and perform S&W analysis with multi-skilled operations personnel as opposed to laboratory chemists. The techniques described, however, are applicable to onshore locations.

This document also provides recommendations and guidelines for the application and that equitably accommodates variances in the uncertainty level between meters in the system. It is intended to advise the user on various aspects of the use of subsea wet-gas flowmeters in allocation measurement systems. Marinization, operation, abnormal operation, and meter testing are important topics included here, but foremost, this document proposes techniques to be used in the allocation of total production to individual contributing streams. Pages: 64
2-Year Extension: October 2018 | Product Number: G08701 | Price: $98.00

Chapter 21
Flow Measurement Using Electronic Metering Systems

Describes standard practices and minimum specifications for electronic measurement systems used in the measurement and recording of flow parameters. This chapter covers natural gas fluid and petroleum product custody transfer applications using industry-recognized primary measurement devices.

Chapter 21.1

(ANSI/API MPMS Ch. 21.1-2011) (AGA Report No. 13)

Describes the minimum specifications for electronic gas measurement systems used in the measurement and recording of flow parameters of gaseous phase hydrocarbon and other related fluids for custody transfer applications utilizing industry recognized primary measurement devices. This standard provides the minimum reporting and change management requirements of the various intelligent components required for accurate and auditable measurement. The requirements can be met by a combination of electronically and/or manually recorded configuration, test reports, change record reporting of the electronic gas measurement system components, and flow parameters. It is recognized that diagnostic capabilities of the newer meter and transmitter technologies are important but due to the device specific complexity, intelligent device diagnostics are out of scope for this standard. Pages: 94
2nd Edition | February 2013 | Reaffirmed: June 2021
2-Year Extension: December 2018
Product Number: H210102 | Price: $179.00

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Chapter 21.2
Electronic Liquid Volume Measurement Using Positive Displacement and Turbine Meters
Provides guidance for the effective use of electronic liquid measurement systems for custody transfer measurement of liquid hydrocarbons under the following conditions. Use of the measurement systems must fall within the scope and field of application of Ch. 12.2. Guidance applies to systems using turbine or positive displacement meters. Guidance applies to systems using on-line correction for the effect of temperature on liquid (CTL) and correction for the effect of pressure on liquid (CPL) compensation. The procedures and techniques in Ch. 21.2 are recommended for new measurement applications. This standard provides custody transfer measurement procedures for pipeline and other electronic liquid metering systems including design, selection, use, auditing, reporting, calibration, verification, and security. Pages: 60

Product Number: H21021 | Price: $207.00

Chapter 21.2-A1
Addendum 1 to Flow Measurement Using Electronic Metering Systems, Inferred Mass
This addendum specifically covers inferred mass measurement systems utilizing flow computers as the tertiary flow calculation device and either turbine or positive displacement type meters, working with on-line density meters, as the primary measurement devices. The scope does not include systems using calculated flowing densities, i.e., Equations of State. The hardware is essentially identical to that referenced in Ch. 21.2 and the methods and procedures are as described in Ch. 14.4, 14.6, 14.7, and 14.8. Audit, record-keeping, collection and calculation interval, security, and most other requirements for systems covered in Ch. 21.2 will apply to this addendum. As in Ch. 21.2, the hydrocarbon liquid streams covered in the scope must be single phase liquids at measurement conditions.

Product Number: H2102A | Price: $66.00

Chapter 22
Testing Protocols
Testing protocols for devices used in the measurement of hydrocarbon fluids. Testing protocols define appropriate methods for measuring and reporting the performance characteristics of similar equipment in a comparable manner, thus providing a means to highlight the relative performance advantages and disadvantages of similar devices.

Chapter 22.1
General Guidelines for Developing Testing Protocols for Devices Used in the Measurement of Hydrocarbon Fluids
(ANSI/API MPMS Ch. 22.1-2015)
(includes Addendum 1 dated November 2018 and Addendum 2 dated February 2022)

Intended for the development of testing protocols and to serve as a guideline to document performance characteristics of hydrocarbon fluid measurement related devices. Pages: 7

2nd Edition | August 2015 | Product Number: H220102 | Price: $95.00

Chapter 22.2
Defines the testing and reporting protocols for flow measurement devices based on the detection of a pressure differential that is created by the device in a flowing stream. This protocol is designed to supply industry with a comparable description of the capabilities of these devices for the measurement of single-phase fluid flow when they are used under similar operating conditions. The objectives of this Testing Protocol are to:
- ensure that the user of any differential pressure flow meter knows the performance characteristics of the meter over a range of Reynolds numbers as applicable or defined by tests,
- facilitate both the understanding and the introduction of new technologies,
- provide a standardized vehicle for validating manufacturer’s performance specifications,
- provide information about relative performance characteristics of the primary elements of the differential pressure metering devices under standardized testing protocol,
- quantify the uncertainty of these devices and define the operating and installation conditions for which the stated uncertainties apply.

Pages: 52

2nd Edition | April 2017 | Reaffirmed: February 2022
Product Number: H220202 | Price: $113.00

Chapter 22.3
Testing Protocol for Flare Gas Metering
(ANSI/API MPMS Ch. 22.3-2015)
Describes a testing protocol for flare gas meters. This includes a discussion of the testing to be performed, how the test data should be analyzed, and how an uncertainty is determined from the testing of the meter. The scope does not include the general guidelines to flare gas metering that are covered under Ch. 14.10.

Pages: 21

1st Edition | August 2015 | Product Number: H220301 | Price: $107.00

Chapter 22.4
Testing Protocol for Pressure, Differential Pressure, and Temperature Measuring Devices
Documents the method for testing the performance characteristics specific to pressure, differential pressure, and temperature sensors and transmitters used in petroleum measurement. The testing protocol includes a listing of parameters affecting the performance of the devices, a description of the tests required, requirements for the test facility, a data reporting format, and an uncertainty determination methodology.

Pages: 44

1st Edition | July 2018 | Product Number: H220401 | Price: $81.00

Chapter 22.6
Testing Protocol for Gas Chromatographs
A general gas chromatograph (GC) performance test protocol that specifies the scope and reporting requirements of GC tests for repeatability, reproducibility, and response linearity. The protocol specifies requirements for tests over a range of gas compositions, tests over a range of environmental conditions, and long-term performance tests.

Pages: 50

1st Edition | August 2015 | Product Number: H220601 | Price: $107.00

Chapter 22.7
Testing Protocol for Multiphase Meter
Provides the minimum requirements for documenting performance testing of an inline multiphase flow meter under controlled flow conditions in a flow loop facility. Completion of the testing protocol is not a calibration and does not replace field testing and validation. This testing protocol documents the method for testing the performance characteristics of multiphase flow meters used in production allocation. The testing protocol includes a listing of parameters affecting the performance of the devices, a description of the tests required, requirements for the test facility, a data reporting format, and an uncertainty determination. A joint API/Energy Institute (EI) standard, it also carries the EI designation Hydrocarbon Management, HM 77.

Pages: 23

1st Edition | January 2023 | Product Number: H22.701 | Price: $65.00

This publication is a new entry in this catalog.
This publication is related to an API licensing, certification, or accreditation program.
Chapter 23
Reconciliation of Hydrocarbon Quantities

Provides practical methodologies for monitoring hydrocarbon transportation loss and gain for non-marine systems i.e. pipeline, tank cars (rail tank cars, tank trucks, etc.). For Marine Reconciliation, refer to Ch. 17.

Chapter 23.1
Reconciliation of Liquid Pipeline Quantities
(supersedes Std 2560)

Provides methodologies for monitoring liquid pipeline loss/gain and for determining the normal loss/gain level for any given pipeline system. Troubleshooting suggestions are also presented. This document does not establish industry standards for loss/gain level because each system is individual and exhibits its own loss/gain level and/or patterns under normal operating conditions. The document provides operational and statistically based tools for identifying when a system has deviated from normal, the magnitude of the deviation, and guidelines for identifying the causes of deviation from normal.

The primary application of this publication is in custody transfer liquid pipeline systems in which there is provision for measuring all liquids that enter the system and exit the system, as well as liquid inventory within the system. The application is not intended for nonliquid or mixed-phase systems. The applications and examples in this document are intended primarily for custody transfer pipeline systems, but the principles may be applied to any system that involves the measurement of liquids into and out of the system and, possibly, inventory of liquids within the system. Such systems may include pipelines, marine terminals, marine voyages, bulk loading or storage terminals, tank farms, and rail and trucking systems. Pages: 35

1st Edition | June 2016 | Product Number: H230101 | Price: $103.00

Chapter 23.2
Reconciliation of Liquid Tank Car(s) Quantities

Provide methodologies and processes to monitor liquid tank car movements’ quantity loss/gain (L/G) ratios, level, and/or quality differences for tank car measurement systems. This document does not establish an industry standard for L/G ratios or level, but under normal operating conditions, the standard will assist the user to identify L/G of any tank car system. It will assist to determine:

• ratio or level deviations,
• patterns or trends,
• liquid quality.

This document will also make available operational and statistically based tools to:

• identify when a system exhibits a deviation from its normal operating conditions,
• guidelines for identifying the causes of the deviation from its normal operating parameters. Pages: 48

1st Edition | August 2020 | Product Number: H230202 | Price: $120.00

Pub 2566
State of the Art Multiphase Flow Metering

Provides information on multiphase flow metering systems gleaned from more than 150 published documents that are in the public domain. The documentation was prepared from information obtained through mid-2002. It should be noted that the indicated performances data stated in these published documents have not necessarily been verified by an independent body. The listing of these references in the Appendix 2 is intended to provide a comprehensive source of data and information on multiphase metering; the reader needs to carefully review the source of the data in the documents when utilizing the information. Pages: 80

1st Edition | May 2004 | Product Number: H25661 | Price: $138.00
Petroleum Measurement

To purchase individual API standards, visit apiwebstore.org

TR 2577
Performance of Full-Bore Vortex Meters for Measurement of Liquid Flows

Provides documentation of performance characteristics of full-bore liquid vortex meters for measuring liquid hydrocarbon flows of different API gravity under the field operating conditions and under a controlled environment in a laboratory test facility with water as the proving fluid, limited laboratory proving facility test results using water as the calibration fluid of several and 2-in. (50 mm) and 4-in. (100 mm) commercially available full-bore vortex meters that are typically installed for non-custody transfer liquid installations, and typical performance of full-bore 4-in. (100-mm) liquid vortex meters for liquid hydrocarbon measurement and to provide guidance in selecting liquid vortex meters for custody transfer measurement. Pages: 30

1st Edition | July 2018 | Product Number: H257701 | Price: $78.00

TR 2578
Flow Conditioner Installation and Effects on Turbine Meters

Provides a summary of flow conditioning testing performed on turbine meters in liquid hydrocarbons. Initial testing was conducted in water and those findings were included as an addendum to Ch. 5.3 in 2009, subsequent testing in hydrocarbon liquids was carried out through July 2016.

Phase II testing focused on operational effects, specifically the relationship of strainer design, strainer basket disturbances, flow conditioning, and their effects on the flow meter deviations in hydrocarbon applications (viscosities, densities, and Reynolds number). Pages: 16

1st Edition | October 2017 | Product Number: H257801 | Price: $71.00

TR 2579
Liquid Hydrocarbon Measurement Uncertainty Calculations

Provides guidelines for the calculation of uncertainty for field stored and transported hydrocarbon liquids. Special emphasis is placed on the measurement uncertainty of crude oils measured at tanks, by lease automatic custody transfer (LACT), and alternative measurement systems. This document provides a methodology for calculating the uncertainty in the measurement of liquid hydrocarbons by flow measurement systems. Specifically, uncertainty performance expressions are developed for positive displacement and Coriolis meter types under API Manual of Petroleum Measurement Standards (MPMS) Chapter 5 for measuring hydrocarbons by volume. This includes ancillary devices, processes, and measurements used to calculate a net standard volume (NSV) such as pressure, temperature, density, and sediment and water (S&W). Pages: 39

1st Edition | September 2020
Product Number: H257901 | Price: $186.00
quality as product is transported throughout the supply chain to maintain the aviation fuel. "Proper handling" entails documenting and testing aviation fuel quality monitoring program) for aviation fuel from point of manufacture to delivery to the airport, hereafter referred to as "pre-airfield storage terminals." This RP does not address in-transit and its shipment directly via a grade-dedicated pipeline, marine vessel (barge or ship), or road/rail transport to an airport. This RP does not address in-transit and transportation systems where contact with non-aviation products may occur, a fuel quality monitoring program is required, in addition to equipment, operating, inspection and maintenance standards. The purpose of this practice is to ensure the fuel remains on specification. This recommended practice (RP) was written to provide guidance on the development of an aviation fuel monitoring and testing program (fuel quality monitoring program) for aviation fuel from point of manufacture to delivery to the airport. “Proper handling” entails documenting and testing aviation fuel quality as product is transported throughout the supply chain to maintain the original product specification.  

### RP 1543
Documentation, Monitoring and Laboratory Testing of Aviation Fuel During Shipment from Refinery to Airport

Aviation fuels pass through a variety of storage and handling facilities, from refinery to airport. As aviation fuels are stored and transported in storage and transportation systems where contact with non-aviation products may occur, a fuel quality monitoring program is required, in addition to equipment, operating, inspection and maintenance standards. The purpose of this practice is to ensure the fuel remains on specification. This recommended practice provides guidance on the development of an aviation fuel monitoring and testing program (fuel quality monitoring program) for aviation fuel from point of manufacture to delivery to the airport. “Proper handling” entails documenting and testing aviation fuel quality as product is transported throughout the supply chain to maintain the original product specification. Pages: 25

#### Publ 1593
Gasoline Marketing in the United States Today

Provides information on motor fuel and gasoline consumption, U.S. motor fuel distribution, the U.S. gasoline pricing system, motor gasoline prices and taxes, the number/configuration of retail gasoline outlets, and employment/productivity in the retail gasoline distribution industry. Pages: 77

#### Publ 1673
Compilation of Air Emission for Petroleum Distribution Dispensing Facilities

Compiles the most widely accepted, available emission factors and emission estimation techniques for developing air emission estimates from evaporative loss sources of petroleum products at marketing and distribution facilities. These losses can occur from transfer and storage operations and fugitive equipment leaks and spillage. Pages: 29

#### AVIATION

#### RP 1595
Design, Construction, Operation, Maintenance, and Inspection of Aviation Pre-Airfield Storage Terminals

Contains basic requirements for the design, construction, operation, and maintenance of pre-airfield storage terminals located directly upstream of the airport, hereafter referred to as “pre-airfield storage terminals.” This recommended practice provides guidance on the minimum equipment standards and operating procedures for the receipt and storage of aviation fuels at pre-airfield storage terminals, located directly upstream of the airport, and its shipment directly via a grade-dedicated pipeline, marine vessel (barge or ship), or road/rail transport to an airport. This RP does not address in-transit or breakout storage upstream of the pre-airfield storage terminal. The design and construction provisions of this standard are intended for application at new facilities. Application of the design and construction provisions of this standard to facilities, equipment, structures, or installations that are already in place, that are in the process of construction or that are installed before the date of this publication, should be evaluated when circumstances merit. Such an evaluation should consider the site-specific circumstances and detailed accounting for both the potential and tolerance for risk, existing conditions at the installation, and overall benefit for applying the required design and construction provisions. The operation, sampling, testing, and maintenance provisions in the various sections of this standard shall apply to both new and existing installations. Pages: 75

#### 2nd Edition | October 2012 | Reaffirmed: April 2019
Product Number: C159502 | Price: $251.00

As of 2010, API does not maintain or distribute the following aviation fuel equipment related documents:

- **EI 1529** Aviation Fuelling Hose
- **EI 1540** Design, Construction, Operation and Maintenance of Aviation Fueling Facilities, IP Model Code of Safe Practice Part 7
- **EI 1542** Identification Markings for Dedicated Aviation Fuel Manufacturing and Distribution Facilities, Airport Storage and Mobile Fuelling Equipment
- **EI 1550** Handbook on Equipment Used for the Maintenance and Delivery of Clean Aviation Fuel
- **EI 1581** Specification and Qualification Procedures for Aviation Jet Fuel Filter/Separators
- **EI 1582** Specification for Similarity for API/EI 1581 Aviation Jet Fuel Filter/Separators
- **EI 1584** Four-Inch Aviation Hydrant System Components and Arrangements
- **EI 1585** Guidance in the Cleaning of Aviation Fuel Hydrant Systems at Airports
- **EI 1590** Specifications and Qualification Procedures for Aviation Fuel Microfilters
- **EI 1594** Initial Pressure Strength Testing of Airport Fuel Hydrant Systems with Water
- **EI 1596** Design and Construction of Aviation Fuel Filter Vessels
- **EI 1597** Procedures for Overwing Fuelling to Ensure Delivery of the Correct Fuel Grade to an Aircraft
- **EI 1598** Considerations for Electronic Sensors to Monitor Free Water and/or Particulate Matter in Aviation Fuel
- **EI 1599** Laboratory Tests and Minimum Performance Levels for Aviation Fuel Dirt Defense Filters

The documents listed above are maintained and distributed by the Energy Institute. For ordering information, please refer to the following website: https://publishing.energystar.org/
MARKETING OPERATIONS

RP 1525  
Bulk Oil Testing, Handling, and Storage Guidelines
Provides recommended equipment and procedures for the proper handling of incoming and outgoing shipments of lubricants to prevent contamination and spillage, and to protect product quality. The guidelines cover receipt, storage, packaging, and shipment of finished lubricants in bulk or packaged goods ranging from Intermediate Bulk Containers (IBCs) to pails. A log (whether electronic or hardcopy) detailing incoming and outgoing shipments is recommended and may be mandatory in some jurisdictions. Pages: 37
2nd Edition | June 2021 | Product Number: F15252
You may download a PDF of this document from https://www.api.org/products-and-services/engine-oil/documents/1525-guidelines

API 1525A
Bulk Engine Oil Chain of Custody and Quality Documentation
Provides procedures for managing bulk engine oil chain of custody to ensure oil quality from the point of manufacture to installation in the end user's engine. The procedures specifically address the following key topics: Bulk Engine Oil Provider (BEOP) practices; the ordering of oils meeting API 1509; chain-of-custody documentation that identifies bulk engine oil throughout the supply system; and requirements for informing consumers about the types of engine oil available for installation and requirements for notification (written and/or electronic) and labeling of the oil installed in mobile equipment engines. Pages: 19
2nd Edition | November 2021 | Product Number: F1525A2
You may download a PDF of this document from https://www.api.org/products-and-services/engine-oil/documents/api-1525a

RP 1604
Closure of Underground Petroleum Storage Tanks
Provides operating procedures that may be used for the abandonment, removal, storage, temporarily-out-service, and sale of used underground tanks that have contained gasoline or other flammable liquids. Pages: 22
4th Edition | February 2021 | Product Number: A16044 | Price: $90.00

RP 1615
Installation of Underground Petroleum Storage Systems
Guide to procedures and equipment that should be used for the proper installation of underground storage systems for bulk petroleum products or used oil at retail and commercial facilities. The stored products include gasoline, diesel fuel, kerosene, lubricating oils, used oil, and certain bio-fuel blends. This RP is intended for use by architects, engineers, tank owners, tank operators, and contractors. Contractors, engineers, and owners or operators who are preparing to design or install an UST system should investigate the federal, state, and local requirements and current methods of compliance for vapor recovery in that region. Vapor recovery is covered in detail in Section 17 of this document. This RP is not intended to cover specialized installations, such as fuel storage systems at marinas or airports, heating oil storage systems (either residential or bulk), or systems installed inside buildings. However, it does outline recognized and generally accepted good engineering practices that may be of use for these specialized installations. This RP does not apply to the installation of below ground or above ground bulk storage systems greater than 60,000 gallons. Pages: 89
Product Number: A16156 | Price: $222.00

RP 1621
Bulk Liquid Stock Control at Retail Outlets
Primarily applies to underground storage of motor fuels and used oil at retail and commercial facilities. It assists the operator in controlling bulk stock losses, thereby achieving a high level of safety and pollution control, while maximizing profits. Pages: 25
5th Edition | May 1993 | Reaffirmed: May 2020
Product Number: A16210 | Price: $90.00

RP 1626
Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Filling Stations
Includes Errata 1 dated February 2011
Describes recommended practices for the storing, handling, and fire protection of ethanol and gasoline-ethanol blends from E1 to E10 and from E70 to E100 (used for E85) at distribution terminals and filling stations. Where information exists for gasoline-ethanol blends from E11 to E15, it is shared. Recommended practices for E16 through E69 are not covered because currently these blends are not legal gasoline blends or alternative fuels. There is a general lack of information on the properties of these blends and there are currently no filling station components certified by any nationally recognized testing laboratory for these blends. Pages: 59
2nd Edition | August 2010 | Reaffirmed: May 2020
Product Number: A16262 | Price: $168.00

Std 1631
Interior Lining and Periodic Inspection of Underground Storage Tanks
Provides minimum recommendations for the interior lining of existing steel and fiberglass reinforced plastic underground tanks used to store petroleum-based motor fuels and middle distillates. Recommendations and procedures to be followed by contractors, mechanics, and engineers are presented. Methods for vapor-freeing tanks, removing sediment, and cleaning interior surfaces of steel and fiberglass tanks are also presented, as are guidelines for identifying tanks that may be lined. The methods described in this standard are applicable to steel and fiberglass-reinforced plastic tanks used for the storage of petroleum-based motor fuels and middle distillates. The procedures are applicable to tanks installed in typical retail service station outlets, but may also be used for tanks installed at other types of facilities. Pages: 25
Product Number: A16315 | Price: $94.00

RP 1637
Using the API Color-Symbol System to Identify Equipment, Vehicles, and Transfer Points for Petroleum Fuels and Related Products at Dispensing and Storage Facilities and Distribution Terminals
Describes a system for marking equipment used to store and handle bulk petroleum, alcohol-blended petroleum and biodiesel products. The marking system described in this recommended practice does not cover aviation fuels. Marking systems for aviation fuels are described in API/IP Std 1542. Pages: 22
**RP 1639**  
**Owner/Operator's Guide to Operation and Maintenance of Vapor Recovery Systems at Gasoline Dispensing Facilities**  
Provides guidance for owners and operators of gasoline dispensing facilities and regulatory officials regarding the operation and maintenance of gasoline vapor recovery systems and components. Proper operation and maintenance of the equipment can improve compliance with vapor recovery regulations and provide substantial emission reductions. This guide does not address the maintenance required qualified service technicians. Pages: 22  
1st Edition | July 2003 | Reaffirmed: May 2020  
Product Number: A16391 | Price: $94.00

**RP 1640**  
**Product Quality in Light Product Storage and Handling Operations**  
Assists those involved in fuel handling at distribution and intermediate storage facilities. This publication provides guidance on the minimum equipment standards and operating procedures for the receipt, storage, blending, and delivery of light products, their blend components, and additives at distribution and intermediate storage terminals, including related operations of pipeline, marine vessel (barge or ship), and road/rail transport. This recommended practice also covers the minimum equipment standards and operating procedures for the receipt, storage, and blending of light products, including but not limited to gasoline, kerosene, diesel, heating oil, and their blend components (i.e. ethanol, biodiesel, and butane) at distribution and storage terminals, as well as light product shipments directly via a pipeline, marine vessel (barge or ship) or road and rail transport. Pages: 85  
2nd Edition | February 2021 | Product Number: A164002 | Price: $226.00

**Publ 1642**  
**Alcohol, Ethers, and Gasoline-Alcohol and -Ether Blends**  
Examines fire safety considerations at petroleum marketing facilities. Focuses on gasoline blended with oxygenates, and M85, but also includes alcohols and ethers because they may be present at terminals and bulk plants for blending purposes. Pages: 12  
1st Edition | February 1996 | Product Number: A16421 | Price: $66.00

**Publ 1645**  
**Stage II Cost Study**  
Addresses the general installation cost information for three different types of retail gasoline outlet (RGO) vapor recovery systems: vapor balance, passive vacuum assist, and active vacuum assist. Additionally, it provides an overview of how each system operates. Pages: 6  
1st Edition | August 2002 | Product Number: A16451 | Price: $62.00

**RP 1646**  
**Safe Work Practices for Contractors Working at Retail Petroleum/Convenience Facilities**  
Provides the recommended minimum safety procedures for working at retail petroleum/convenience facilities and is a key component of the API WorkSafe Program. It also details how to develop a task specific Job Safety Analysis that should be completed before any work may begin. This document also provides the user with a general awareness of safety issues associated with maintenance and construction work at retail petroleum/convenience facilities, including service stations. It also highlights many of the Federal OSHA requirements that may apply to maintenance and construction work in the retail petroleum/convenience business. Pages: 84  
2nd Edition | May 2017 | Reaffirmed: September 2022  
Product Number: A164602 | Price: $159.00

**RP 1646 * **  
**Safe Work Practices for Contractors Working at Retail Petroleum/Convenience Facilities—Spanish**  
Spanish translation of RP 1646.  
2nd Edition | May 2017 | Reaffirmed: September 2022  
Product Number: A164602S | Price: $159.00

**Std 2610**  
**Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities**  
Guides the management of terminals and tanks in a manner that protects the environment and the safety of workers and the public. This standard is intended for petroleum terminal and tank facilities associated with marketing, refining, pipeline, and other similar facilities. This standard may be used as a resource and management guide by those responsible for such facilities and by those working on their behalf. This standard is a compilation of industry knowledge, information, and management practices for all relevant aspects of terminal and tank operations aggregated into an overview document comprising best practices. Pages: 100  
3rd Edition | September 2018 | Product Number: C26103 | Price: $192.00

**Used Oil**

**A Guidebook for Implementing Curbside and Drop-Off Used Motor Oil Collection Programs**  
Designed to help municipal managers and regulators evaluate the types of available programs (either curbside or drop-off programs, including examples of both), and how to effectively implement these used oil recycling programs. It is based on national surveys of existing programs throughout the country and includes examples of budgets, procedures, equipment, and model programs that are currently underway. Pages: 47  

**Publ 1830**  
**National Used Oil Collection Study**  
Reviews the status of used engine oil collection in the United States. Documents state efforts to collect oil and the outcomes of such efforts. Provides examples of how used oil collection can be successful, as well as warning of the pitfalls that should be avoided, based on the experience of other states. Pages: 248  
1st Edition | June 1996 | Product Number: B18301 | Price: $63.00

**Publ 1835**  
**Study of Used Motor Oil Recycling in Eleven Selected Countries**  
The study described in this report obtained information about used motor oil collection and recycling programs in 11 selected countries around the world. Pages: 55  
1st Edition | November 1997 | Product Number: B18351 | Price: $65.00

**Tank Truck Operations**

**For Safety’s Sake—MC 306 Cargo Tank Vehicle Inspection**  
This VHS tape provides a step-by-step approach to pre- and post-trip inspection of MC 306 cargo tank vehicles. The tape follows a driver through an actual walk-around inspection and covers driver recordkeeping and the inspection itself—brakes, lights, mirrors, tires, wiring, the tank, and placards. Also includes common truck defects. The videotape was prepared under the direction of the API Highway Safety Committee and parallels the U.S. Department of Transportation’s truck inspection regulations. Two minutes of blank leader is provided on the tape so that it can be customized to fit company training needs. VHS tape: 14 minutes. Pages: 65  
January 1989 | Product Number: A11500 | Price: $112.00

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Marketing

To purchase individual API standards, visit apiwebstore.org

RP 1004
Bottom Loading and Vapor Recovery for MC-306 & DOT-406 Tank Motor Vehicles
Provides an industry standard for bottom loading and vapor recovery of proprietary and hired carrier DOT MC-306 tank vehicles at terminals operated by more than one supplier. Guides the manufacturer and operator of a tank vehicle as to the uniform features that should be provided to permit loading of a tank vehicle with a standard 4-in. adapter. This edition of RP 1004 requires an independent secondary control system and maximum requirements for outage in the tank to allow the secondary control system to function. Pages: 21
2-Year Extension: January 2018
Product Number: A10048 | Price: $120.00

RP 1007
Loading and Unloading of MC 306/DOT 406 Cargo Tank Motor Vehicles
Ensuring the safe and efficient loading and delivery of petroleum products to retail service stations and bulk facilities is the primary goal for all companies that transport product. This document is a guideline for use by the truck driver and persons responsible for loading and unloading of MC306/DOT406 cargo tanks. It identifies specific steps to ensure that product can be loaded into tank trucks and unloaded into both underground and aboveground storage tanks in a safe and efficient manner that protects the environment. It is intended to be used in conjunction with existing driver training programs and procedures. Pages: 24
2-Year Extension: January 2018
Product Number: A10071 | Price: $42.00

RP 1112
Developing a Highway Emergency Response Plan for Incidents Involving Hazardous Materials
Provides minimum guidelines for developing an emergency response plan for incidents involving hazardous liquid hydrocarbons, such as gasoline and crude oil, transported in MC 306/DOT 406 and MC 307/DOT 407 aluminum cargo tanks, and for coordinating and cooperating with local, state, and federal officials. Covers response plan priorities, personnel training, special equipment, media relations, environmental relations, and post-response activities. The appendixes outline a highway emergency response plan and suggest a procedure for removing liquid hydrocarbons from overturned cargo tanks and righting the tank vehicles. Pages: 21
2-Year Extension: January 2018
Product Number: A11123 | Price: $82.00

MOTOR OILS AND LUBRICANTS

Motor Oil Shelf Cards
This two-page laminated guide helps consumers understand the API Engine Oil Quality Marks—the API Certification Mark, “Starburst,” and Service Symbol, “Donut,” and the API Service Categories. Shelf Cards are available in English and Spanish and can be personalized with a company logo. For information on personalizing the shelf cards, call 202-682-8156. Single copies free on request from API [eolcs@api.org or (202)-682-8156]

API 1509
Engine Oil Licensing and Certification System
Describes the API Engine Oil Licensing and Certification System (EOLCS), a voluntary licensing and certification program designed to define, certify, and monitor engine oil performance deemed necessary for satisfactory equipment life and performance by vehicle and engine manufacturers.

API 1509 *
Engine Oil Licensing and Certification System—Chinese
Chinese translation of API 1509.

API 1509 *
Engine Oil Licensing and Certification System—Portuguese
Portuguese translation of API 1509.

API 1509 *
Engine Oil Licensing and Certification System—Spanish
Spanish translation of API 1509.

Publ 1520 *
Directory of Licensees: API Engine Oil Licensing and Certification System
Identifies the companies licensed to display the API Engine Oil Licensing and Certification System (EOLCS) Symbols. This directory can be accessed only through API’s website, https://www.api.org/products-and-services/engine-oil/eolcs-categories-and-documents/documents/publication-1520

DIESEL FUEL

Publ 1571
Diesel Fuel—Questions and Answers for Highway and Off-Highway Use
Provides answers to some of the frequent questions asked about diesel fuel. Included are explanations of the quality features of diesel fuel and their significance, descriptions of diesel fuel classifications, discussions of additives normally used and their purposes, and explanations of factors that can affect performance. Pages: 20

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This publication is a new entry in this catalog. This publication is related to an API licensing, certification, or accreditation program.
HEALTH, ENVIRONMENT, AND SAFETY: GENERAL

Std 2350
Overfill Protection for Storage Tanks in Petroleum Facilities
(includes Errata 1 dated April 2021)
(ANSI/API Std 2350)
Applies to storage tanks associated with marketing, refining, pipeline, and terminals operations and with tanks containing Class I or Class II petroleum liquids and use is recommended for Class III petroleum liquids. This standard addresses overfill protection for petroleum storage tanks. It recognizes that prevention provides the most basic level of protection, thus while using both terms “protection” and “prevention,” the document emphasizes prevention. The standard’s scope covers overfill (and damage) prevention practices for aboveground storage tanks in petroleum facilities, including refineries, marketing terminals, bulk plants, and pipeline terminals that receive flammable and combustible liquids. The fourth edition continues to build on experience and new technology through the use of management systems. Since operations are the primary overfill prevention safeguard, new definitions and requirements are established for alarms. Risk reduction is also addressed by current and generally accepted industry practices.

The purpose of this standard is to assist owner/operators and operating personnel in the prevention of tank overfills by implementation of a comprehensive overfill prevention process (OPP). The goal is to receive product into the intended storage tank without overfill or loss of containment.

This standard does not apply to: underground storage tanks; aboveground tanks of 1320 U.S. gallons (5000 liters) or less; aboveground tanks which comply with PEI 600; pressure vessels; tanks containing non-petroleum liquids; tanks storing LPG and LNG; tanks at service stations; tanks filled exclusively from wheeled vehicles (i.e. tank trucks or railroad tank cars); and tanks covered by OSHA 29 CFR 1910.119 and EPA 40 CFR 68, or similar regulations.

It is not intended for use with: petroleum products; non-petroleum products; and expressed hydrocarbons used as components in oilfield needs.

5th Edition | September 2020
Product Number: K235005 | Price: $135.00

HEALTH, ENVIRONMENT, AND SAFETY: WASTE

Publ 1638
Waste Management Practices for Petroleum Marketing Facilities
Provides specific guidance for managing typical waste streams at petroleum marketing facilities. This publication covers petroleum marketing facilities ranging from retail fuel convenience stores to terminals and lube plants.

Pages: 20
1st Edition | October 1994 | Product Number: A16381 | Price: $82.00

HEALTH, ENVIRONMENT, AND SAFETY: WATER

Publ 1612
Guidance Document for Discharging of Petroleum Distribution Terminal Effluents to Publicly Owned Treatment Works
Provides terminal managers with guidance on discharging terminal effluents to publicly owned treatment works (POTWs). Covers relations with POTW personnel, POTW concerns in accepting terminals wastewater, pretreatment regulations and local limits on the discharge of wastewaters to POTWs, and associated costs.

Pages: 34
1st Edition | November 1996 | Product Number: A16121 | Price: $105.00

HEALTH, ENVIRONMENT, AND SAFETY: SOIL AND GROUNDWATER

Publ 1628A
Natural Attenuation Processes
Describes the physical, chemical, and biological processes that decrease the concentrations and ultimately limit the extent of the dissolved plume migrating from a hydrocarbon release. Pages: 16
1st Edition | July 1996 | Product Number: A1628A | Price: $64.00

Publ 1628B
Risk-Based Decision Making
Discusses risk-based decision making approaches used for the assessment of hazardous conditions. Also presents information that can be utilized to focus remedial measures and funds on petroleum hydrocarbon release sites while being protective of human health and the environment, and to facilitate timely closure of hydrocarbon-impacted sites.

Pages: 20

Publ 1628C
Optimization of Hydrocarbon Recovery
Covers the optimization, in its broadest sense, to achieve an environmentally sound site closure in the appropriate timeframe for the least cost (to maximize efficiency of the selected system).

Pages: 13

Publ 1628D
In-Situ Air Sparging
Addresses in-situ air sparging. Covers remediation technologies, starting with the early techniques of containment or mass reduction through today's very aggressive site closure techniques. Addresses containment as well as residual petroleum hydrocarbon compounds.

Pages: 24

Publ 1628
A Guide to the Assessment and Remediation of Underground Petroleum Releases
Provides an overview of proven technologies for the assessment and remediation of petroleum releases in soil and groundwater. Covers accidental releases arising from the production, transportation, refining, and marketing of liquid petroleum products or unrefined crude oil.

Pages: 119
3rd Edition | July 1996 | Product Number: A16283 | Price: $177.00

Publ 1628 and its five companion publications (1628A, 1628B, 1628C, 1628D, and 1628E) may be purchased as a set.

Order Number: A1628S | Price: $350.00

Publ 1669
Results of a Retail Gasoline Outlet and Commercial Parking Lot Storm Water Runoff Study
Presents the findings of a study to characterize storm water runoff from retail gasoline outlets and compares the results with runoff from commercial parking lots and published urban “background” values. Funded by the Western States Petroleum Association (WSPA) and the American Petroleum Institute (API), the results of this study indicate that fueling activities at normally operated and maintained retail gasoline outlets do not contribute additional significant concentrations of measured constituents in storm water runoff.

Pages: 24
1st Edition | December 1994 | Product Number: A16691 | Price: $90.00
Publ 1628E
Operation and Maintenance Considerations for Hydrocarbon Remediation Systems
Discusses concepts regarding operation and maintenance procedures necessary to achieve and maintain optimal performance of petroleum hydrocarbon remediation systems. Pages: 23
1st Edition | July 1996 | Product Number: A1628E | Price: $64.00

Publ 1629
Guide for Assessing and Remediating Petroleum Hydrocarbons in Soils
This publication provides information regarding the site and release characteristics relevant to, and methods for assessing and remediating, soils contaminated with petroleum hydrocarbons released from underground or aboveground storage tank systems and operations. Developed to complement Publ 1628, which focuses primarily on assessing and remediating petroleum releases that may impact groundwater. Pages: 81

SECURITY

Std 1164
Pipeline Control Systems Cybersecurity
(includes Errata 1 dated August 2021)
Provides requirements and guidance for managing cyber risk associated with industrial automation and control (IAC) environments to achieve security, integrity, and resiliency objectives. This is accomplished through proper isolation of IAC environments from non-IAC environments to help IAC operational continuity. This standard is tailored for the oil and natural gas (ONG) pipeline industry, which includes, but is not limited to, natural gas and hazardous liquid transmission pipeline systems, natural gas distribution pipeline systems, liquefied natural gas (LNG) facilities, propane air facilities, and others involved in these industries. This standard was developed to provide an actionable approach to protect IAC essential functions by managing cybersecurity risk to IAC environments. IAC environments can include, but are not limited to, supervisory control and data acquisition (SCADA), local control, and industrial internet of things (IIoT) solutions. This standard should be used in the context of developing, implementing, maintaining, and improving an IAC cybersecurity program, which includes the policies, processes, and procedural and technical controls for IAC cyber environments. Pages: 142
3rd Edition | August 2021 | Product Number: D11043 | Price: $198.00
If you have any questions or comments regarding API standards, please visit https://www.api.org/products-and-services/standards

NOTE: Free publications with an asterisk are subject to a $10.00 handling charge for each total order plus actual shipping charges.

RAIL TRANSPORTATION

RP 3000
Classifying and Loading of Crude Oil into Rail Tank Cars
Provides guidance on the material characterization, transport classification, and quantity measurement for overfill prevention of petroleum crude oil, for the loading of rail tank cars.

This document applies only to petroleum crude oil classified as Hazard Class 3—Flammable Liquid under the U.S. Code of Federal Regulations (CFR) at the time of publication.

RP 3000 identifies criteria for determining the frequency of sampling and testing of petroleum crude oil for transport classification. It discusses how to establish a sampling and testing program and provides an example of such a program.

This document provides guidance on Packing Group (PG) assignment, including the potential effect of heel, and mixing of crude oils of differing PGs. The document provides guidance on initial testing and an ongoing sampling and testing for assignment of PG.

RP 3000 provides guidance on determining the loading target quantity (LTQ) of crude oil transported by rail tank car. This includes crude oil temperature and density determination, identification of sampling points based on loading scenarios, and measurement equipment and processes.

Guidance on the documentation of measurement results and record retention is also provided.

1st Edition | September 2014 | Reaffirmed: December 2022
Product Number: A30001 | Price: $136.00

PIPEDLINE PUBLIC EDUCATION AND AWARENESS

API Guidelines for Right-of-Way Activities Brochure

The liquid petroleum pipeline industry has developed these guidelines to improve understanding and increase awareness of the nature of underground pipelines that transport oil, petroleum products, natural gas liquids, and other hazardous liquids and how to conduct land development and use activity near pipeline rights of way.

The guidelines are intended for use by anyone who is involved in land development, agriculture, and excavation/ construction activities near a pipeline. The industry’s goal is to protect public safety of the people who live and work along pipeline rights of way, protect the environment along rights of way, and maintain the integrity of the pipeline so that petroleum products can be delivered to customers safely and without interruption.

A pipeline right-of-way (ROW) is property in which a pipeline company and a landowner both have a legal interest. Each has a right to be there, although each has a different type of use for the land. Pipeline companies are granted permission from private landowners to transport petroleum products across their private lands. That permission is documented in a written agreement called an easement, and it is obtained through purchase, license, or by agreement with the landowner. In cases where the land is owned by the government—whether local, state or federal—similar arrangements for easements, licenses or occupancy agreements are obtained.

A pipeline requires regular observation, integrity assessment and maintenance to maintain the safety of its operations. Part of that task is to ensure that the pipeline ROW is kept clear of trees, structures and other encroachments that might interfere with the safe operation of the pipeline and the pipeline company’s access to the line.

The pipeline industry hopes that these guidelines will help both pipeline operators and people working and living along pipeline rights of way to better understand their respective responsibilities for maintaining the safety of this vital, but invisible, transportation system.

1st Edition | August 2018 | Product Number: DOGP04
Price: $14.00 ($68.00 for set of five brochures)

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PIPEDLINE OPERATIONS PUBLICATIONS

RP 80
Definition of Onshore Gas Gathering Lines
(includes Addendum 1 dated January 2023)

Developed by an industry coalition that included representatives from over 20 petroleum industry associations, this recommended practice provides a functional description of onshore gas gathering pipelines for the sole purpose of providing users with a practical guide for determining the application of the definition of gas gathering in the federal Gas Pipeline Safety Standards, 49 CFR Part 192, and state programs implementing these standards.

Pages: 47
2nd Edition | March 2020 | Product Number: G80002 | Price: $111.00

RP 1102
Steel Pipelines Crossing Railroads and Highways

Covers the design, installation, inspection, and testing required to ensure safe crossings of steel pipelines under railroads and highways. The provisions apply to the design and construction of welded steel pipelines under railroads and highways. The provisions of this practice are formulated to protect the facility crossed by the pipeline, as well as to provide adequate design for safe installation and operation.

The provisions herein should be applicable to the construction of pipelines crossing under railroads and highways and to the adjustment of existing pipelines crossed by railroad or highway construction. This practice should not be applied retroactively. Neither should it apply to pipelines under contract for construction on or prior to the effective date of this edition. Neither should it be applied to directionally drilled crossings or to pipelines installed in utility tunnels.

Pages: 64
7th Edition | December 2007 | Reaffirmed: December 2017
Product Number: D11021 | Price: $125.00

Std 1104
Welding of Pipelines and Related Facilities
(includes Errata 1 dated September 2023)

Covers the gas and arc welding of butt, fillet, and socket welds in carbon and low-alloy steel piping used in the compression, pumping, and transmission of crude petroleum, petroleum products, fuel gases, carbon dioxide, and nitrogen, and, where applicable, covers welding on distribution systems. It applies to both new construction and in-service welding. The welding may be done by a shielded metal-arc welding, submerged arc welding, gas tungsten-arc welding, gas metal-arc welding, flux-cored arc welding, plasma arc welding, oxyacetylene welding, or flash butt welding process, or by a combination of these processes using a manual, semiautomatic, mechanized, or automatic welding technique or a combination of these techniques. The welds may be produced by position or roll welding or by a combination of position and roll welding.

This standard also covers the procedures for radiographic, magnetic particle, liquid penetrant, and ultrasonic testing, as well as the acceptance standards to be applied to production welds tested to destruction or inspected by radiographic, magnetic particle, liquid penetrant, ultrasonic, and visual testing methods.

Pages: 174
22nd Edition | July 2021 | Product Number: D110422 | Price: $410.00

This publication is a new entry in this catalog. ◆ This publication is related to an API licensing, certification, or accreditation program.
**Transportation**

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**Std 1104**

*Welding of Pipelines and Related Facilities—Russian (includes Errata 1 dated September 2023)*

Russian translation of Std 1104.

22nd Edition | July 2021 | Product Number: D110422R | Price: $410.00

**RP 1109**

*Line Markers and Signage for Hazardous Liquid Pipelines and Facilities*

Addresses the permanent marking of liquid petroleum pipeline transportation facilities. It covers the design, message, installation, placement, inspection, and maintenance of markers and signs on pipeline facilities located onshore and at inland waterway crossings. Markers and signs indicate the presence of a pipeline facility and warn of the potential hazards associated with its presence and operation. The markers and signs may contain information to be used by the public when reporting emergencies and seeking assistance in determining the precise location of a buried pipeline.

The provisions of this recommended practice cover the minimum marker and sign requirements for liquid petroleum pipeline facilities. Alternative markers, which are recommended for some locations under certain circumstances, are also discussed. The pipeline operator is responsible for determining the extent of pipeline marking. Consideration should be given to the consequences of pipeline failure or damage; hazardous characteristics of the commodity being transported; and the pipeline’s proximity to industrial, commercial, residential, and environmentally sensitive areas. The pipeline marking programs are also integral parts of the pipeline operator’s maintenance and emergency plans.

This recommended practice is not intended to be applied retroactively. Its recommendations are for new construction and for normal marker maintenance programs subsequent to the effective date of this edition. Pages: 24

5th Edition | October 2017 | Product Number: D11095 | Price: $107.00

**RP 1110**

*Pressure Testing of Steel Pipelines for the Transportation of Gas, Petroleum Gas, Hazardous Liquids, Highly Volatile Liquids, or Carbon Dioxide*

Applies to all parts of a pipeline or pipeline facility including line pipe, pump station piping, terminal piping, compressor station piping, metering station piping, delivery station piping, regulator station piping, appurtenances connected to line pipe, appurtenances connected to facility piping, fabricated assemblies, valves, tees, elbows, reducers, flanges, and any other pipeline equipment or appurtenances. This RP does not apply to pumping units, compressor units, breakout tanks, pressure vessels, control piping, sample piping, instrument piping/tubing, or any component or piping system for which other codes specify pressure testing requirements (i.e. ASME Boiler and Pressure Vessel Code, piping systems covered by building codes). Pages: 37

7th Edition | December 2022 | Product Number: D111007 | Price: $103.00

**RP 1111**

*Design, Construction, Operation, and Maintenance of Offshore Hydrocarbon Pipelines (Limit State Design)*

Sets criteria for the design, construction, testing, operation, and maintenance of offshore steel pipelines used in the production, production support, or transportation of hydrocarbons from the outlet flange of a production facility. The criteria applies to transportation piping facilities located on production platforms after separation and treatment, including meter facilities, gas compression facilities, liquid pumps, and associated piping and appurtenances. This document may also be used for water injection pipelines offshore.

Limit state design has been incorporated into the document to provide a uniform factor of safety with respect to rupture or burst failure as the primary design condition independent of the pipe diameter, wall thickness, and grade. The criteria contained in this document are intended to permit the economical transportation of hydrocarbons while providing for the safety of life and property and the protection of the environment. The general adoption of these criteria should assure that offshore hydrocarbon pipelines possess the requisite structural integrity for their safe and efficient operation. Pages: 78


**RP 1115**

*Recommended Practice for Movement in In-Service Pipelines*

Covers the design, execution, inspection, and safety of a pipeline-lowering or other movement operation conducted while the pipeline is in service. (In this document, the terms lowering and movement can be used interchangeably.) This recommended practice presents general guidelines for conducting a pipeline-movement operation without taking the pipeline out of service. It also presents equations for estimating the induced stresses. To promote the safety of the movement operation, it describes stress limits and procedures. Additionally, it outlines recommendations to protect the pipeline against damage. The practicality and safety of trench types, support systems, and lowering or other methods are considered. Inspection procedures and limitations are presented. Pages: 46


**RP 1130**

*Computational Pipeline Monitoring for Liquids*

Focuses on the design, implementation, testing, and operation of CPM systems that use an algorithmic approach to detect hydraulic anomalies in liquid pipelines. These systems provide tools that assist controllers in detecting commodity releases that are within the sensitivity of an algorithm. CPM system provide an alarm and display other related data to the controllers to aid in decision-making. The controllers would undertake an immediate investigation, confirm the reason for the alarm, and initiate an operational response to the hydraulic anomaly when the alarm represents an irregular operating condition, abnormal operating condition, or a commodity release. This RP is intended for controllers and operators, CPM system developers and engineers, and others interested in CPM system design, implementation, and operation. Pages: 44

2nd Edition | April 2022 | Product Number: D011302 | Price: $121.00

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This publication is a new entry in this catalog. This publication is related to an API licensing, certification, or accreditation program.
RP 1133
Managing Hydrotechnical Hazards for Pipelines Located Onshore or Within Coastal Areas

Sets out criteria for the design, construction, operation, maintenance, and abandonment of onshore pipelines that could affect high consequence floodplains and associated commercially navigable waterways. This document applies only to steel pipelines that transport gas, hazardous liquids, alcohols or carbon dioxide. The design, construction, inspection, and testing provisions of this document should not apply to pipelines that were designed or installed prior to the latest revision of this publication. The operation and maintenance provisions of this document should apply to existing facilities. The contents in this document should not be considered a fixed rule for application without regard to sound engineering judgment. Pages: 94

2nd Edition | December 2017 | Product Number: D11332 | Price: $176.00

TR 1149
Pipeline Variable Uncertainties and Their Effects on Leak Detectability

Describes procedures for predicting uncertainties in the detection of leaks in pipelines using computational methods based upon physical hydraulic state measurements. This class of pipeline leak detection methods is commonly called Computational Pipeline Monitoring (CPM). Pages: 160

2nd Edition | September 2015 | Product Number: D11492 | Price: $179.00

RP 1160
Managing System Integrity for Hazardous Liquid Pipelines

Outlines a process that an operator of a pipeline system can use to assess risks and make decisions about risks in order to reduce incidents and the adverse effects of errors and incidents.

An integrity management program provides a means to improve the safety of pipeline systems and to allocate operator resources effectively to: identify and analyze actual and potential precursor events that can result in incidents; examine the likelihood and potential severity of incidents; provide a comprehensive and integrated means for examining and comparing the spectrum of risks and risk reduction activities available; provide a structured, easily communicated means for selecting and implementing risk reduction activities; and establish and track system performance with the goal of improving that performance.

This recommended practice (RP) is specifically designed to provide the operator with a description of industry-proven practices in pipeline integrity management.

The RP is largely targeted to onshore pipelines along the right-of-way, but the process and approach can be applied to pipeline facilities, including pipeline stations, terminals, and delivery facilities associated with pipeline systems. Pages: 137

3rd Edition | February 2019
Product Number: D116003 | Price: $215.00

RP 1161
Pipeline Operator Qualification (OQ)

Provides guidance for developing and maintaining an operator qualification (OQ) program. This document is comprised of the RP along with normative and non-mandatory, informative annexes. This RP is applicable for all pipelines, both onshore and offshore, subject to 49 CFR Part 192 and/or Part 195. References to 49 CFR Part 192 are applicable to gas-transmission-only tasks, and references to 49 CFR Part 195 are applicable to liquid-only tasks. Operators may choose to use all, part, or none of this document as applicable to their operations. Pages: 284

5th Edition | November 2021 | Product Number: D11615 | Price: $216.00

RP 1162
Public Awareness Programs for Pipeline Operators

Addresses the development, implementation, evaluation, and documentation of pipeline public awareness programs associated with systems in the United States for distribution, regulated transmission, gathering pipelines, and underground storage that are required under federal or state pipeline safety regulations to have a public awareness program. It provides minimum requirements and offers guidance to operators to develop public awareness programs that take into account the similarities and differences in pipeline types, release characteristics, stakeholder audiences, operator activities, and other factors that can influence the program’s development and implementation. This document provides operators with public awareness program elements and illustrates the process for establishing, implementing, measuring, and adjusting a program, in alignment with the Plan-Do-Check-Act (PDCA) process for managing programs. This recommended practice addresses certain operational changes requiring additional communication based on the introduction of new hazards. Pages: 108

3rd Edition | August 2022 | Product Number: D116203 | Price: $144.00

Std 1163
In-Line Inspection Systems Qualification

Covers the qualification, selection, reporting, verification, validation, and use of in-line inspection (ILI) systems for onshore and offshore steel gas and hazardous liquid pipelines. This includes, but is not limited to, tethered, self-propelled, or free-flowing systems for detecting metal loss, cracks, mechanical damage, pipeline geometries, and pipeline location or mapping. The standard applies to both existing and developing technologies. This standard is an umbrella document that provides performance-based requirements for ILI systems, including procedures, personnel, equipment, and associated software. Pages: 113

3rd Edition | September 2021 | Product Number: D11632 | Price: $142.00

Std 1164
Pipeline Control Systems Cybersecurity

(List Errata 1 dated August 2021)

Provides requirements and guidance for managing cyber risk associated with industrial automation and control (IAC) environments to achieve security, integrity, and resiliency objectives. This is accomplished through proper isolation of IAC environments from non-IAC environments to help IAC operational continuity. This standard is tailored for the oil and natural gas (ONG) pipeline industry, which includes, but is not limited to, natural gas and hazardous liquid transmission pipeline systems, natural gas distribution pipeline systems, liquefied natural gas (LNG) facilities, propane air facilities, and others involved in these industries. This standard was developed to provide an actionable approach to protect IAC essential functions by managing cybersecurity risk to IAC environments. IAC environments can include, but are not limited to, supervisory control and data acquisition (SCADA), local control, and industrial internet of things (IIoT) solutions. This standard should be used in the context of developing, implementing, maintaining, and improving an IAC cybersecurity program, which includes the policies, processes, and procedural and technical controls for IAC cyber environments. Pages: 142

3rd Edition | August 2021 | Product Number: D11643 | Price: $198.00

RP 1165
Pipeline SCADA Displays

Focuses on the design and implementation of displays used for the display, monitoring, and control of information on pipeline supervisory control and data acquisition (SCADA) systems. The primary purpose is to promote the success of the controller to safely operate pipeline systems and to document industry practices that provide guidance to a pipeline company or operator who wants to select a new SCADA system, or update or expand an existing SCADA system, and for guidance throughout the SCADA system display lifecycle. The pipeline industry and stakeholders have determined that well-designed displays can contribute to safe operations and prevent or mitigate...
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pipeline incidents. Using established human factors considerations in display design can promote the safety performance of a pipeline operator. Pages: 148

2nd Edition | December 2022
Product Number: D116502 | Price: $138.00

TR 1166
Excavation Monitoring and Observation for Damage Prevention

Provides a consistently applied decision making process for monitoring and observing of excavation and other activities on or near pipeline Rights-of-Way for “hazardous liquid” and “natural and other gas” transmission pipelines. (NOTE: One call provisions and laws vary by state, and it is the operator's responsibility to be familiar with and comply with all applicable one-call laws.) This document's purpose is to protect the public, excavation employees, and the environment by preventing damage to pipeline assets from excavation activities. Pages: 16

2nd Edition | October 2015 | Product Number: D11662 | Price: $115.00

RP 1167
Pipeline SCADA Alarm Management

Provides pipeline operators with recommended industry practices in the development, implementation, and maintenance of a SCADA alarm management program. It provides guidance on elements that include, but are not limited to, alarm definition, philosophy, documentation, management of change, and auditing. This document is not intended to be a step-by-step set of instructions on how to build an alarm management system. Each pipeline operator has a unique operating philosophy and will therefore have a unique alarm philosophy. This document is intended to outline key elements for review when building an alarm management system. SCADA systems used within the pipeline industry vary in their alarm-related capabilities, and there are many different software systems available to aid in alarm management. It is the responsibility of the pipeline operator to determine the best method to achieve their alarm management goals.

This document uses industry best practices to help to illustrate aspects of alarm management. The scope is intended to be broad. Pages: 48

2nd Edition | June 2016 | Reaffirmed: October 2021
Product Number: D116702 | Price: $136.00

RP 1168
Pipeline Control Room Management

Provides pipeline operators and controllers with guidance on control room management best practices to consider when developing or enhancing practices and procedures. This document was written for operators with continuous and non-continuous operations, as applicable. This document addresses four pipeline safety elements for hazardous liquid and natural gas pipelines in both the transportation and distribution sectors: pipeline control room personnel roles, authorities, and responsibilities; guidelines for shift turnover; pipeline control room fatigue management; and pipeline control room management of change. Pages: 28

2nd Edition | February 2015 | Reaffirmed: October 2021
Product Number: D11682 | Price: $98.00

RP 1168 *
Pipeline Control Room Management—Portuguese

Portuguese translation of RP 1168.

2nd Edition | February 2015 | Reaffirmed: October 2021
Product Number: D11682P | Price: $98.00

RP 1169
Pipeline Construction Inspection

Covers the basic requirements and their associated references needed to effectively and safely perform inspection activities during construction of new onshore pipelines. Use of this document will provide the basis for what pipeline operators need to know and where to find detailed information related to each facet of new pipeline construction inspection activities.

The requirements are organized into the following major sections:

• inspector responsibilities,
• personnel and general pipeline safety,
• environmental and pollution control,
• general pipeline construction inspection.

Users of this document include those individuals either engaged in pipeline construction inspection or seeking to become certified inspectors. Pipeline owner/operators and pipeline inspection service companies may also use this document to aid and enhance their inspector training programs. Pages: 149

2nd Edition | March 2020 | Product Number: D11692 | Price: $186.00

RP 1169 *
Pipeline Construction Inspection—Chinese

Chinese translation of RP 1169.

2nd Edition | March 2020 | Product Number: D11692 | Price: $186.00

RP 1170
Design and Operation of Solution-Mined Salt Caverns Used for Natural Gas Storage

Provides the functional recommendations for salt cavern facilities used for natural gas storage service and covers facility geomechanical assessments, cavern well design and drilling, risk management, solution mining techniques and operations, including monitoring and maintenance practices, site security and safety, procedures, training, and abandonment. It provides a comprehensive set of design guidelines, recognizing the nature of subsurface geological diversity, and stresses the need for in-depth, site specific geomechanical assessments with a goal of long-term facility integrity and safety. This RP includes the cavern well system (wellhead, wellbore, and cavern) from the emergency shutdown (ESD) valve down to the cavern and facilities having significant impact to safety and integrity of the cavern system. Pages: 118

2nd Edition | November 2022
Product Number: D117002 | Price: $197.00

RP 1171
Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs

Applies to natural gas storage in depleted oil and gas reservoirs and aquifer reservoirs, and focuses on storage well, reservoir, and fluid management for functional integrity in design, construction, operation, monitoring, maintenance, and documentation practices. Storage design, construction, operation, and maintenance include activities in risk management, site security, safety, emergency preparedness, and procedural documentation and training to embed human and organizational competence in the management of storage facilities. This RP embodies historical knowledge and experience and emphasizes the need for case-by-case and site-specific conditional assessments. This RP applies to both existing and newly constructed facilities. Applicable distinctions for aquifer facilities are identified, as necessary. “Replacement,” as used in this document, refers to the complete replacement of a facility unit, as, for example, when an existing well is abandoned and replaced with a new well. Pages: 72

2nd Edition | November 2022
Product Number: D117102 | Price: $197.00

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RP 1172
Recommended Practice for Construction Parallel to Existing Underground Transmission Pipelines

Emphasis of these guidelines is on the interaction between existing transmission pipeline operators and those planning to construct in a parallel fashion. These activities may involve many different parties. Contractors working on behalf of the constructing party, including environmental and survey professionals, design engineers, construction contractors, and operators of excavation and earth moving equipment, should engage in work practices that are in conformance with these guidelines and apply vigilance in identifying unanticipated circumstances that may indicate a problem. This RP applies to those aspects of an operation. Pages: 30

1st Edition | April 2014 | Reaffirmed: April 2020
Product Number: D11721 | Price: $93.00

RP 1173
Pipeline Safety Management Systems (ANSI/API RP 1173)

Establishes a pipeline safety management systems (PSMS) framework for organizations that operate hazardous liquids and gas pipelines jurisdictional to the U.S. Department of Transportation. Operators of other pipelines may find this document applicable useful in operating to their systems. This recommended practice (RP) provides pipeline operators with safety management system requirements that when applied provide a framework to reveal and manage risk, promote a learning environment, and continuously improve pipeline safety and integrity. At the foundation of a PSMS is the operator's existing pipeline safety system, including the operator's pipeline safety processes and procedures. This RP provides a comprehensive framework and defines the elements needed to identify and address safety for a pipeline's life cycle. These safety management system requirements identify what is to be done, and leaves the details associated with implementation and maintenance of the requirements to the individual pipeline operators. The document does not explicitly address personnel safety, environmental protection, and security, but the elements herein can be applied to those aspects of an operation. Pages: 49

1st Edition | July 2015 | Reaffirmed: April 2023
Product Number: D117301 | Price: $93.00

RP 1174
Recommended Practice for Offshore Hazardous Liquid Pipeline Emergency Preparedness and Response

Provides operators of onshore hazardous liquid pipelines a framework that promotes the continual improvement of emergency planning and response processes, including identification and mitigation of associated risks and implementation of changes from lessons learned. This recommended practice (RP) assists the operator in preparing for a safe, timely, and effective response to a pipeline emergency. This RP applies to assets under the jurisdiction of the U.S. Department of Transportation (DOT), specifically U.S. Title 49 Code of Federal Regulations (CFR) Parts 194 and 195. Operators of non-DOT jurisdictional pipelines or tank assets may also make voluntary use of this document. Pages: 48

1st Edition | December 2015 | Product Number: D11741 | Price: $101.00

RP 1175
Pipeline Leak Detection—Program Management

Establishes a framework for Leak Detection Program (LDP) management for hazardous liquid pipelines that are jurisdictional to the U.S. Department of Transportation. This RP is an industry consensus document revised by hazardous liquid pipeline operators, leak detection manufacturers, consultants, and others. RP 1175 focuses on using a risk-based approach to each operator's LDP. Reviewing the main body of this document and following the guidance set forth assists in creating an inherently risk mitigating LDP management system. RP 1175 represents industry best practices in managing an LDP. All leak detection systems (LDSs) used by a pipeline operator should be managed in a coordinated manner. The goal of the LDP is to detect leaks quickly and with certainty, thus facilitating quicker shutdown and therefore minimizing negative consequences. This RP focuses on management of LDSs, not the design of LDSs, and therefore contains relatively little technical detail. As with RP 1130, RP 1175 is intended for single-phase pipelines only; however, the approach may be applicable to pipelines that are not single phase. Pages: 66

1st Edition | April 2022 | Product Number: D11752 | Price: $174.00

RP 1176
Recommended Practice for Assessment and Management of Cracking in Pipelines (includes Errata 1 dated February 2021)

Applies to any pipeline system used to transport hazardous liquid or natural gas, including those defined in U.S. Title 49 Code of Federal Regulations (CFR) Parts 192 and 195. This RP is designed to provide the operator with a description of industry-proven practices in the integrity management of cracks and threats that give rise to cracking mechanisms. The guidance is largely targeted to the line pipe along the right-of-way (ROW), but some of the processes and approaches can be applied to pipeline facilities, including pipeline stations, terminals, and delivery facilities associated with pipeline systems. Defects associated with lap-welded (LW) pipe and selective seam weld corrosion (SSWC) are not covered within this RP. This RP presents the pipeline industry's understanding of pipeline cracking. Mechanisms that cause cracking are discussed, methods to estimate the failure pressure of cracks are reviewed, and methods to estimate crack growth are presented. Selection of the appropriate integrity assessment method for various types of cracking, operating conditions, and pipeline characteristics is discussed. This RP also reviews current knowledge about in-line inspection (ILI) technology and in-the-ditch (ITD) nondestructive evaluation technology. A methodology for responding to ILI indications and specific criteria for when to respond to certain results is presented. Applicable repair techniques are reviewed. Sections are included for the discussion of reassessment interval determination and the consideration of appropriate preventive and mitigative measures. Some performance metrics for measuring the effectiveness of a crack management program are discussed. The technical discussion about crack formation, growth, and failure is to provide the knowledge needed by operators to effectively make integrity decisions about managing cracking on their pipeline systems. Pages: 144

1st Edition | July 2016 | Product Number: D117601 | Price: $182.00

RP 1177
Recommended Practice for Steel Pipeline Construction Quality Management Systems

Establishes minimum Quality Management System (QMS) processes for organizations that own, operate, construct, or provide construction-related services for onshore carbon and low-alloy steel pipelines used in the transportation of hazardous liquids, carbon dioxide, and gas. This recommended practice specifies the elements of a QMS to manage the construction process systematically from design verification, materials manufacturing, procurement, construction, inspection, and testing to initiation of operations. Pages: 68

1st Edition | November 2017 | Product Number: D110701 | Price: $128.00
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Bull 1178
Integrity Data Management and Integration
Provides a compendium of methodologies and considerations for integrating the underlying data used to support integrity management. Any one approach may not be appropriate or applicable in all circumstances. The document reviews possible approaches for consideration by operators in the context of their specific circumstances.

The primary focus of this bulletin is the methodologies and processes used to spatially integrate and normalize the data to support the application of comparative techniques used in interpreting integrity data, with particular emphasis on in-line inspection (ILI) data. The begins with a discussion of general data quality processes, goals, and considerations such that data quality approaches can be considered in the context of the data integration processes.

An impediment to informed integrity decisions is the inability to efficiently review a broad spectrum of data in a format that has been normalized and spatially aligned. With the variations in organizational structures, integrity management programs, and technologies used across the pipeline sector, individual operators design data integration procedures that are customized to their organizational structure, processes, and pipeline systems. Properly managed and integrated data supports agile analytics to integrate new data as they become available and to recognize coincident events and patterns. The source of the data may be from within an organization or may be external to the company, as in the case of representative data based on industry experience or manufacturing processes. The intent is to empower operators to efficiently analyze and integrate threat- and integrity-related data to support their integrity management programs. Pages: 62

1st Edition | November 2020 | Product Number: D1178 | Price: $113.00

TR 1179
Hydrostatic Testing as an Integrity Management Tool
Provides guidelines related to hydrostatic testing as a tool for integrity management in gas and liquids pipelines. It specifically focuses on program design and key parameters for consideration in hydrostatic test programs, as well as potential detrimental effects of hydrostatic testing. Several case studies supplement the guidelines provided. Pages: 64

1st Edition | May 2019 | Product Number: D1179 | Price: $117.00

RP 1181
Pipeline Operational Status Determination
Provides guidance for operations, inspection, and maintenance activities based on the operational status of a pipeline. This establishes:
• four statuses: precommissioned, active/in-service, idled, and abandoned;
• operations, inspections, and maintenance recommendations for various pipeline operational statuses;
• pipeline status documentation requirements;
• recommendations regarding safe transition between pipeline statuses.

For the purposes of this document, the word “pipeline” refers to transmission and regulated gathering pipelines and pipeline systems, although the principles may be applied to nonregulated gathering and flow lines. Pages: 17

1st Edition | October 2019 | Product Number: D1181 | Price: $65.00

RP 1182
Construction, Operation, and Maintenance of Large Diameter Rural Gas Gathering Lines
Contains provisions relating to the design, construction, testing, corrosion control, operation, and maintenance of onshore gas gathering lines as defined in API 80. The requirements in the RP are applicable to pipeline >12.75 in. outside diameter in Class 1 locations (3.1.4) or Class 2 locations (3.1.5) that are not regulated onshore gas gathering lines as defined in 49 CFR 192.8. Pages: 30

1st Edition | March 2020 | Product Number: D1182 | Price: $65.00

RP 1183
Assessment and Management of Pipeline Dents (includes Errata 1 dated January 2021)
Applicable to any pipeline system used to transport hazardous liquid or natural gas. This RP includes detailed technical discussion on dent formation, strain and fatigue, and failure modes and mechanisms. These details are provided to give pipeline operators the information and knowledge necessary to make informed integrity management decisions regarding the management of dents on their systems. This RP describes preventive and mitigative measures that pipeline operators can apply to manage dents after detection. The in-service response of dents to a range of loading conditions is discussed in detail. Pages: 138

1st Edition | November 2020 | Product Number: D1183 | Price: $186.00

RP 1184
Pipeline Facilities Construction Inspection
Covers the basic requirements needed to perform inspection activities safely and effectively during onshore transmission pipeline facility construction. Areas of specialty inspection are noted and are beyond the scope of this document. This content can be applied to construction associated with existing facilities. This recommended practice is not intended to be fully comprehensive of all systems that may be located within a pipeline transportation facility. Users of this recommended practice include operators and those individuals either engaged in facility construction inspection or seeking to become certified inspectors. Operators and facility pipeline inspection service companies may also use this document to develop their inspection processes and responsibilities for inspectors, and to develop and enhance their inspector training programs. This recommended practice was based on The Practical Guide for Facilities Construction Inspectors, developed in partnership by the INGAA Foundation and the CEPA Foundation, and supports United Nations Sustainable Development Goal 9 for resilient infrastructure. Pages: 183

1st Edition | October 2021 | Product Number: D1184 | Price: $144.00

RP 1188
Hazardous Liquid Pipeline Facilities Integrity Management (includes Addendum 1 dated December 2023)
Covers the integrity management of hazardous liquid pipeline facilities. This RP provides guidance on high-consequence area impact determinations; data integration; threat identification; risk assessment; inspection and reinspection; preventive and mitigative measures (P&M); and performance measures. Facilities include terminal and pipeline station piping systems within terminal and pipeline facility boundaries and includes off-plot piping. Off-plot piping includes, but is not limited to, piping between facilities, piping that comes from or goes to a refinery or other type facility, or piping that may cross a road, ditch, or other property outside the confines of a terminal facility. This RP covers the integrity management of all pressure-containing components directly used in the transport or storage of hazardous liquids within a liquids pipeline facility. Piping for transportation of hazardous liquids, such as but not limited to crude oil, highly volatile liquids (HVLs), gasoline, diesel, biofuels, lubricating oils, jet fuel, and aviation fuel are covered by the scope of this document. Pages: 51

1st Edition | January 2022 | Product Number: D1188 | Price: $104.00
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PIPETLINE MAINTENANCE WELDING


Investigated and improved the methods of predicting cooling rates during pipeline maintenance welding. The scope of this study included:

- a review of three previous research efforts to develop satisfactory methods for welding appurtenances to in-service pipelines;
- a survey of pipeline leak and rupture incidents associated with appurtenances;
- the enhancement of existing analytical models for predicting cooling rates and temperatures during welding on an in-service pipeline; and
- a validation of the thermal-analysis models that was achieved by performing welds on pipeline carrying three different liquid-petroleum products.

May 2002 | Product Number: | Version 4.2 | May 2002
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Std 1104
Welding of Pipelines and Related Facilities
(includes Errata 1 dated September 2023)

Covers the gas and arc welding of butt, fillet, and socket welds in carbon and low-alloy steel piping used in the compression, pumping, and transmission of crude petroleum, petroleum products, fuel gases, carbon dioxide, and nitrogen, and, where applicable, covers welding on distribution systems. It applies to both new construction and in-service welding. The welding may be done by a shielded metal-arc welding, submerged arc welding, gas tungsten-arc welding, gas metal-arc welding, flux-cored arc welding, plasma arc welding, oxyacetylene welding, or flash butt welding process, or by a combination of these processes using a manual, semiautomatic, mechanized, or automatic welding technique or a combination of these techniques. The welds may be produced by position or roll welding or by a combination of position and roll welding. This standard also covers the procedures for radiographic, magnetic particle, liquid penetrant, and ultrasonic testing, as well as the acceptance standards to be applied to production welds tested to destruction or inspected by radiographic, magnetic particle, liquid penetrant, ultrasonic, and visual testing methods. Pages: 174

22nd Edition | July 2021 | Product Number: D110422 | Price: $410.00

Std 1104 *
Welding of Pipelines and Related Facilities—Russian
(includes Errata 1 dated September 2023)

Russian translation of Std 1104.

22nd Edition | July 2021 | Product Number: D110422R | Price: $410.00

TANK TRUCK OPERATIONS

RP 1004
Bottom Loading and Vapor Recovery for MC-306 & DOT-406 Tank Motor Vehicles

Provides an industry standard for bottom loading and vapor recovery of propietary and hired carrier DOT MC-306 tank vehicles at terminals operated by more than one supplier. Guides the manufacturer and operator of a tank vehicle as to the uniform features that should be provided to permit loading of a tank vehicle with a standard 4-in. adapter. This edition of RP 1004 requires an independent secondary control system and maximum requirements for outage in the tank to allow the secondary control system to function. Pages: 21

2-Year Extension: January 2018
Product Number: A10048 | Price: $120.00

RP 1007
Loading and Unloading of MC 306/DOT 406 Cargo Tank Motor Vehicles

Ensuring the safe and efficient loading and delivery of petroleum products to retail service stations and bulk facilities is the primary goal for all companies that transport product. This document is a guideline for use by the truck driver and persons responsible for loading and unloading of MC306/ DOT406 cargo tanks. It identifies specific steps to ensure that product can be loaded into tank trucks and unloaded into both underground and aboveground storage tanks in a safe and efficient manner that protects the environment. It is intended to be used in conjunction with existing driver training programs and procedures. Pages: 24

2-Year Extension: January 2018
Product Number: A10071 | Price: $42.00

RP 1112
Developing a Highway Emergency Response Plan for Incidents Involving Hazardous Materials

Provides minimum guidelines for developing an emergency response plan for incidents involving hazardous liquid hydrocarbons, such as gasoline and crude oil, transported in MC 306/DOT 406 and MC 307/DOT 407 aluminum cargo tanks, and for coordinating and cooperating with local, state, and federal officials. Covers response plan priorities, personnel training, special equipment, media relations, environmental relations, and post-response activities. The appendices outline a highway emergency response plan and suggest a procedure for removing liquid hydrocarbons from overturned cargo tanks and righting the tank vehicles. Pages: 21

2-Year Extension: January 2018
Product Number: A11123 | Price: $82.00

SECURITY

Std 780
Security Risk Assessment Methodology for the Petroleum and Petrochemical Industries

Prepared by a Security Risk Assessment (SRA) Committee of the American Petroleum Institute (API) to assist the petroleum and petrochemical industries in understanding security risk assessment and in conducting SRAs. The standard describes the recommended approach for assessing security risk widely applicable to the types of facilities operated by the industry and the security issues the industry faces. The standard is intended for those responsible for conducting security risk assessments and managing security at these facilities. The method described in this standard is widely applicable to a full spectrum of security issues from theft to insider sabotage to terrorism. The API SRA Methodology was developed for the petroleum and petrochemical industry for a broad variety of both fixed and mobile applications. This recommended practice describes a single methodology, rather than a general framework for SRAs, but the methodology is flexible and adaptable to the needs of the user. This methodology constitutes one approach for assessing security vulnerabilities at petroleum and petrochemical industry facilities. However, there are other risk assessment techniques and methods available to industry, all of which share common risk assessment elements. Pages: 113

1st Edition | May 2013 | Reaffirmed: February 2022
Product Number: K78001 | Price: $206.00

* These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersede the English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.
RP 781
Facility Security Plan Methodology for the Oil and Natural Gas Industries

Provides the framework to establish a secure workplace. The plan provides an overview of the threats facing the facility and describes the security measures and procedures designed to mitigate risk and protect people, assets, operations, and company reputation. This API standard was prepared with guidance and direction from the API Security Committee, to assist the petroleum and petrochemical industries in the preparation of a Facility Security Plan (FSP). This standard specifies the requirements for preparing an FSP as well as a discussion of the typical elements included in an FSP.

This standard is intended to be flexible and adaptable to the needs of the user. It is noted that the content of an FSP can vary depending on circumstances such as facility size, location, and operations. This methodology is one approach for preparing an FSP at petroleum and petrochemical facilities. There are other security plan formats available for the industry. It is the responsibility of the user to choose the format and content of the FSP that best meets the needs of a specific facility. The format and content of some FSPs should be dictated by government regulations for covered facilities. This standard is not intended to supersede the requirements of any regulated facility but may be used as a reference document. Pages: 82

1st Edition | September 2016 | Product Number: K78101 | Price: $157.00
have been mothballed (preserved for potential future use) are still covered
deterioration. Process piping systems that are temporarily out of service but
does not become a process safety hazard because of continuing
need some amount of inspection and/or risk mitigation to assure that it
“in-service inspection” Code. However abandoned in place piping may still
Alteration of Piping Systems

This publication is related to an API licensing, certification, or accreditation program.
inspected or recertified. Inspections and tests made at manufacturers' plants, which are usually covered by codes or purchase specifications, are not covered by this publication.

This publication does not cover training requirements for personnel involved in the inspection and repair of pressure-relieving devices. Those seeking these requirements should see API 510/570, which gives the requirements for a quality control system and specifies that the repair organization maintain and document a training program ensuring that personnel are qualified.

Pages: 80

4th Edition | April 2017 | Product Number: C57604 | Price: $227.00

RP 576 *
Inspection of Pressure-Relieving Devices—Spanish

Spanish translation of RP 576.

4th Edition | April 2017 | Product Number: C576045S | Price: $227.00

RP 577◆◆
Welding Processes, Inspection, and Metallurgy

Provides guidance to the API authorized inspector on welding inspection as encountered with fabrication and repair of refinery and chemical plant equipment and piping. Common welding processes, welding procedures, welder qualifications, metallurgical effects from welding, and inspection techniques are described to aid the inspector in fulfilling their role implementing API 510, API 570, Std 653, and RP 582. The level of learning and training obtained from this document is not a replacement for the training and experience required to be an American Welding Society (AWS) Certified Welding Inspector (CWI). Pages: 194

3rd Edition | October 2020 | Product Number: C57703 | Price: $269.00

RP 578◆◆◆
Material Verification Program for New and Existing Assets

Provides recommended practices for an owner/operator to develop and implement a material verification program (MVP) as part of an asset integrity program. The MVP uses positive material identification (PMI) and other testing and administrative methods to verify that the nominal composition of an asset, an asset component, or weldment (or any other tested item) is consistent with the selected or specified construction materials. A well-designed and well-implemented MVP is an important management system used to minimize the potential for release of hazardous substances due to nonconforming materials of construction. Pages: 28

4th Edition | February 2023 | Product Number: C57804 | Price: $227.00

API 579-1/ASME FFS-1
Fitness-For-Service

Provides guidance for conducting fitness-for-service assessments using methodologies specifically prepared for pressurized equipment. Fitness-for-service assessments are quantitative engineering evaluations that are performed to demonstrate the structural integrity of an in-service component that may contain a flaw or damage, or that may be operating under a specific condition that might cause a failure. The guidelines provided in this standard can be used to make run-repair-replace decisions to help determine if components in pressurized equipment containing flaws that have been identified by inspection can continue to operate safely for some period of time. These fitness-for-service assessments are currently recognized and referenced by API Codes and Standards (510, 570, and 653), and by NB-23 (National Board Inspection Code) as suitable means for evaluating the structural integrity of pressure vessels, piping systems, and storage tanks where inspection has revealed some level of degradation and/ or flaws in the equipment. Pages: 1478

4th Edition | December 2021
Product Number: C57904 | Price: $1,274.00

API 579-2/ASME FFS-2
Fitness-For-Service Example Problem Manual

Fitness-For-Service (FFS) assessments in API 579-1/ASME FFS-1 are engineering evaluations that are performed to demonstrate the structural integrity of an in-service component that may contain a flaw or damage, or that may be operating under specific conditions that could produce a failure. API 579-1/ASME FFS-1 provides guidance for conducting FFS assessments using methodologies specifically prepared for pressurized equipment. The guidelines provided in this standard may be used to make run-repair-replace decisions to help determine if pressurized equipment containing flaws that have been identified by inspection can continue to operate safely for some period of time. These FFS assessments of API 579-1/ASME FFS-1 are currently recognized and referenced by the API Codes and Standards (510, 570, and 653), and by NB-23 as a suitable means for evaluating the structural integrity of pressure vessels, piping systems, and storage tanks where inspection has revealed degradation and flaws in the equipment or where operating conditions suggest that a risk of failure may be present.

Example problems illustrating the use and calculations required for Fitness-For-Service assessments described in API 579-1/ASME FFS-1 are provided in this document. Example problems are provided for all calculation procedures in both SI and U.S. customary units.

An introduction to the example problems in this document is described in Part 2 of this standard. The remaining parts of this document contain the example problems. The parts in this document coincide with the parts in API 579-1/ASME FFS-1. For example, example problems illustrating calculations for local thin areas are provided in Part 5 of this document. This coincides with the assessment procedures for local thin areas contained in Part 5 of API 579-1/ASME FFS-1. Pages: 366

1st Edition | August 2009 | Product Number: C57921 | Price: $168.00

RP 580◆◆◆
Elements of a Risk-Based Inspection Program

Provides users with the basic minimum and recommended elements for developing, implementing, and maintaining a risk-based inspection (RBI) program. It also provides guidance to owner-users, operators, and designers of pressure-containing equipment for developing and implementing an inspection program. These guidelines include means for assessing an inspection program and its plan. The approach emphasizes safe and reliable operation through risk-prioritized inspection. A spectrum of complementary risk analysis approaches (qualitative through fully quantitative) can be considered as part of the inspection planning process. RBI guideline issues covered include an introduction to the concepts and principles of RBI for risk management; individual sections that describe the steps in applying these principles within the framework of the RBI process. Pages: 99

4th Edition | August 2023 | Product Number: C58004 | Price: $326.00

RP 581
Risk-Based Inspection Methodology

(includes Addendum 1 dated April 2019 and Addendum 2 dated October 2020)

Provides quantitative procedures to establish an inspection program using risk-based methods for pressurized fixed equipment including pressure vessel, piping, tankage, pressure relief devices (PRDs), and heat exchanger tube bundles. RP 580 provides guidance for developing Risk-Based Inspection (RBI) programs on fixed equipment in refining, petrochemical, chemical process plants, and oil and gas production facilities. The intent is for RP 580 to introduce the principles and present minimum general guidelines for RBI, while this recommended practice provides quantitative calculation methods to determine an inspection plan.

The calculation of risk outlined in API RP 581 involves the determination of a probability of failure (POF) combined with the consequence of failure (COF). Failure is defined as a loss of containment from the pressure boundary resulting in leakage to the atmosphere or rupture of a pressurized component. Risk increases as damage accumulates during in-service operation as the risk tolerance or risk target is approached and an inspection
is recommended of sufficient effectiveness to better quantify the damage state of the component. The inspection action itself does not reduce the risk; however, it does reduce uncertainty and therefore allows more accurate quantification of the damage present in the component. Pages: 632

3rd Edition | April 2016 | Product Number: C58103 | Price: $936.00

API Risk-Based Inspection Software

API RBI software, created by petroleum refinery and chemical plant owner/users for owner/users, finds its basis in API Publication 581, Base Resource Document—Risk-Based Inspection. Practical, valuable features are built into the technology, which is based on recognized and generally accepted good engineering practices.

The purposes of the Risk-Based Inspection Program are:

- screen operating units within a plant to identify areas of high risk;
- estimate a risk value associated with the operation of each equipment item in a refinery or chemical process plant based on a consistent methodology;
- prioritize the equipment based on the measured risk;
- design a highly effective inspection program; and
- systematically manage the risks associated with equipment failures.

The RBI method defines the role of operating equipment as the combination of two separate terms: the consequence of failure and the likelihood of failure.

For more information: e-mail rbi@api.org or call 281-537-8848

RP 582
Welding Guidelines for the Chemical, Oil, and Gas Industries

Provides supplementary guidelines and practices for welding and welding-related topics for shop and field fabrication, repair, and modification of the following: pressure-retaining equipment; tanks and attachment welds; nonremovable internals for process equipment; structural items attached and related to process equipment; and other equipment or component items when referenced by an applicable purchase document. Pages: 78

4th Edition | May 2023 | Product Number: C58204 | Price: $149.00

RP 583
Corrosion Under Insulation and Fireproofing

Covers design, maintenance, inspection, and mitigation practices to address external corrosion under insulation (CUI) and corrosion under fireproofing (CUF). The document discusses the external corrosion of carbon and low-alloy steels under insulation and fireproofing, and external chloride stress corrosion cracking (ECSCC) of austenitic and duplex stainless steels under insulation. Pages: 106

2nd Edition | March 2021 | Product Number: C58302 | Price: $202.00

RP 584
Integrity Operating Windows

Explains the importance of integrity operating windows (IOWs) for process safety management and to guide users in how to establish and implement an IOW program for process facilities. It is the intent of the document to provide the user with information and guidance on the work process for the development and implementation of IOWs to help strengthen the mechanical integrity (MI) program for each process unit. This edition includes a new Annex D, Barriers to Successful IOW Implementation, as a way to assist in improving industry safety and sustainability. Pages: 69

2nd Edition | December 2021 | Product Number: C58402 | Price: $140.00

RP 585
Pressure Equipment Integrity Incident Investigation

Provides owner-operators with practices for developing, implementing, sustaining, and enhancing an investigation program for pressure equipment integrity (PEI) incidents. This document describes characteristics of how an effective investigation could be structured so organizations can learn from PEI failures, near-misses, or discoveries. Pages: 52

2nd Edition | April 2021 | Product Number: C58502 | Price: $149.00

Bull 587
Guidance for the Development of Ultrasonic Examiner Qualification Programs

Provides owner/users with guidelines for developing basic in-house qualification programs to identify industry-qualified UT angle beam examiners that are equivalent to those possessing an ultrasonic angle beam qualification from API (e.g. API QUTE/QUSE Detection and Sizing Tests) for inspection of pressure equipment and piping as required by API 510 and API 570. The availability of high-quality and accurate ultrasonic testing (UT) data is often the cornerstone for weld and base metal discontinuities detection and sizing for equipment integrity assessments. As a result, API has implemented several certification programs to assist in defining the minimum criteria for assessing the performance of UT technicians. Pages: 31

1st Edition | May 2021 | Product Number: C58701 | Price: $94.00

RP 588
Recommended Practice for Source Inspection and Quality Surveillance of Fixed Equipment

Summarizes the basic body of knowledge that the source inspector typically needs to know to perform as a source inspector for fixed equipment. A secondary purpose is to assist candidates intending to take the API Source Inspection Examination to become certified source inspectors. This recommended practice (RP) outlines the fundamentals of source inspection and may be useful to all personnel conducting such activities to perform their jobs in a competent and ethical manner.

This RP covers the process of specifying the necessary quality surveillance of materials, equipment, and fabrications being supplied for use in the oil, petrochemical, and gas Industry, including upstream, midstream, and downstream segments. This RP may be used as the basis for providing a systematic approach to risk-based source inspection in order to provide confidence that materials and equipment being purchased meet the minimum requirements as specified in the project documents and contractual agreements. Pages: 72

1st Edition | July 2019 | Product Number: C58801 | Price: $175.00

Bull 590
SCIMI Term, Definition, and Acronym Standardization Work Process

Establishes a work process to manage terms, definitions, and acronyms in documents published by the API Committee on Refining Equipment (CRE) Subcommittee on Inspection and Mechanical Integrity (SCIMI). The work processes described in this publication shall be used when SCIMI develops new standards or new terms, definitions, and acronyms in existing standards. The work processes shall also be used to verify accuracy and consistent use of terms, definitions, and acronyms when an existing SCIMI document is revised. Pages: 12

1st Edition | November 2022 | Product Number: C59001 | Price: $69.00
Std 653 ●
Tank Inspection, Repair, Alteration, and Reconstruction
(includes Addendum 1 dated April 2018, Addendum 2 dated May 2020, Addendum 3 dated November 2023, and Errata 1 dated March 2020)

Covers steel storage tanks built to Std 650 and its predecessor Spec 12C. It provides minimum requirements for maintaining the integrity of such tanks after they have been placed in service and addresses inspection, repair, alteration, relocation, and reconstruction.

The scope is limited to the tank foundation, bottom, shell, structure, roof, attached appurtenances, and nozzles to the face of the first flange, first threaded joint, or first welding-end connection. Many of the design, welding, examination, and material requirements of Std 650 can be applied in the maintenance inspection, rating, repair, and alteration of in-service tanks. In the case of apparent conflicts between the requirements of this standard and Std 650 or its predecessor Spec 12C, this standard shall govern for tanks that have been placed in service.

This standard employs the principles of Std 650; however, storage tank owner/operators, based on consideration of specific construction and operating details, may apply this standard to any steel tank constructed in accordance with a tank specification.

This standard is intended for use by organizations that maintain or have access to engineering and inspection personnel technically trained and experienced in tank design, fabrication, repair, construction, and inspection. This standard does not contain rules or guidelines to cover all the varied conditions which may occur in an existing tank. When design and construction details are not given, and are not available in the as-built standard, details that will provide a level of integrity equal to the level provided by the current edition of Std 650 must be used.

This standard recognizes fitness-for-service assessment concepts for evaluating in-service degradation of pressure containing components. API 579-1/ASME FFS-1, Fitness-For-Service, provides detailed assessment procedures or acceptance criteria for specific types of degradation referenced in this standard. When this standard does not provide specific evaluation procedures or acceptance criteria for a specific type of degradation or when this standard explicitly allows the use of fitness-for-service criteria, API 579-1/ASME FFS-1 may be used to evaluate the various types of degradation or test requirements addressed in this standard. Pages: 162

5th Edition | November 2014 | Product Number: C65305 | Price: $255.00

Std 653 *
Tank Inspection, Repair, Alteration, and Reconstruction—Chinese (includes Addendum 1 dated April 2018, Addendum 2 dated May 2020, Addendum 3 dated November 2023, and Errata 1 dated March 2020)
Chinese translation of Std 653.

5th Edition | November 2014 | Product Number: C65305C | Price: $255.00

Std 653 *
Tank Inspection, Repair, Alteration, and Reconstruction—Portuguese (includes Addendum 1 dated April 2018, Addendum 2 dated May 2020, Addendum 3 dated November 2023, and Errata 1 dated March 2020)
Portuguese translation of Std 653.

5th Edition | November 2014 | Product Number: C65305P | Price: $255.00

MECHANICAL EQUIPMENT STANDARDS FOR REFINERY SERVICE

Std 610
Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas Industries
Specifies requirements for centrifugal pumps, including pumps running in reverse as hydraulic power recovery turbines, for use in petroleum, petrochemical, and gas industry process services. This document is applicable to overhung pumps, between bearings pumps, and vertically suspended pumps. This document also provides requirements applicable to specific types of pumps. Illustrations are provided of the various specific pump types and the designations assigned to each specific pump type. Pages: 233

12th Edition | January 2021 | Product Number: C61012 | Price: $175.00

Std 611
General-Purpose Steam Turbines for Petroleum, Chemical, and Gas Industry Services
Covers the minimum requirements for general-purpose steam turbines. These requirements include basic design, materials, related lubrication systems, controls, auxiliary equipment, and accessories for use in the petroleum, chemical, and gas industry services. This standard includes only general-purpose turbines. General-purpose turbines are horizontal or vertical turbines used to drive equipment that is usually spared or is in noncritical service. They are generally used where steam conditions will not exceed a pressure of 48 bar (700 psig) and a temperature of 400 °C (750 °F). Pages: 150

6th Edition | June 2022 | Product Number: C61106 | Price: $175.00

Std 612
Petroleum Petrochemical, and Natural Gas Industries—Steam Turbines—Special-Purpose Applications
Specifies the minimum requirements for steam turbines for special-purpose applications for use in the petroleum, petrochemical, and natural gas industries. These requirements include basic design, materials, fabrication, inspection testing, and preparation for shipment. It also covers the related lube oil systems, instrumentation, control systems, and auxiliary equipment. It is not applicable to general-purpose steam turbines, which are covered in Std 611. Pages: 199

8th Edition | November 2020 | Product Number: C61208 | Price: $263.00

Std 613
Special Purpose Gear Units for Petroleum, Chemical and Gas Industry Services
(ANSI/API Std 613)
Covers the minimum requirements for special-purpose, enclosed, precision single- and double-helical one-and two-stage speed increasers and reducers of parallel-shaft design for refinery services. This standard is primarily intended for gear units that are in continuous service without installed spare equipment. Pages: 124

6th Edition | July 2021 | Product Number: C61306 | Price: $250.00

Std 614
Lubrication, Shaft-Sealing, and Control-Oil Systems and Auxiliaries
Covers the minimum requirements for lubrication systems, oil-type shaft-sealing systems, oil-control systems, and auxiliaries, excluding dry gas seal systems and fuel systems. These systems can serve individual equipment such as compressors, gears, pumps, and drivers or complete trains.
Pages: 246


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**Std 616**
Gas Turbines for the Petroleum, Chemical and Gas Industry Services
Covers the minimum requirements for open-, simple-, and regenerative-cycle combustion gas turbine units for services of mechanical drive, generator drive, or process gas generation. All auxiliary equipment required for operating, starting, controlling, and protecting gas turbine units is either discussed directly in this standard or referred to in this standard through references to other publications. Specifically, gas turbine units that are capable of firing gas or liquid or both are covered by this standard. This standard covers both industrial and aeroderivative gas turbines.

6th Edition | September 2022 | Product Number: C61606 | Price: $245.00

**Std 617**
Axial and Centrifugal Compressors and Expander-Compressors
Specifies minimum requirements and gives recommendations for axial compressors, single-shaft and integrally geared process centrifugal compressors, and expander-compressors for special-purpose applications that handle gas or process air in the petroleum, chemical, and gas industries.

9th Edition | April 2022 | Product Number: C61709 | Price: $286.00

**Std 618**
Reciprocating Compressors for Petroleum, Chemical and Gas Industry Services
(ANSI/API Std 618)
(Covers the minimum requirements for reciprocating compressors and their drivers used in petroleum, chemical, and gas industry services for handling process air or gas with either lubricated or nonlubricated cylinders. Compressors covered by this standard are of low to moderate speed and in critical services. Also covered are related lubricating systems, controls, instrumentation, intercoolers, aftercoolers, pulsation suppression devices, and other auxiliary equipment. Pages: 190)

5th Edition | December 2007 | Reaffirmed: July 2017
Product Number: C61805 | Price: $196.00

**Std 618** *
Reciprocating Compressors for Petroleum, Chemical and Gas Industry Services—Russian
(ANSI/API Std 618)
(Covers the minimum requirements for reciprocating compressors and their drivers used in petroleum, chemical, and gas industry services for handling process air or gas with either lubricated or nonlubricated cylinders. Compressors covered by this standard are of low to moderate speed and in critical services. Also covered are related lubricating systems, controls, instrumentation, intercoolers, aftercoolers, pulsation suppression devices, and other auxiliary equipment. Pages: 190)

5th Edition | December 2007 | Reaffirmed: July 2017
Product Number: C61805R | Price: $196.00

**Std 619/ISO 10440-1:2007** *
Rotary-Type Positive Displacement Compressors for Petroleum, Petrochemical and Natural Gas Industries
Includes Errata 1 to datasheets dated August 2018
Specifies requirements for dry and oil-flooded, helical-lobe rotary compressors used for vacuum or pressure or both in petroleum, petrochemical, and gas industry services. It is intended for compressors that are in special-purpose applications. It is not applicable to general-purpose air compressors, liquid-ring compressors, or vane-type compressors.

This edition of API Std 619 is the identical national adoption of ISO 10440-1:2007. Pages: 135

5th Edition | December 2010 | Product Number: CX61905 | Price: $234.00

**Std 619/ISO 10440-1:2007** *
Rotary-Type Positive Displacement Compressors for Petroleum, Petrochemical and Natural Gas Industries—Russian
Includes Errata 1 to datasheets dated August 2018

5th Edition | December 2010
Product Number: CX61905R | Price: $234.00

**Std 670**
Machinery Protection Systems
Provides a purchase specification to facilitate the manufacture, procurement, installation, and testing of vibration, axial-position, and bearing temperature monitoring systems for petroleum, chemical, and gas industry services. Covers the minimum requirements for monitoring radial shaft vibration, casing vibration, shaft axial position, and bearing temperatures. It outlines a standardized monitoring system and covers requirements for hardware (sensors and instruments), installation, testing, and arrangement.

Product Number: C67005 | Price: $212.00

**Std 670** *
Machinery Protection Systems—Russian
Russian translation of Std 670.

5th Edition | November 2014 | Product Number: C67005R | Price: $212.00

**Std 671**
Special Purpose Couplings for Petroleum, Chemical, and Gas Industry Services
Specifies the requirements for couplings for the transmission of power between the rotating shafts of two machines in special-purpose applications in the petroleum, petrochemical and natural gas industries. Such applications are typically in large and/or high speed machines, in services that can be required to operate continuously for extended periods, are often unspared and are critical to the continued operation of the installation. By agreement, it can be used for other applications or services. Couplings covered are designed to accommodate parallel (or lateral) offset, angular misalignment and axial displacement of the shafts without imposing unacceptable mechanical loading on the coupled machines. It is applicable to gear, metallic flexible element, quill shaft and torsionally resilient type couplings. Torsional damping and resilient type couplings are detailed in Annex A; gear-type couplings are detailed in Annex B and quill shaft style coupling are detailed in Annex C. Also covers the design, materials of construction, manufacturing quality, inspection and testing special purpose couplings.

5th Edition | August 2020
Product Number: C67105 | Price: $253.00

**Std 672**
Packaged, Integrally Geared Centrifugal Air Compressors for Petroleum, Chemical, and Gas Industry Services
Covers the minimum requirements for constant-speed, packaged, general purpose integrally geared centrifugal air compressors, including their accessories. This standard is not applicable to machines that develop a pressure rise of less than 0.35 bar (5.0 psi) above atmospheric pressure, which are classed as fans or blowers.

5th Edition | August 2019
Product Number: C67205 | Price: $315.00

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Refining

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**Std 673**
Centrifugal Fans for Petroleum, Chemical, and Gas Industry Services

Covers the minimum requirements for centrifugal fans for use in petroleum, chemical, and gas industry services. Fan static pressure rise is limited to differential usually not exceeding 130 in. (330 cm) of water equivalent air pressure from a single impeller or each impeller in a two stage fan. This standard does not apply to axial flow, axial cooler, cooling tower, and ventilation fans and positive displacement blowers.

This standard covers equipment for both general purpose and special purpose applications. The purchaser shall determine which classification applies. Refer to Section 3 for definition of the terms general purpose and special purpose. Additional or overriding requirements applicable to special purpose applications are included at the end of each section (e.g. 6.7.5, etc.).

Pages: 113

3rd Edition | December 2014 | Product Number: C67303 | Price: $184.00

**Std 673 ***
Centrifugal Fans for Petroleum, Chemical, and Gas Industry Services—Russian

Russian translation of Std 673.

3rd Edition | December 2014

Product Number: C67303R | Price: $184.00

**Std 674**
Positive Displacement Pumps—Reciprocating

(includes Errata 1 dated May 2014 and Errata 2 dated April 2015)

Covers the minimum requirements for reciprocating positive displacement pumps and pump units for use in the petroleum, petrochemical, and gas industry services. Both direct-acting and power-frame types are included. Controlled-volume pumps, hydraulically driven pumps, and rotary pumps are not included. Pages: 95


2-Year Extension: November 2015

Product Number: C67403 | Price: $202.00

**Std 674 ***
Positive Displacement Pumps—Reciprocating—Russian

(includes Errata 1 dated May 2014 and Errata 2 dated April 2015)

Russian translation of Std 674.


Product Number: C67403R | Price: $202.00

**Std 675**
Positive Displacement Pumps—Controlled Volume for Petroleum, Chemical, and Gas Industry Services

(includes Errata 1 dated June 2014 and Errata 2 dated April 2015)

Covers the minimum requirements for reciprocating, controlled volume pumps, and pump units for use in the petroleum, petrochemical, and gas industry services. These pumps are either hydraulic diaphragm or packed gland type design. Rotary positive displacement pumps are not included. Diaphragm pumps that use direct mechanical actuation are also excluded.

NOTE See Std 674 for positive displacement reciprocating pumps and Std 670 for positive displacement rotary pumps.

This standard requires the purchaser to specify certain details and features. A bullet (•) at the beginning of a paragraph indicates that either a decision by, or further information from, the purchaser is required. Further information should be shown on the datasheets (see example in Annex A) or stated in the quotation request and purchase order. Pages: 64

3rd Edition | November 2012 | Reaffirmed: July 2021

Product Number: C67503 | Price: $138.00

**Std 675 ***
Positive Displacement Pumps—Controlled Volume for Petroleum, Chemical, and Gas Industry Services—Russian

(includes Errata 1 dated June 2014 and Errata 2 dated April 2015)

Russian translation of Std 675.

3rd Edition | November 2012 | Reaffirmed: July 2021

Product Number: C67503R | Price: $138.00

**Std 676**
Positive Displacement Pumps—Rotary

Covers the minimum requirements for rotary positive displacement process pumps and pump units for use in the petroleum, petrochemical, and gas industry services. Controlled-volume pumps, hydraulically driven pumps and positive displacement reciprocating pumps are not included. Pages: 101

4th Edition | September 2021 | Product Number: C67604 | Price: $194.00

**Std 677**
Liquid Ring Compressors and Vacuum Pumps in Petroleum, Chemical, and Gas Industry Services

Covers the minimum requirements for general-purpose, enclosed single and multistage gear units incorporating parallel shaft spur, and helical gears for use in the petroleum, chemical, and gas industry services. General-purpose and extruder gears manufactured according to this standard are limited to pitch line velocities that do not exceed 60 m/s (12,000 ft/min). Pages: 188

4th Edition | February 2022 | Product Number: C67704 | Price: $179.00

**Std 681**
Liquid Ring Compressors and Vacuum Pumps in Petroleum, Chemical, and Gas Industry Services—Russian

Covers the minimum requirements for the basic design, inspection, testing, and preparation for shipment of liquid ring vacuum pump and compressor systems for service in the petroleum, chemical, and gas industries. It includes both vacuum pump and compressor design and system design. Pages: 151

2nd Edition | July 2021 | Product Number: C68102 | Price: $175.00

**Std 682**
Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps

Specifies requirements and gives recommendations for sealing systems for centrifugal and rotary pumps used in the petroleum, natural gas, and chemical industries. See A1.1.1 and A1.2.1. It is the responsibility of the purchaser or seal vendor to ensure that the selected seal and auxiliaries are suitable for the intended service condition. It is applicable mainly for hazardous, flammable, and/o toxic services where a greater degree of reliability is required for the improvement of equipment availability and the reduction of both emissions to the atmosphere and life-cycle sealing costs. It covers seals for pump shaft diameters from 20 mm (0.75 in.) to 110 mm (4.3 in.). This standard is also applicable to seal spare parts and can be referred to for the upgrading of existing equipment. A classification system for the seal configurations covered by this standard into categories, types, arrangements, and orientations is provided.

This standard is referenced normatively in Std 610. It is applicable to both new and retrofitted pumps and to pumps other than Std 610 pumps (e.g. ASME B73.1, ASME B73.2, and Std 676 pumps). This standard might also be referenced by other machinery standards such as other pumps, compressors, and agitators. Users are cautioned that this standard is not specifically written to address all of the potential applications that a purchaser may specify. This is especially true for the size envelope specified for Std 682 seals. The purchaser and seal vendor shall mutually agree on the features taken from this standard and used in the application. Pages: 256


Product Number: C68204 | Price: $277.00

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**Std 682 * **
Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps—Chinese
Chinese translation of Std 682,
Product Number: C68204C | Price: $277.00

**Std 682 * **
Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps—Russian
Russian translation of Std 682.
Product Number: C68204R | Price: $277.00

**RP 684**
Describes, discusses, and clarifies the section of the API Standard Paragraphs that outline the complete lateral and torsional rotordynamics and rotor balancing acceptance program designed by API to ensure equipment mechanical reliability. Background material on the fundamentals of these subjects (including terminology) along with rotor modeling utilized in this analysis is presented for those unfamiliar with the subject. This document is an introduction to the major aspects of rotating equipment vibrations that are addressed during a typical lateral dynamics analysis. Pages: 303
2nd Edition | August 2005 | Reaffirmed: November 2010
Product Number: C68402 | Price: $191.00

**TR 684-1**
Describes, discusses, and clarifies the section of the API Standard Paragraphs that outline the complete rotordynamic acceptance program. The acceptance program was designed by API to ensure mechanical reliability of equipment. This document is an introduction to the major aspects of rotating equipment vibrations that are addressed during a typical lateral dynamics analysis. Pages: 538
1st Edition | November 2019 | Product Number: C684101 | Price: $245.00

**Std 685**
Sealless Centrifugal Pumps for Petroleum, Petrochemical, and Gas Industry Process Service
Covers the minimum requirements for sealless centrifugal pumps for use in petroleum, heavy-duty petrochemical, and gas industry services. It is applicable to single-stage overhung pumps of two classifications, magnetic drive pumps (MDPs) and canned motor pumps (CMPs). Sections 2 through 8 and Section 10 cover requirements applicable to both classifications. Section 9 is divided into two subsections and covers requirements unique to each classification. Pages: 197
3rd Edition | July 2022 | Product Number: C68503 | Price: $245.00

**RP 686**
Recommended Practice for Machinery Installation and Installation Design
Provides recommended procedures, practices, and checklists for the installation and precommissioning of new, existing, and reapplied machinery and to assist with the installation design of such machinery for petroleum, chemical, and gas industry services facilities. In general, this RP is intended to supplement vendor instructions and the instructions provided by the original equipment manufacturer (OEM) should be carefully followed with regard to equipment installation and checkout. Most major topics of this RP are subdivided into sections of “Installation Design” and “Installation” with the intent being that each section can be removed and used as needed by the appropriate design or installation personnel. Pages: 254
Product Number: C68602 | Price: $203.00

**RP 687 **
Special-Purpose Rotating Equipment Repairs
Covers the recommendations for the inspection and repair of special-purpose rotating equipment assemblies and components (rotors, bearings, couplings, and stationary components) used in petroleum, chemical, and gas industry services. Pages: 671
2nd Edition | October 2023 | Product Number: C68702 | Price: $310.00

**Std 688 **
Pulsation and Vibration Control for Positive Displacement Machinery Systems for Petroleum, Chemical, and Natural Gas Industry Services
Covers the minimum requirements for pulsation and vibration control for positive displacement (PD) machinery systems used in the petroleum, chemical, and natural gas industry services. The specific machinery addressed includes reciprocating compressors; rotary-type PD compressors; PD pumps—reciprocating; PD pumps—controlled volume; and PD pumps—rotary. Pages 175
2nd Edition | October 2023 | Product Number: C68802 | Price: $180.00

**RP 691**
Risk-Based Machinery Management
Defines the minimum requirements for the management of health, safety, and environmental (HSE) risks across the machinery life cycle. It shall be applied to the subset of operating-company- and/or vendor-defined high-risk machinery. Pages: 198
1st Edition | June 2017 | Product Number: C69101 | Price: $177.00

**Std 692**
Dry Gas Sealing Systems for Axial, Centrifugal, and Rotary Screw Compressors and Expanders
Covers the minimum dry gas sealing system requirements in association with axial, centrifugal, and rotary screw compressors and expanders for use in the petroleum, chemical, and gas industry services as described in API 617 and API 619. Pages: 258
1st Edition | June 2018 | Product Number: C69201 | Price: $179.00

**RP 697 **
Pump Repair
Covers the minimum recommendations for the inspection and repair of API 610 pumps types OH1 through OH5 and BB1 through BB5. This document covers the entire process of field inspection, modifications, inspection, upgrades, repair and/or new component manufacturer, reassembly of the pump casing and rotor in the shop, and the reinstallation and start-up of the pump in the field. Pages 750
2nd Edition | April 2023 | Product Number: C69701 | Price: $325.00

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STORAGE TANKS

Impact of Gasoline Blended with Ethanol on the Long-Term Structural Integrity of Liquid Petroleum Storage Systems and Components

Summarizes the results of a literature review conducted for the American Petroleum Institute on the impact of gasoline blended with ethanol on the long-term structural integrity of liquid petroleum storage systems and components. It is anticipated that the use of ethanol in motor fuels will continue to increase. This has generated interest about the potential long-term structural effects of ethanol on liquid petroleum storage systems, including underground storage tanks (USTs), underground piping, and associated components. The objective of the literature review is to determine the state of industry knowledge and research on the effects of ethanol/gasoline blends on the long-term structural integrity of UST systems and components. This review is intended to assist decision-makers on further research requirements and needed changes or supplements to existing standards for underground storage system components used for storing and dispensing gasoline blended with gasoline. Appendix A may be purchased separately as an electronic database file. The database synopsis and bibliographic information for all articles reviewed for the project. The report is organized by article index number. Reference numbers cited in this report refer to the article index number. Pages: 25
January 2003 | Executive Summary | Price: $71.00
Appendix A—Literature Review | Price $138.00

Spec 12B ◆ Specification for Bolted Tanks for Storage of Production Liquids

Covers material, design, fabrication, and testing requirements for vertical, cylindrical, aboveground, closed and open-top, bolted steel storage tanks in various standard sizes and capacities with internal pressures approximating atmospheric pressure. This specification is designed to provide the oil production industry with safe and economical bolted tanks of adequate safety and reasonable economy for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. Pages: 30
17th Edition | December 2020
Product Number: G12B17 | Price: $143.00

Spec 12D ◆ Specification for Field-Welded Tanks for Storage of Production Liquids

Covers material, design, fabrication, and testing requirements for vertical, cylindrical, aboveground, closed top, welded steel storage tanks with internal pressures approximately atmospheric at various sizes and capacities ranging from 500 to 10,000 barrels. This specification is designed to provide the oil production industry with tanks of adequate safety and reasonable economy for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. This specification is for the convenience of purchasers and manufacturers in ordering and fabricating tanks. Pages: 29
12th Edition | June 2017 | Effective Date: December 1, 2017
Product Number: G12D12 | Price: $116.00

Spec 12F ◆ Specification for Shop-Welded Tanks for Storage of Production Liquids

Covers material, design, fabrication, and testing requirements for new shop-fabricated vertical, cylindrical, aboveground, welded steel storage tanks in the standard sizes and capacities, and for internal pressures approximately atmospheric, given in Table 1. This specification is designed to provide the oil production industry with tanks of adequate safety and reasonable economy for use in the storage of crude petroleum and other liquids commonly handled and stored by the production segment of the industry. This specification is for the convenience of purchasers and manufacturers in ordering and fabricating tanks. Pages: 35
13th Edition | January 2019 | Effective Date: July 1, 2019
Product Number: G12F13 | Price: $146.00

Spec 12P ◆ Specification for Fiberglass Reinforced Plastic Tanks

Covers material, design, fabrication, and testing requirements for fiberglass reinforced plastic (FRP) tanks. Only shop-fabricated, vertical, cylindrical tanks are covered. Tanks covered by this specification are intended for above ground and atmospheric pressure service. This specification applies to new tanks. The requirements may be applied to existing tanks at the discretion of the owner/operator. This specification is designed to provide the petroleum industry with various standard sizes of FRP tanks. Because of the versatility of FRP tanks, the user shall be responsible for determining the suitability of FRP tanks for the intended service. Unsupported cone bottom tanks are outside the scope of this specification. Pages: 27
4th Edition | February 2016 | Effective Date: August 1, 2016
Product Number: G12P04 | Price: $117.00

◆ This publication is related to an API licensing, certification, or accreditation program.
**Std 12R1**
*Installation, Operation, Maintenance, Inspection, and Repair of Tanks in Production Service*
(includes Addendum 1 dated June 2021)

For use as a guide for new tank installations and maintenance of existing tanks, Spec 12R1 contains recommendations for good practices in the collection of well or lease production; gauging; delivery to pipeline carriers for transportation; and other production storage and treatment operations. This recommended practice is intended primarily for application to tanks fabricated to Specs 12F, 12D, 12F, and 12P when employed in on-land production service, but its basic principles are applicable to atmospheric tanks of other dimensions and specifications when they are employed in similar oil and gas production, treating, and processing services. It is not applicable to refineries, petrochemical plants, marketing bulk stations, or pipeline storage facilities operated by carriers. Pages: 53


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**Std 620**
*Design and Construction of Large, Welded, Low-Pressure Storage Tanks*
(includes Addendum 1 dated November 2014, Addendum 2 dated April 2018, and Addendum 3 dated September 2021)

Covers the design and construction of large field-assembled, welded, low-pressure carbon steel above ground storage tanks (including flat-bottom tanks) that have a single vertical axis of revolution, that contain petroleum intermediates (gases or vapors) and finished products, as well as other liquid products commonly handled and stored by the various branches of the industry.

Covered are tanks designed for metal temperatures not greater than 250 °F and with pressures in their gas or vapor spaces not more than 15 pounds per square inch gauge. The basic rules in this standard provide for installation in areas where the lowest recorded 1-day mean atmospheric temperature is -50 °F. Annex S covers stainless steel low-pressure storage tanks in ambient temperature service in all areas, without limit on low temperatures. Annex R covers low-pressure storage tanks for refrigerated products at temperatures from +40 °F to -60 °F. Annex Q covers low-pressure storage tanks for liquefied gases at temperatures not lower than -325 °F.

This standard is applicable to tanks that (a) hold or store liquids with gases or vapors above their surface or (b) hold or store gases or vapors alone. These rules do not apply to lift-type gas holders.

Although the rules in this standard do not cover horizontal tanks, they are not intended to preclude the application of appropriate portions to the design and construction of horizontal tanks designed in accordance with good engineering practice. Pages: 288

12th Edition | October 2013 | Product Number: C62012 | Price: $471.00

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**Std 620 * **
*Design and Construction of Large, Welded, Low-Pressure Storage Tanks—Chinese*
(includes Addendum 1 dated November 2014, Addendum 2 dated April 2018, and Addendum 3 dated September 2021)

Chinese translation of Std 620.

12th Edition | October 2013 | Product Number: C62012C | Price: $471.00

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**Std 625**
*Tank Systems for Refrigerated Liquefied Gas Storage*
(includes Addendum 1 dated July 2013, Addendum 2 dated November 2014, Addendum 3 dated June 2018, and Addendum 4 dated September 2021)

Covers low pressure, aboveground, vertical, and cylindrical tank systems storing liquefied gases requiring refrigeration. This standard provides general requirements on responsibilities, selection of storage concept, performance criteria, accessories/appurtenances, quality assurance, insulation, and commissioning of tank systems. Included are tank systems having a storage capacity of 800 cubic meters (5000 bbls) and larger. Stored product shall be liquids which are in a gaseous state at ambient temperature and pressure and require refrigeration to less than 5 °C (40 °F) to maintain a liquid phase. Also covered are tank systems with a minimum design temperature of -198 °C (-325 °F), a maximum design internal pressure of 50 kPa (7 psig), and a maximum design uniform external pressure of 1.75 kPa (0.25 psig).

Tank system configurations covered consist of a primary liquid and vapor containment constructed of metal, concrete, or a metal/concrete combination and, when required, a secondary liquid containment. Pages: 63

13th Edition | March 2020 | Product Number: C62501 | Price: $251.00

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**Std 650 ◆**
*Welded Tanks for Oil Storage*
(includes Errata 1 dated January 2021)

Establishes minimum requirements for material, design, fabrication, erection, and testing for vertical, cylindrical, aboveground, closed- and open-top, welded carbon, or stainless steel storage tanks in various sizes and capacities for internal pressures approximating atmospheric pressure (internal pressures not exceeding the weight of the roof plates), but a higher internal pressure is permitted when addition requirements are met. This standard applies only to tanks whose entire bottom is uniformly supported and to tanks in non-refrigerated service that have a maximum design temperature of 93 °C (200 °F) or less. Pages: 514

13th Edition | March 2020 | Product Number: C65013 | Price: $565.00

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**RP 651 ◆**
*Cathodic Protection of Aboveground Petroleum Storage Tanks*

Presents procedures and practices for achieving effective corrosion control on aboveground storage tank bottoms through the use of cathodic protection. This RP contains provisions for the application of cathodic protection to existing and new aboveground storage tanks. Corrosion control methods based on chemical control of the environment or the use of protective coatings are not covered in detail.

When cathodic protection is used for aboveground storage tank applications, it is the intent of this RP to provide information and guidance specific to aboveground metallic storage tanks in hydrocarbon service. Certain practices recommended herein may also be applicable to tanks in other services. It is intended to serve only as a guide to persons interested in cathodic protection. Specific cathodic protection designs are not provided. Such designs should be developed by a person thoroughly familiar with cathodic protection practices for aboveground petroleum storage tanks.

This RP does not designate specific practices for every situation because the varied conditions in which tank bottoms are installed preclude standardization of cathodic protection practices. Pages: 46


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RP 651 *
Cathodic Protection of Aboveground Petroleum Storage Tanks—Chinese
Chinese translation of RP 651.
4th Edition | September 2014
Product Number: C65104C | Price: $136.00

RP 652 ●
Linings of Aboveground Petroleum Storage Tank Bottoms
Provides guidance on achieving effective corrosion control by the application of tank bottom linings in aboveground storage tanks in hydrocarbon service. It contains information pertinent to the selection of lining materials, surface preparation, lining application, cure, and inspection of tank bottom linings for existing and new storage tanks. In many cases, tank bottom linings have proven to be an effective method of preventing internal corrosion of steel tank bottoms.

Provides information and guidance specific to aboveground steel storage tanks in hydrocarbon service. Certain practices recommended herein may also applicable to tanks in other services. This recommended practice is intended to serve only as a guide and detailed tank bottom lining specifications are not included. This recommended practice does not designate specific tank bottom linings for every situation because of the wide variety of service environments. Pages: 40

5th Edition | May 2020 | Product Number: C65205 | Price: $155.00

Std 653 ●
Tank Inspection, Repair, Alteration, and Reconstruction (includes Addendum 1 dated April 2018, Addendum 2 dated May 2020, and Errata 1 dated March 2020)

Covers steel storage tanks built to Std 650 and its predecessor Spec 12C. It provides minimum requirements for maintaining the integrity of such tanks after they have been placed in service and addresses inspection, repair, alteration, relocation, and reconstruction.

The scope is limited to the tank foundation, bottom, shell, structure, roof, attached appurtenances, and nozzles to the face of the first flange, first threaded joint, or first welding-end connection. Many of the design, welding, examination, and material requirements of Std 650 can be applied in the maintenance inspection, rating, repair, and alteration of in-service tanks. In the case of apparent conflicts between the requirements of this standard and Std 650 or its predecessor Spec 12C, this standard shall govern for tanks that have been placed in service.

This standard employs the principles of Std 650; however, storage tank owner/operators, based on consideration of specific construction and operating details, may apply this standard to any steel tank constructed in accordance with a tank specification.

This standard is intended for use by organizations that maintain or have access to engineering and inspection personnel technically trained and experienced in tank design, fabrication, repair, construction, and inspection.

This standard does not contain rules or guidelines to cover all the varied conditions which may occur in an existing tank. When design and construction details are not given, and are not available in the as-built standard, details that will provide a level of integrity equal to the level provided by the current edition of Std 650 must be used.

This standard recognizes fitness-for-service assessment concepts for evaluating in-service degradation of pressure containing components. API 579-1/ASME FFS-1, Fitness-For-Service, provides detailed assessment procedures or acceptance criteria for specific types of degradation referenced in this standard. When this standard does not provide specific evaluation procedures or acceptance criteria for a specific type of degradation or when this standard explicitly allows the use of fitness-for-service criteria, API 579-1/ASME FFS-1 may be used to evaluate the various types of degradation or test requirements addressed in this standard. Pages: 162

5th Edition | November 2014 | Product Number: C65305 | Price: $255.00

Std 653 ●
Tank Inspection, Repair, Alteration, and Reconstruction—Chinese (includes Addendum 1 dated April 2018, Addendum 2 dated May 2020, and Errata 1 dated March 2020)
Chinese translation of Std 653.

5th Edition | November 2014 | Product Number: C65305C | Price: $255.00

Std 653 ●
Tank Inspection, Repair, Alteration, and Reconstruction—Portuguese (includes Addendum 1 dated April 2018, Addendum 2 dated May 2020, and Errata 1 dated March 2020)
Portuguese translation of Std 653.

5th Edition | November 2014 | Product Number: C65305P | Price: $255.00

TR 654
Aboveground Storage Tank Caulking or Sealing the Bottom Edge Projection to the Foundation
Provides guidance to owner/operators that have tanks that are set on a foundation system with the goal to protect the asset from deterioration by minimizing corrosion and foundation deterioration and allowing for proper support of the tank shell. The asset includes the tank itself, as well as the foundation system.

This document does not require that caulking or sealants be installed at the bottom edge projection and the foundation of aboveground storage tanks. It provides guidance in situations in which caulking or sealants may be advantageous and should be considered.

This technical report applies to situations where an owner/operator is considering caulk or sealant in this area, or if any regulatory agency requires or recommends that an owner/operator installs some type of caulk or sealant. This document will also consider how to inspect existing caulk and sealant, including maintenance procedures, and includes a suggested inspection schedule. Pages: 23

1st Edition | May 2019 | Product Number: C65401 | Price: $115.00

TR 655
Vapor Corrosion Inhibitors for Storage Tanks
Provides details on utilizing vapor corrosion inhibitors (VCIs) for protection of the soil side of tank bottoms. Pages: 28

1st Edition | April 2021 | Product Number: C65501 | Price: $72.00

Publ 937
Evaluation of Design Criteria for Storage Tanks with Frangible Roof Joints
Describes research that evaluated the ability of the present Std 650 tank design criteria to ensure the desired frangible joint behavior. Particular questions include:

• evaluation of the area inequality as a method to predict the buckling response of the compression ring,
• effect of roof slope, tank diameter, and weld size on the frangible joint, and
• effect of the relative strength of the roof-to-shell joint compared to the shell-to-bottom joint. Pages: 73

1st Edition | April 1996 | Product Number: C93701 | Price: $146.00

Publ 937-A
Study to Establish Relations for the Relative Strength of API 650 Cone Roof, Roof-to-Shell and Shell-to-Bottom Joints
Investigates the relative strengths of the roof-to-shell and shell-to-bottom joints, with the goal of providing suggestions for frangible roof design criteria applicable to smaller tanks. Pages: 68

1st Edition | August 2005 | Product Number: C937A0 | Price: $133.00

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**TR 939-D**

**Stress Corrosion Cracking of Carbon Steel in Fuel Grade Ethanol—Review, Experience Survey, Field Monitoring, and Laboratory Testing** (includes Addendum 1 dated October 2013)

Addresses stress corrosion cracking (SCC) in carbon steel equipment used in distribution, transportation, storage, and blending of denatured fuel ethanol. API, with assistance from the Renewable Fuels Association (RFA), conducted research on the potential for metal cracking and product leakage in certain portions of the fuel ethanol distribution system. TR 939-D contains a review of existing literature, results of an industry survey on cracking events and corrosion field monitoring, and information on mitigation and prevention. Pages: 172


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**Std 2015**

**Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks**

Applicable to stationary atmospheric and low-pressure (up to and including 15 psig) aboveground petroleum storage tanks used in all sectors of the petroleum and petrochemical industry, including crude oil and gas production; refining; petrochemicals; pipelines and terminals; bulk storage; and ethanol facilities. This standard provides requirements for safely planning, coordinating, and conducting tank entry and cleaning operations, from removal from service through return to service. Pages: 146

8th Edition | January 2018 | Product Number: K20158 | Price: $215.00

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**RP 2026**

**Safe Access/Egress Involving Floating Roofs of Storage Tanks in Petroleum Service**

Addresses the hazards associated with access/egress onto external and internal floating roofs of in-service petroleum storage tanks and identifies some of the most common practices and procedures for safely accomplishing this activity. This RP is intended primarily for those persons who are required to perform inspection, service, maintenance, or repair activities that involve descent onto floating roofs of in-service petroleum tanks. Pages: 28

4th Edition | July 2022 | Product Number: K202604 | Price: $110.00

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**RP 2027**

**Ignition Hazards and Safe Work Practices for Abrasive Blasting of Atmospheric Storage Tanks in Hydrocarbon Service**

Provides safe work practices for the prevention and control of vapor, ignition, and other potential hazards during abrasive blasting of aboveground storage tanks in liquid hydrocarbon service at atmospheric pressure. It also provides assistance to employers in developing operating procedures that provide for hazard recognition to significantly reduce ignition risks during abrasive blasting of hydrocarbon storage tanks in service that may contain or have the potential to develop a flammable atmosphere in the vapor space. This RP applies to safe work practices required for abrasive blasting of exterior shells and exterior roofs of all aboveground atmospheric storage tanks in liquid hydrocarbon service. It also applies to safe work practices for abrasive blasting conducted on the roofs and inner portions of the exposed surfaces of shells (that portion of the shell above the roof level) on open-top (external) floating roof tanks. This RP also covers recognition and control of ignition hazards that are specific to and may be present during abrasive blasting of aboveground storage tanks in liquid hydrocarbon service at atmospheric pressure. The ignition sources covered in this RP include static electricity, internal combustion engines, electric motors, friction sparks, hot metal surfaces, and external-to-the-work ignition sources. Pages: 27

4th Edition | November 2018 | Product Number: C20274 | Price: $132.00

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**RP 2207**

**Preparing Tank Bottoms for Hot Work**

Addresses only the safety aspects of hot work performed on petroleum storage tank bottoms. It discusses safety precautions for preventing fires, explosions, and associated injuries. The term “hot work,” as used in this publication, is defined as an operation that can produce a spark or flame hot enough to ignite flammable vapors. RP 2009 provides more in-depth information on safe hot work practices, and its requirements are not duplicated here. Pages: 28

8th Edition | April 2022 | Product Number: K22078 | Price: $121.00

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**Std 2510**

**Design and Construction of LPG Installations**

Provides minimum requirements for the design and construction of installations for the storage and handling of liquefied petroleum gas (LPG) at marine and pipeline terminals, natural gas processing plants, refineries, petrochemical plants, and tank farms. This standard covers storage vessels, loading and unloading systems, piping, and related equipment. Pages: 52

9th Edition | August 2020 | Product Number: C25109 | Price: $132.00

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**Std 2610**

**Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities**

Guides the management of terminals and tanks in a manner that protects the environment and the safety of workers and the public. This standard is intended for petroleum terminal and tank facilities associated with marketing, refining, pipeline, and other similar facilities. This standard may be used as a resource and management guide by those responsible for such facilities and by those working on their behalf. This standard is a compilation of industry knowledge, information, and management practices for all relevant aspects of terminal and tank operations aggregated into an overview document comprising best practices. Pages: 100

3rd Edition | September 2018 | Product Number: C26103 | Price: $192.00

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**PRESURE-RELIEVING SYSTEMS FOR REFINERY SERVICE**

**Std 520, Part I**

**Sizing, Selection, and Installation of Pressure-Relieving Devices—Part I—Sizing and Selection** (includes Errata 1 dated May 2023)

Applies to the sizing and selection of pressure relief devices used in refineries and related industries for equipment that has a maximum allowable working pressure of 15 psig (103 kPag) or greater. The pressure relief devices covered in this standard are intended to protect unfired pressure vessels and related equipment against overpressure from operating and fire contingencies.

This standard includes basic definitions and information about the operational characteristics and applications of various pressure relief devices. It also includes sizing procedures and methods based on steady state flow of Newtonian fluids. Atmospheric and low-pressure storage tanks covered in Std 2000 and pressure vessels used for the transportation of products in bulk or shipping containers are not within the scope of this standard. See Std 521 for information about appropriate ways of reducing pressure and restricting heat input. The rules for overpressure protection of fired vessels are provided in ASME Section I and ASME B31.1 and are not within the scope of this standard. Pages: 172

10th Edition | October 2020 | Product Number: C520110 | Price: $404.00

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Seat Tightness of Pressure Relief Valves

The test medium for determining the seat tightness—air, steam, or water—shall be the same as that used for determining the set pressure of the valve. For dual-service valves, the test medium—air, steam, or water—shall be the same as the primary relieving medium.

To ensure safety, the procedures outlined in this standard shall be performed by persons experienced in the use and functions of pressure relief valves.

Pages: 13
5th Edition | July 2020 | Product Number: C52705 | Price: $108.00

RP 576 ◆
Inspection of Pressure-Relieving Devices

Describes the inspection and repair practices for self-actuated pressure-relieving devices commonly used in the oil/gas and petrochemical industries. As a guide to the inspection and repair of these devices in the user’s plant, it is intended to ensure their proper performance. This publication covers self-actuated devices such as direct acting spring loaded valves, pilot operated pressure-relief valves, rupture disks, pin actuated devices, and weight-loaded pressure vacuum vents.

The recommendations in this publication are not intended to supersede requirements established by regulatory bodies. This publication includes tank weak seams and/or sections or tank thief hatches, explosion doors, fusible plugs, control valves, pressure regulating devices, integral rotating equipment components, other devices that either depend on an external source of power for operation or are manually operated or devices not designed to be inspected or recertified. Inspections and tests made at manufacturers’ plants, which are usually covered by codes or purchase specifications, are not covered by this publication.

This publication does not cover training requirements for personnel involved in the inspection and repair of pressure-relieving devices. Those seeking these requirements should see API 510/570, which gives the requirements for a quality control system and specifies that the repair organization maintain and document a training program ensuring that personnel are qualified.

Pages: 80
4th Edition | April 2017 | Product Number: C57604 | Price: $227.00

Std 2000
Venting Atmospheric and Low-Pressure Storage Tanks

Covers the normal and emergency vapour venting requirements for aboveground liquid petroleum or petroleum products storage tanks and aboveground and underground refrigerated storage tanks, designed for operation at pressures from full vacuum through 103.4 kPa (ga) [15 psig].

Discussed in this International Standard are the causes of overpressure and vacuum; determination of venting requirements; means of venting; selection, and installation of venting devices; and testing and marking of relief devices.

This International Standard is intended for tanks containing petroleum and petroleum products but it can also be applied to tanks containing other liquids; however, it is necessary to use sound engineering analysis and judgment whenever this International Standard is applied to other liquids.

This International Standard does not apply to external floating-roof tanks.

Pages: 87
Product Number: C20007 | Price: $244.00

◆ This publication is related to an API licensing, certification, or accreditation program.
PIPING COMPONENT AND VALVE STANDARDS

API 570◆
Piping Inspection Code: In-Service Inspection, Rating, Repair, and Alteration of Piping Systems
(includes Addendum 1 dated May 2017, Addendum 2 dated March 2018, Addendum 3 dated June 2023, and Errata 1 dated April 2018)
Covers inspection, rating, repair, and alteration procedures for metallic and fiberglass reinforced plastic (FRP) piping systems and their associated pressure-relieving devices that have been placed in service. This inspection code applies to all hydrocarbon and chemical process piping covered in 1.2.1 that have been placed in service unless specifically designated as optional per 1.2.2. This publication does not cover inspection of specialty equipment including instrumentation, exchanger tubes, and control valves. However, this piping code could be used by owner/users in other industries and other services at their discretion. Process piping systems that have been retired from service and abandoned in place are no longer covered by this “in-service inspection” code. However, abandoned in place piping may still need some amount of inspection and/or risk mitigation to assure that it does not become a process safety hazard because of continuing deterioration. Process piping systems that are temporarily out of service but have been mothballed (preserved for potential future use) are still covered by this code. Pages: 88


RP 574◆
Inspection Practices for Piping System Components
Supplements API 570 by providing piping inspectors with information that can improve skill and increase basic knowledge of inspection practices. This recommended practice describes inspection practices for piping, tubing, valves (other than control valves), and fittings used in petroleum refineries and chemical plants. Common piping components, valve types, pipe joining methods, inspection planning processes, inspection intervals and techniques, and types of records are described to aid the inspectors in fulfilling their role implementing API 570. This publication does not cover inspection of specialty items, including instrumentation, furnace tubulars, and control valves. Pages: 113

4th Edition | November 2016 | Product Number: C57404 | Price: $227.00

RP 578◆◆
Material Verification Program for New and Existing Assets
Provides recommended practices for an owner/operator to develop and implement a material verification program (MVP) as part of an asset integrity program. The MVP uses positive material identification (PMI) and other testing and administrative methods to verify that the nominal composition of an asset, an asset component, or weldment (or any other tested item) is consistent with the selected or specified construction materials. A well-designed and well-implemented MVP is an important management system used to minimize the potential for release of hazardous substances due to nonconforming materials of construction. Pages: 28

4th Edition | February 2023 | Product Number: C57804 | Price: $227.00

RP 591◆◆
Process Valve Qualification Procedure
Provides recommendations for evaluation of a manufacturer's valve construction and quality management system for the purpose of determining a manufacturer's capability to provide new valves manufactured in accordance with applicable standards listed. Testing per this recommended practice that does not have an established requirement in the applicable standard is for information only. Pages: 32


Std 594 ◆
Check Valves: Flanged, Lug, Wafer, and Butt-Welding
Covers the design, materials, face-to-face dimensions, pressure-temperature ratings, inspection, examination, and testing requirements for two types of check valves. Pages: 33

9th Edition | February 2022 | Effective Date: August 2022
Product Number: CS9409 | Price: $141.00

Std 598◆
Valve Inspection and Testing
Covers inspection, examination, supplementary examinations, and pressure test requirements for resilient-seated, nonmetallic-seated (e.g. ceramic), and metal-to-metal-seated valves of the gate, globe, plug, ball, check, and butterfly types. This standard supplements the API standards that reference it, but it may also be applied to other types of valves by agreement between the purchaser and the valve manufacturer. See Annex A for information to be specified by the purchaser. Pages: 24

11th Edition | February 2023 | Product Number: CS9811 | Price: $104.00

Std 599◆
Metal Plug Valves—Flanged, Threaded, and Welding Ends
Covers steel, nickel base, and other alloy plug valves with flanged or butt-welding ends and ductile iron plug valves with flanged ends in sizes NPS 1/2 through NPS 24 and threaded or socket-welding ends for sizes NPS 1/2 through NPS 2. Valve bodies conforming to ASME B16.34 may have one flange and one butt-welding end, or one threaded and one socket welding end. Pages: 26

8th Edition | March 2020 | Product Number: CS9908 | Price: $110.00

Std 600◆
Steel Gate Valves—Flanged and Butt-Welding Ends, Bolted Bonnets
Specifies the requirements for a heavy-duty series of bolted bonnet steel gate valves for petroleum refinery and related applications where corrosion, erosion, and other service conditions would indicate a need for full port openings, heavy wall sections, and large stem diameters. Pages: 42

14th Edition | May 2021 | Product Number: C60014 | Price: $146.00

Std 602◆
Gate, Globe, and Check Valves for Sizes DN 100 (NPS 4) and Smaller for the Petroleum and Natural Gas Industries
Specifies the requirements for a series of compact gate, globe, and check valves for petroleum and natural gas industry applications. It covers valves of the nominal pipe sizes DN: 8, 10, 15, 20, 25, 32, 40, 50, 65, 80, and 100; corresponding to nominal pipe sizes NPS: 1/4, 3/8, 1/2, 3/4, 1, 11/4, 11/2, 2, 21/2, 3, and 4; and applies to pressure class designations: 150, 300, 600, 800, and 1500. Pages: 72

11th Edition | May 2022 | Effective Date: November 1, 2022
Product Number: C60211 | Price: $147.00

Std 603◆
Corrosion-Resistant, Bolted Bonnet Gate Valves—Flanged and Butt-Welding Ends
Specifies the requirements for corrosion-resistant bolted bonnet gate valves meeting the requirements of ASME B16.34, Standard Class, for valves having flanged or butt-weld ends in sizes NPS 1/2 through 24, corresponding to nominal pipe sizes in ASME B36.10M, and Classes 150, 300, and 600. This standard covers the requirements for corrosion-resistant gate valves for use in process piping applications. Covered are requirements for outside-screw-and-yoke (OS&Y) valves with rising stems, non-rising hand-wheels, bolted bonnets, and various types of gate configurations. Pages: 9

9th Edition | September 2018 | Product Number: C60309 | Price: $103.00
Refining

To purchase individual API standards, visit apiwebstore.org

Std 607
Fire Test for Quarter-Turn Valves and Valves Equipped with Nonmetallic Seats

Specifies fire testing requirements and method for confirming the pressure-containing capability of quarter-turn valves with nonmetallic or metallic seats and other operated valves with nonmetallic seating under pressure during and after the fire test. It does not cover the testing requirements for valve actuators other than manually operated gear boxes or similar mechanisms when these form part of the normal valve assembly. Other types of valve actuators (e.g., electrical, pneumatic, or hydraulic) may need special protection to operate in the environment considered in this valve test, and the fire testing of such actuators is outside the scope of this standard. Pages: 26

8th Edition | October 2022 | Product Number: C60708 | Price: $105.00

Std 608 ◇
Metal Ball Valves—Flanged, Threaded, and Welding Ends

Specifies the requirements for metal ball valves suitable for petroleum, petrochemical and industrial applications that have butt-welding or flanged ends for NPS 1/2 through NPS 2 and threaded or socket-welding ends for NPS 1/4 through NPS 2, corresponding to the nominal pipe sizes in ASME B36.10M. Also applies to metal ball valves in pressure classes 150, 300, and 600 for flanged and butt-welding ends and in pressure classes 150, 300, 600, and 900 for socket-welding and threaded ends. Establishes requirements for bore sizes described as full bore, single reduced bore, and double reduced bore. Covers additional requirements for ball valves that are otherwise in full conformance to the requirements of ASME B16.34, Standard Class. Pages: 32


Std 609 ◇
Butterfly Valves: Double-Flanged, Lug- and Wafer-Type, and Butt-Welding Ends

Covers design, materials, face-to-face dimensions, pressure-temperature ratings, and examination, inspection, and test requirements for gray iron, ductile iron, bronze, steel, nickel-based alloy, or special alloy butterfly valves. Pages: 34

9th Edition | April 2021 | Product Number: C60909 | Price: $114.00

RP 615
Valve Selection Guide

Aids in selection of valves for the hydrocarbon processing industry (HPI) and may also assist in the selection of valves for other industrial processes, such as power or general industry process applications. Selection guidance is provided for valve types covered by ASME B16.34 and API valve standards for the downstream segment, which include gate, ball, plug, butterfly, check, and globe valves. Modulating control valves and pressure-relief valves are outside the scope of this RP. Pages: 55

3rd Edition | August 2022 | Product Number: C61503 | Price: $104.00

RP 621
Reconditioning of Metallic Gate, Globe, and Check Valves

Provides guidelines for reconditioning heavy wall (API 600 and API 594 type) carbon steel, ferritic steel (up to 9 % Cr), stainless steel, and nickel alloy gate, globe, and check valves for ASME pressure classes 150, 300, 400, 600, 900, 1500, and 2500. Guidelines contained in this RP apply to flanged and butt weld cast or forged valves. This RP does not cover reconditioning or remanufacturing of used or surplus valves intended for resale. The only intent of this RP is to provide guidelines for refurbishing an end user’s (Owner) valves for continued service in the Owner’s facility. Valves reconditioned or remanufactured to this RP may not meet API Standard requirements for new valves. Pages: 54

5th Edition | October 2022 | Product Number: C62105 | Price: $162.00

Std 622
Type Testing of Process Valve Packing for Fugitive Emissions (includes Addendum 1 dated March 2022)

Provides the requirements for comparative testing of block valve stem packing for process applications where fugitive emissions are a consideration. Packing(s) shall be suitable for use at -29 °C to 538 °C (-20 °F to 1000 °F). Factors affecting fugitive emissions performance that are considered by this standard include temperature, pressure, thermal cycling, mechanical cycling, and corrosion. Pages: 37

3rd Edition | October 2018 | Product Number: C62203 | Price: $162.00

Std 623
Steel Globe Valves—Flanged and Butt-Welding Ends, Bolted Bonnets

Specifies the requirements for a heavy-duty series of bolted bonnet steel globe valves for petroleum refinery and related applications where corrosion, erosion, and other service conditions would indicate a need for heavy wall sections and large stem diameters. Pages: 39

2nd Edition | January 2021 | Product Number: C62302 | Price: $94.00

Std 624 ◇
Type Testing of Rising Stem Valves Equipped with Graphite Packing for Fugitive Emissions (includes Errata 1 dated May 2023)

Provides the requirements and acceptance criteria (100 ppmv) for fugitive emission type testing of rising and rising-rotating stem valves equipped with packing previously tested in accordance with API 622. Packing shall be suitable for use at service temperatures -29 °C to 538 °C (-20 °F to 1000 °F). The type testing requirements contained herein are based upon elements of EPA Method 21. Valves larger than NPS 24 or valves greater than class 1500 are outside the scope of this standard. Pages: 27

2nd Edition | February 2023 | Product Number: C62402 | Price: $98.00

Std 641 ◇
Type Testing of Quarter-Turn Valves for Fugitive Emissions

Provides the requirements and acceptance criteria for fugitive emission type testing of quarter-turn valves. Valves larger than NPS 60 and valves greater than ASME B16.34 class 1500 are outside the scope of this standard. Valves with a pressure rating at ambient temperature less than 6.89 barg (100 psig) are outside the scope of this standard. For all valves rated greater than or equal to 400 °C (750 °F), an additional high temperature test may be performed in accordance with Annex C or when specified by the purchaser. Pages: 26

2nd Edition | October 2023 | Product Number: C64102 | Price: $91.00

ELECTRICAL INSTALLATIONS AND EQUIPMENT

RP 500 ◇
Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1, and Division 2

Provides guidelines for classifying locations Class I, Division 1 and Class I, Division 2 at petroleum facilities for the selection and installation of electrical equipment. Basic definitions given in the 2023 edition of NFPA 70, National Electrical Code (NEC), have been followed in developing this recommended practice. Pages: 183

4th Edition | June 2023 | Product Number: C50004 | Price: $302.00
RP 505
Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2
Provides guidelines for determining the degree and extent of Class I, Zone 0, Zone 1, and Zone 2 locations at petroleum facilities for the selection and installation of electrical equipment. Basic definitions provided in the National Electrical Code have been followed in developing this document, which applies to the classification of locations for both temporarily and permanently installed electrical equipment.
RP 505 is intended to be applied where there may be a risk of ignition due to the presence of flammable gas or vapor mixed with air under normal atmospheric conditions. Pages: 177
2nd Edition | August 2018 | Product Number: C50502 | Price: $224.00

RP 540
Electrical Installations in Petroleum Processing Plants
Provides information on electrical installations in petroleum processing plants. It is intended for all individuals and organizations concerned with the safe design, installation, and operation of electrical equipment in petroleum processing plants. Pages: 107
Product Number: C54004 | Price: $204.00

Std 541 *
Form-Wound Squirrel Cage Induction Motors—375 kW (500 Horsepower) and Larger
Covers the minimum requirements for all form-wound squirrel-cage induction motors 500 Horsepower and larger for use in petroleum industry services. This standard may be applied to adjustable speed motors and induction generators with appropriate attention to the specific requirements of such applications. Pages: 160
5th Edition | December 2014 | Reaffirmed: May 2021
Product Number: C54105 | Price: $206.00

Std 541 *
Form-Wound Squirrel Cage Induction Motors—375 kW (500 Horsepower) and Larger—Russian
Russian translation of Std 541.
5th Edition | December 2014 | Reaffirmed: May 2021
Product Number: C54105R | Price: $206.00

Std 546
Brushless Synchronous Machines—500 kVA and Larger
Covers the minimum requirements for form-wound and bar-wound brushless synchronous machines 500 kVA and larger for use in petroleum, chemical, and other industrial applications. This standard includes synchronous motors and generators with two different rotor designs: salient-pole type rotors with solid or laminated poles; and cylindrical type rotors with solid or laminated construction. Pages: 269
4th Edition | April 2022 | Product Number: C54604 | Price: $225.00

Std 547 ◆
General Purpose Form-Wound Squirrel Cage Induction Motors—185 kW (250 hp) Through 2240 kW (3000 hp)
Covers the requirements for form-wound induction motors for use in general-purpose petroleum, chemical, and other industrial duty applications. These motors:
- are rated less than 800 hp (600 kW) for two-pole (3000 or 3600 RPM) motors of totally-enclosed construction,
- are rated less than 1250 hp (930 kW) for two-pole motors of WP-II type enclosures,
- drive centrifugal loads,
- drive loads having inertia values within those listed in NEMA MG 1 Part 20,
- are not induction generators. Pages: 62
3rd Edition | May 2014 | Product Number: C53503 | Price: $163.00

HEAT TRANSFER EQUIPMENT STANDARDS FOR REFINERY SERVICE

Std 530
Calculation of Heater-Tube Thickness in Petroleum Refineries (includes Addendum 1 dated July 2019 and Addendum 2 dated December 2021)
Specifies the requirements and gives recommendations for the procedures and design criteria used for calculating the required wall thickness of new tubes and associated component fittings for fired heaters for the petroleum, petrochemical, and natural gas industries. These procedures are appropriate for designing tubes for service in both corrosive and non-corrosive applications. These procedures have been developed specifically for the design of refinery and related fired heater tubes (direct-fired, heat-absorbing tubes within enclosures). These procedures are not intended to be used for the design of external piping. This standard does not give recommendations for tube retirement thickness; Annex A describes a technique for estimating the life remaining for a heater tube. Pages: 264
7th Edition | April 2015 | Product Number: C53007 | Price: $314.00

RP 534
Heat Recovery Steam Generators
Provides guidelines for the selection and/or evaluation of burners installed in fired heaters in general refinery services. Details of related equipment designs are considered only where they interact with the HRSG system design. The document does not provide rules for design, but indicates areas that need attention and offers information and descriptions of HRSG types available to the designer/user for purposes of selecting the appropriate HRSG. Pages: 60
2-Year Extension: April 2013 | Product Number: C53402 | Price: $103.00

RP 535
Burners for Fired Heaters in General Refinery Services
Provides guidelines for the selection and/or evaluation of burners installed in fired heaters in general refinery services. Details of fired heater and related equipment designs are considered only where they interact with the burner selection. This RP does not provide rules for design, but indicates areas that need attention. It offers information and descriptions of burner types available to the designer/user for purposes of selecting the appropriate burner for a given application.
The burner types discussed are those currently in industry use. It is not intended to imply that other burner types are not available or recommended. Many of the individual features described in these guidelines are applicable to most burner types.
In addition to specification of burners, this RP has been updated to include practical guidelines for troubleshooting in service burners as well as including considerations for safe operation. Pages: 84
3rd Edition | May 2014 | Product Number: C53503 | Price: $163.00

* These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersede the English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.

This publication is a new entry in this catalog. ◆ This publication is related to an API licensing, certification, or accreditation program.
The document covers the following methods of post combustion NOx reduction for both new and retrofit applications:

- Selective Non-catalytic Reduction (SNCR), and
- Selective Catalytic Reduction (SCR).

This standard is primarily intended for direct application to fired process heaters, reformers, industrial, and power boilers in petrochemical and general refinery services. The same fundamental NOx control technologies and systems may also be applied to Fluid Catalytic Cracking Units (FCCUs), incinerators, gas turbine exhaust, and other exhaust gas process systems however SCRs may require additional chemical considerations beyond the scope of this standard to address unique aspects, such as high particulate content and corrosive chemicals, in the flue gas stream.

This document does not cover:

- Reduced NOx formation through combustion controls and design techniques such as low NOx burners, flue gas recirculation (FGR), and staged combustion; and
- Non-selective Catalytic Reduction (NSCR) for the control of NOx and other pollutant emissions.

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This document does not cover:

- Reduced NOx formation through combustion controls and design techniques such as low NOx burners, flue gas recirculation (FGR), and staged combustion; and
- Non-selective Catalytic Reduction (NSCR) for the control of NOx and other pollutant emissions.
Refining

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Std 660 *
Shell-and-Tube Heat Exchangers—Russian
(includes Addendum 1 dated August 2020)
Russian translation of Std 660.
9th Edition | March 2015 | Product Number: C66009R | Price: $201.00

Std 661
Petroleum, Petrochemical, and Natural Gas Industries—Air-Cooled Heat Exchangers for General Refinery Service
(ANSI/API Std 661)
Gives requirements and recommendations for the design, materials, fabrication, inspection, testing, and preparation for shipment of air-cooled heat exchangers for use in the petroleum, petrochemical, and natural gas industries. This standard is applicable to air-cooled heat exchangers with horizontal bundles, but the basic concepts can also be applied to other configurations. Pages: 147
7th Edition | July 2013 | Reaffirmed: November 2018
Product Number: C66107 | Price: $271.00

Std 662 *
Heat Exchangers for General Refinery Service—Russian
(ANSI/API Std 661)
Gives requirements and recommendations for the mechanical design, materials selection, fabrication, inspection, testing, and preparation for shipment of shell-and-tube heat exchangers for use in the petroleum, petrochemical, and natural gas industries. This standard is applicable to standalone shell-and-tube heat exchangers and those integral with a pressure vessel. Pages: 67
2nd Edition | August 2022 | Product Number: C66302 | Price: $208.00

Std 664
Spiral Plate Heat Exchangers
(includes Errata 1 dated February 2021)
Specifies the requirements and gives recommendations for the mechanical design, materials selection, fabrication, inspection, testing, and preparation for shipment of spiral plate heat exchangers for use in the petroleum, petrochemical, and natural gas industries. It is applicable to standalone spiral plate heat exchangers and those integral with a pressure vessel. Pages: 39
1st Edition | March 2014 | Reaffirmed: June 2019
Product Number: C66401 | Price: $189.00

Std 665
Hairpin Type Heat Exchangers
Specifies requirements and gives recommendations for the mechanical design, materials selection, fabrication, inspection, testing, and preparation for shipment of hairpin heat exchangers for use in the petroleum, petrochemical, and natural gas industries. Hairpin heat exchangers include double-pipe and multi-tube heat exchangers. Pages: 67
2nd Edition | February 2016 | Product Number: C66502 | Price: $171.00

Std 666
Spiral Plate and Frame Heat Exchangers
(includes Addendum 1 dated August 2020)
Specifies the requirements and gives recommendations for the design, materials selection, fabrication, inspection, testing, and preparation for shipment of spiral plate and frame heat exchangers for use in the petroleum, petrochemical, and natural gas industries. Pages: 55
1st Edition | March 2022 | Product Number: C66701 | Price: $100.00

Std 668
Brazed Aluminum Plate-Fin Heat Exchangers
Gives requirements and recommendations for the mechanical design, materials selection, fabrication, inspection, testing, and preparation for shipment of brazed aluminum plate-fin heat exchangers for use in the petroleum, petrochemical, and natural gas industries. This edition is a revision of the First Edition of Std 662, Part 2. Pages: 49
1st Edition | November 2018 | Product Number: C66801 | Price: $147.00

Std 669
Heat Recovery Systems
Provides guidelines for heat transfer equipment used in waste heat recovery systems in the petroleum, petrochemical, and natural gas industries. Details of related equipment designs are included only where these are necessary to ensure proper design and operation and safe interaction with the heat recovery system. It indicates areas that need attention and offers information and descriptions of various types of heat transfer equipment available to aid in the selection of the appropriate heat recovery system. Pages: 84
1st Edition | June 2022 | Product Number: C66901 | Price: $137.00

INSTRUMENTATION AND CONTROL SYSTEMS

RP 551
Process Measurement Instrumentation
Provides procedures for the installation of the more generally used measuring and control instruments and related accessories. Pages: 233
2nd Edition | February 2016 | Product Number: C55102 | Price: $171.00

RP 552
Transmission Systems
Reviews the recommended practices for the installation of electronic and pneumatic measurement and control-signal transmission systems. It does not discuss leased wire, radio, and telemetring transmission. Pages: 39
1st Edition | October 1994 | Reaffirmed: November 2022
2-Year Extension: November 2012
Product Number: C55201 | Price: $118.00

RP 553
Refinery Valves and Accessories for Control and Safety Instrumented Systems
Addresses the special needs of automated valves in refinery services. The knowledge and experience of the industry has been captured to provide proven solutions to well-known problems. This document provides recommended criteria for the selection, specification, and application of valve (i.e. double-acting and spring-return) and diaphragm-actuated (spring-return) control valves. Control valve design considerations are outlined such as valve selection, material selection, flow characteristic evaluation, and valve accessories. It also discusses control valve sizing, fugitive emissions, and consideration of the effects of flashing, cavitation, and noise. Recommendations for emergency block and vent valves, on/off valves intended for safety instrumented systems, and special design valves for refinery services, such as Fluid Catalytic Cracking Unit (FCCU) slide valves and vapor depressurizing systems, are also included in this recommended practice. Pages: 109
2nd Edition | October 2012 | Product Number: C55302 | Price: $157.00

* These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersede the English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.
TECHNICAL DATA BOOK PETROLEUM REFINING: RELATED ITEMS

Reports Issued by Research Project 49
1951

API Research Project 49, Reference Clay Minerals, issued a series of eight reports, as follows:
No. 1, Glossary of Mineral Names
No. 2, Reference Clay Localities-United States
No. 3, Differential Thermal Analysis of Reference Clay Mineral Specimens
No. 4, Reference Clay-Europe
No. 5, Occurrence and Microscopic Examination of Reference Clay Mineral Specimens
No. 6, Electron Micrographs of Reference Clay Minerals
No. 7, Analytical Data on Reference Clay Minerals
No. 8, Infrared Spectra of Clay Minerals

TR 997
Comprehensive Report of API Crude Oil Characterization Measurements
A consortium of API member companies has sponsored a research program consisting of a series of projects on the characterization of crude oils. The goal of this program was to obtain complete sets of assay and thermophysical property data on a few widely varying crude oil refining and refining facilities. This report provides descriptions of the test procedures, discussions of their accuracy, and comprehensive compilation of the data for the crude oils measured under this program. Pages: 129

1st Edition | August 2000 | Product Number: C99701 | Price: $228.00

CHARACTERIZATION AND THERMODYNAMICS

API Monograph Series
Each publication discusses the properties of solid, liquid, and gaseous phases of one or a few closely related, industrially important compounds in a compact, convenient, and systematic form. In addition to the basic physical properties, each publication covers density, molar volume, vapor pressure, enthalpy of vaporization, surface tension, thermodynamic properties, viscosity, thermal conductivity, references to properties of mixtures, and spectrographic data.
Publ 705, Tetratin, 1978
Publ 706, cis- and trans-Decalin, 1978
Publ 707, Naphthalene, 1978
Publ 708, Anthracene and Phenanthrene 9, 1979
Publ 709, Four-Ring Condensed Aromatic Compounds, 1979
Publ 710, Pyridine and Phenylpyridines, 1979
Publ 711, Quinoline, 1979
Publ 712, Isoquinoline, 1979
Publ 713, Indanols, 1980
Publ 714, Indan and Indene, 1980
Publ 715, Acenaphthylene, Acenaphthene, Fluorene, and Fluoranthenone, 1981
Publ 716, Carbazole, 9-Methylcarbazole, and Acridine, 1981
Publ 717, Thiophene, 2,3- and 2,5-Dihydrothiophene, and Tetrahydrothiophene, 1981
Publ 718, Aniline, 1982
Publ 719, Indole, 1982
Publ 720, 2-, 3-, and 4-Methylaniline, 1983
Publ 721, Benzofuran, Dibenzofuran, and Benzanthrathofurans, 1983
Publ 722, Isopropylnnbenzene, and 1-Methyl-2-, -3-, and -4-Isopropylnbenzene, 1984
Publ 723, tert-Butyl methyl ether, 1984
Publ 724, 1- and 2-Methylnaphthalene and Dibenzenanthracenes, 1985

Thermodynamic Properties and Characterization of Petroleum Fractions
February 1988

MATERIALS ENGINEERING PUBLICATIONS

API Coke Drum Survey 1996
Final Report
In 1996 a survey was sent by the API Subcommittee on Inspection, Coke Drum Task Group, to companies operating coke drums in the United States and abroad. This was the third survey of similar nature conducted by API. Fifty-four surveys were returned representing 17 operating companies and a total of 145 drums. The purpose of the survey was to collect data covering a broad range of issues including: 1. General Information; 2. Design; 3. Operating Information; 4. Inspection Practices; 5. Deterioration Experience; and 6. Repair Procedures.
Three of the six areas, Operation Information, Inspection Practices and Deterioration Experience, were not covered in previous industry surveys. Additionally, this survey requested more detailed information than previous surveys. Pages: 61
October 2003 | Product Number: C096C1 | Price: $134.00

Impact of Gasoline Blended with Ethanol on the Long-Term Structural Integrity of Liquid Petroleum Storage Systems and Components
Summarizes the results of a literature review conducted for the American Petroleum Institute on the impact of gasoline blended with ethanol on the long-term structural integrity of liquid petroleum storage systems and components. It is anticipated that the use of ethanol in motor fuels will continue to increase. This has generated interest about the potential long-term structural effects of ethanol on liquid petroleum storage systems, including underground storage tanks (USTs), underground piping, and associated components. The objective of the literature review is to determine the state of industry knowledge and research on the effects of ethanol/gasoline blends on the long-term structural integrity of UST systems and components. This review is intended to assist decision-makers on further research requirements and needed changes or supplements to existing standards for underground storage system components used for storing and dispensing gasoline blended with ethanol. Appendix A may be purchased separately as an electronic database file. The database synopses' and bibliographic information for all articles reviewed for the project. The report is organized by article index number. Reference numbers cited in this report refer to the article index number.
January 2003 | Executive Summary | Price: $71.00
Appendix A–Literature Review | Price: $138.00

RP 571 ◆
Damage Mechanisms Affecting Fixed Equipment in the Refining Industry
Provides background information on damage that can occur to equipment in the refining process. It is intended to supplement Risk-Based Inspection (RP 580 and Publ 581) and Fitness-for-Service (API 579-1/ASME FFS-1) technologies developed in recent years by API to manage existing refining equipment integrity. It is also an excellent reference for inspection, operations, and maintenance personnel. This RP covers over 60 damage mechanisms. Each write-up consists of a general description of the damage, susceptible materials, construction, critical factors, inspection method selection guidelines, and control measures. Wherever possible, pictures are included and references are provided for each mechanism. In addition, generic process flow diagrams have been included that contain a summary of the major damage flow mechanism expected for typical refinery process units. Pages: 376
3rd Edition | March 2020 | Product Number: C57103 | Price: $374.00
RP 582 • Welding Guidelines for the Chemical, Oil, and Gas Industries
Provides supplementary guidelines and practices for welding and welding-related topics for shop and field fabrication, repair, and modification of the following: pressure-retaining equipment; tanks and attachment welds; nonremovable internals for process equipment; structural items attached and related to process equipment; and other equipment or component items when referenced by an applicable purchase document. Pages: 78
4th Edition | May 2023 | Product Number: C58204 | Price: $149.00

TR 932-A • A Study of Corrosion in Hydroprocess Reactor Effluent Air Cooler Systems
Provides technical background for controlling corrosion in hydroprocesses reactor effluent systems based on industry experience and consensus practice. Information for this report has been gathered from open literature, private company reports, and interviews with representatives of major refining companies. The findings in this report are the basis for the guidance in Bull 932-B. Pages: 49
2nd Edition | September 2002 | Product Number: C932A02 | Price: $164.00

RP 932-B • Design, Materials, Fabrication, Operation, and Inspection Guidelines for Corrosion Control in Hydroprocessing Reactor Effluent Air Cooler (REAC) Systems
Provides guidance to engineering and plant personnel on equipment and piping design, material selection, fabrication, operation, and inspection practices to manage corrosion and fouling in the wet sections of hydroprocessing reactor effluent systems. The reactor effluent system includes the equipment and piping subject to ammonium salt, NH4HS corrosion, and associated fouling. This system usually begins at the last feed/effluent exchanger or first water injection point and continues through the cold high-pressure separator (1, 2, and 3 separator designs) or cold high- and low-pressure separators (4 and 5 separator designs). The reactor effluent system specifically excludes the stripper, fractionator, and final separation sections. However, guidance in this document may be applicable to ammonium salt corrosion mitigation in those areas, as well. The majority of these systems have an air cooler; however, some systems utilize only shell and tube heat exchangers. Reactor effluent systems are prone to fouling and corrosion by ammonium bisulfide (NH4HS) and ammonium chloride (NH4Cl) salts.
This recommended practice is applicable to process streams in which NH4Cl and NH4HS salts can form and deposit in equipment and piping or dissolve in water to form aqueous solutions of these salts. Included in this practice are: details of deterioration mechanisms; methods to assess and monitor the corrosivity of systems; details on materials selection, design, and fabrication of equipment for new and revamped processes; considerations in equipment repairs; and details of an inspection plan. Pages: 70
3rd Edition | June 2019 | Product Number: C932B03 | Price: $278.00

TR 932-C • Use of Duplex Stainless Steels in Hydroprocessing Reactor Effluent Air Coolers (REACs)
Covers results of a survey of the petroleum refining industry concerning the use of duplex stainless steel (DSS) in hydroprocessing reactor effluent air cooler (REAC) systems. The API Committee on Refining Equipment Subcommittee on Corrosion and Materials (SCCM) commissioned this survey after several industry reports of weldment cracking failures with DSS REAC system components, including REAC header boxes, tube-to-tubesheet welds, and associated piping. REAC component weldment cracking has been addressed in SCCM documents, including TR 932-B and TR 938-C, in published conference papers, and in a report issued by the Materials Technology Institute (MTI). Pages: 48
1st Edition | August 2022 | Product Number: C932C01 | Price: $109.00

RP 934-A • Materials and Fabrication of 2 1/4Cr-1Mo, 2 1/4Cr-1Mo-1/4V, 3Cr-1Mo, and 3Cr-1Mo-1/4V Steel Heavy Wall Pressure Vessels for High-Temperature, High-Pressure Hydrogen Service
Covers materials and fabrication requirements for new 2 1/4Cr and 3Cr steel heavy wall pressure vessels for high-temperature, high-pressure hydrogen service. For this recommended practice (RP), “heavy wall” is defined as a shell thickness of 4 in. (100 mm) or greater, and high-temperature is considered to be operating temperatures of 650 °F (345 °C) and above. This RP applies to vessels that are designed, fabricated, certified, and documented in accordance with ASME Section VIII, Division 2, including Paragraph 3.4, Supplemental Requirements for Cr-Mo Steels, and ASME Code Case 2151, as applicable.
Materials covered by this RP are conventional steels including standard 2 1/4Cr-1Mo and 3Cr-1Mo steels, and advanced steels which include 2 1/4Cr-1Mo-1/4V, 3Cr-1Mo-1/4V-Ti-B, and 3Cr-1Mo-1/4V-Nb-Ca steels. This document may be used as a reference document for the fabrication of vessels made of enhanced steels (steels with mechanical properties increased by special heat treatments such as ASME SA-542, Grade B, Class 4) at the purchaser's discretion. However, no attempt has been made to cover specific requirements for the enhanced steels and they may be different than the requirements for vanadium grade. Pages: 57
3rd Edition | January 2019 | Product Number: C934A03 | Price: $135.00

TR 934-B • Fabrication Considerations for Vanadium-Modified Cr-Mo Steel Heavy Wall Pressure Vessels
Best practice guideline to be used by fabricators, in conjunction with RP 934-A, when constructing new heavy wall pressure vessels with vanadium-modified Cr-Mo steels intended for service in petroleum refining, petrochemical, or chemical facilities. These materials are primarily used in high-temperature, high-pressure services that contain hydrogen. The document provides typical practices to be followed during fabrication, based upon experience and the knowledge gained from actual problems that have occurred during the fabrication of vanadium-modified Cr-Mo steels. Pages: 44
2nd Edition | January 2022 | Product Number: C934B02 | Price: $160.00

RP 934-C • Materials and Fabrication of 1 1/4Cr-1/2Mo Steel Heavy Wall Pressure Vessels for High-Pressure Hydrogen Service Operating at or Below 825 °F (440 °C)
Covers materials and fabrication requirements for new 1 1/4Cr-Mo steel heavy wall pressure vessels and heat exchangers for high-temperature, high-pressure hydrogen service. It applies to vessels that are designed, fabricated, certified, and documented in accordance with ASME Section VIII, Division 1 or Division 2. This document may also be used as a resource for equipment fabricated of 1Cr-1/2Mo Steel. This document may also be used as a resource when planning to modify an existing heavy wall pressure vessel.
The interior surfaces of these heavy wall pressure vessels may have an austenitic stainless steel or ferritic stainless steel weld overlay or cladding to provide additional corrosion resistance. For this recommended practice, “heavy wall” is defined as a shell thickness 2 in. (50 mm) or greater, but less than or equal to 4 in. (100 mm) at the time of mill heat treatment.
Although outside of its scope, this document can be used as a resource for vessels down to 1 in. (25 mm) or lower in shell thickness, with changes defined by the purchaser. Pages: 25
2nd Edition | February 2019 | Product Number: C934C02 | Price: $118.00

To purchase individual API standards, visit apiwebstore.org
TR 934-D
Technical Report on the Materials and Fabrication Issues of 1 1/4Cr-1/2Mo and 1Cr-1/2Mo Steel Pressure Vessels
Numerous 1 1/4Cr-1/2Mo and 1Cr-1/2Mo vessels have been constructed and successfully used in various applications in the petroleum industry and in other types of service applications. These vessels have been constructed to the requirements of the ASME Boiler & Pressure Vessel Code, Section VIII, Divisions 1 and 2, and to various international pressure vessel codes and standards. The 1 1/4Cr-1/2Mo and 1Cr-1/2Mo vessels are typically used in service conditions (e.g., high temperature and/or high pressure hydrogen), which require heavy walls and cause in service deterioration. As such, the steels are subject to special requirements, such as notch toughness, elevated temperature tensile properties, hardness, fabrication heat treatments, etc., which may limit the maximum thickness to be able to meet the desired properties. Corrosion protection by stainless steel weld overlay or cladding may also be required. This report provides background information and guidance on the implementation of RP 934-C. In recent years it has been recognized that there are important distinctions that need to be considered for 1 1/4Cr-1/2Mo steels. Whereas RP 934-A continues to provide materials and fabrication requirements for new 2 1/4Cr-1Mo alloys and 2 1/2/3Cr-1Mo-1/4V steel heavy wall pressure vessels in high temperature, high pressure hydrogen service, different material and fabrication requirements have been developed for 1 1/4/4Cr-1/2Mo steel heavy wall pressure vessels. These requirements are covered in RP 934-C and 934-E. This document contains a description of key damage mechanisms that relate specifically to 1 1/4Cr-1/2Mo pressure vessels used in a variety of services. These damage mechanisms include elevated temperature damage such as “reheat cracking” or “creep embrittlement,” as well as other damage mechanisms that may occur at lower temperatures. This document provides information and guidance on successful practices for fabrication of 1 1/4Cr-1/2Mo steel heavy wall pressure vessels for the intended services of both RP 934-C and RP 934-E. The survey of steel producers and vessel fabricators (Annex 1) indicates that there is a need to evaluate the effect of heat treat cycles on materials properties (CVN toughness, tensile and yield strength). Pages: 56
1st Edition | September 2010
Product Number: C934D01 | Price: $146.00

To purchase individual API standards, visit apiwebstore.org

TR 934-F Part 1
Impact of Hydrogen Embrittlement on Minimum Pressurization Temperature for Thick-Wall Cr-Mo Steel Reactors in High-Pressure H2 Service—Initial Technical Basis for RP 934-F
In support of API Recommended Practice 934-F [Guidance for Establishing a Minimum Pressurization Temperature (MPT) for Heavy Wall Reactors in High Temperature Hydrogen Service During Startups and Shutdowns, not yet published], the objective of this study is to establish the technical basis for determining a minimum pressurization temperature necessary to avoid Internal Hydrogen Assisted Cracking (IHAC) of weld metal and base plate of temper embrittled 2¼Cr-1Mo steel in high pressure H2 service. The threshold condition for the onset of subcritical crack propagation—and its dependencies on dissolved hydrogen concentration, temperature, and steel purity/temper embrittlement—are targeted as particularly important to pressure vessel safe operations. A second objective is to improve the underlying database for fracture mechanics fitness-for-service (FFS) modeling of IHAC. Both analyses are built on the conservative rising-displacement threshold stress intensity factor for IHAC (KIH). This investigation has accomplished 5 tasks, leading to conclusions that are sufficient to establish RP 934-F on MPT to conservatively avoid IHAC in 2¼Cr-1Mo steel. 
Task 1—Summarize and clarify the technical approach, assumptions, data, and modeling results used in Phase II JIP research to quantitatively establish the H concentration and temperature dependencies of the threshold stress intensity, KIH, for IHAC and the concentration dependence of MPT for moderate-impurity 2¼Cr-1Mo steel.
Task 2—Validate the Phase II correlation of KIH and critical temperature vs H concentration, based on new analyses of post-Phase-II IHAC data.
Task 3.0—Enhance the Phase II analysis of KIH vs crack tip H concentration, and thus MPT, by describing the interaction between temper embrittlement and IHAC using JIP Phase I data so as to predict the influence of modern steel purity.
Task 4.0—Build on the hydrogen-damage-mechanism-based master correlation between KIH and crack tip stress field/microstructure-trapped H to develop a H concentration similitude parameter that is useful in engineering analysis of thick-wall reactor FFS and MPT.
Task 5.0—Validate the empirically based trends and predictions of the effects of temperature and steel purity on the threshold stress intensity through consideration of state-of-the art theory and micromechanical modeling of IHAC. Pages: 118
1st Edition | September 2017
Product Number: C934F101 | Price: $202.00

TR 934-F Part 2
Literature Review of Fracture Mechanics-Based Experimental Data for Internal Hydrogen-Assisted Cracking in Vanadium-Modified 2¼Cr-1Mo Steel
Documents a critical assessment of the existing literature on IHAC of V-modified Cr-Mo steels for use in interpreting the results of the present laboratory work and so as to establish a definitive characterization of the H cracking resistance of this steel class. Since these modern Cr-Mo-V steels are of relatively high purity, and thus retain a low RAT after laboratory simulation of in-service temper embrittlement, the database for 2¼Cr-1Mo provides a context for assessment of the IHAC performance of V-modified grades. Hydrogen cracking of less pure V-modified Cr-Mo steels was not considered in this review. The content that follows is chronologically organized into initial and more modern works, as justified by improvement in test execution, data analysis, and reporting, as well as the evolution from laboratory to commercial scale heats of Cr-Mo-V. Pages: 46
1st Edition | August 2017 | Product Number: C934F201 | Price: $135.00
TR 934-F Part 3
Subcritical Cracking of Modern 2¼Cr-1Mo-¼V Steel Due to Dissolved Internal Hydrogen and H2 Environment, Research Report
Conveys the results of API-sponsored research to: (a) quantitatively characterize the internal hydrogen assisted cracking (IHAC) resistance of modern 2¼Cr-1Mo-¼V steel, in both base metal and weld metal product forms and including the effect of stressing temperature, (b) scope the hydrogen environment assisted cracking (HEAC) resistance of 2¼Cr-1Mo-¼V base metal, (c) understand the mechanism(s) for the IHAC and HEAC behaviors of Cr-Mo and Cr-Mo-V steels, centered on H interactions with microstructure-scale trap sites, and (d) assess application of data and understanding of IHAC and HEAC to determine the role of subcritical H-assisted cracking on a minimum pressurization temperature estimate relevant to thick-wall hydro-treating reactor vessels. Pages: 170
1st Edition | December 2017 | Product Number: C934F01 | Price: $189.00

TR 934-F Part 4
The Effects of Hydrogen for Establishing a Minimum Pressurization Temperature (MPT) for Heavy Wall Steel Reactor Vessels
Hydrogen, dissolved in the thick wall of a steel pressure vessel during steady-state operation in elevated temperature, high-pressure H2, can cause both slow-subcritical crack advance as well as unstable-catastrophic fracture during shutdown and startup. This behavior is defined in Section 2. It follows that modern fracture-mechanics assessments of the minimum pressurization temperature (MPT) and fitness for service (FFS) must include the deleterious effect of H on both subcritical and unstable internal hydrogen assisted cracking (IHAC). Two approaches are in draft stage to develop standard procedures that address this need; an API 934-F recommended practice and a WRC Bulletin 562 basis for ASME/API 579. The objective of this technical report is to establish the technical basis necessary to enable and validate these best practices for quantifying the effects of hydrogen on (a) the MPT and (b) FFS of a thick wall hydroprocessing reactor. Pages: 112
1st Edition | November 2018
Product Number: C934F401 | Price: $189.00

RP 934-G
Design, Fabrication, Operational Effects, Inspection, Assessment, and Repair of Coke Drums and Peripheral Components in Delayed Coking Units
Includes information and guidance on the practices used by industry practitioners on the design, fabrication, operation, inspection, assessment, and repair of coke drums and peripheral components in delayed coking units. The guidance is general and does not reflect specific details associated with a design offered by licensors of delayed coking technology or inspection tools, repair techniques, and/or engineering assessments offered by contractors. Pages: 94
1st Edition | September 2021 | Product Number: C934J01 | Price: $132.00

Publ 935
Thermal Conductivity Measurement Study of Refractory Castables
Compares the differences between measurement techniques used to develop thermal conductivity of refractory castables. The following procedures were examined: Water Calorimeter, Calorimeter-Pilkington Method, Hot Wire Method, Comparative Thermal Conductivity Method, and Panel Test. The refractory industry uses various methods for measuring and reporting thermal conductivity. The accuracy of reporting and understanding thermal conductivity are vital to developing the most cost effective, efficient, and reliable equipment. The study makes no attempt to rank, classify or assign accuracy to each of the measurement techniques. Pages: 22
1st Edition | September 1999 | Product Number: C93501 | Price: $66.00

Std 936
Refractory Installation Quality Control—Inspection and Testing
Monolithic Refractory Linings and Materials
Provides installation quality control procedures for monolithic refractory linings and may be used to supplement owner specifications. Materials, equipment, and personnel are qualified by the methods described, and applied refractory quality is closely monitored, based on defined procedures and acceptance criteria. The responsibilities of inspection personnel who monitor and direct the quality control process are also defined. In addition, this standard provides guidance for the establishment of quality control elements necessary to achieve the defined requirements. Pages: 49
Product Number: C93604 | Price: $163.00

Publ 937-A
Study to Establish Relations for the Relative Strength of API 650 Cone Roof, Roof-to-Shell and Shell-to-Bottom Joints
Investigates the relative strengths of the roof-to-shell and shell-to-bottom joints, with the goal of providing suggestions for frangible roof design criteria applicable to smaller tanks. Pages: 68
1st Edition | August 2005 | Product Number: C937A0 | Price: $133.00

Publ 938-A
An Experimental Study of Causes and Repair of Cracking of 1¼Cr-½Mo Steel Equipment
Gives the results of an experimental study conducted to provide the petroleum industry with solutions to recurring incidents of cracking in the application of welded 1¼Cr-½Mo steel for hydrogen processing equipment. Pages: 220
1st Edition | May 1996 | Product Number: C93801 | Price: $178.00

This publication is a new entry in this catalog.
◆ This publication is related to an API licensing, certification, or accreditation program.
Guidelines for Avoiding Sulfidation (Sulfidic) Corrosion Failures in Oil Refineries

Applies to hydrocarbon process streams with sulfur-containing compounds, without the presence of hydrogen, that operate at temperatures above approximately 500 °F (260 °C) up to about 1000 °F (540 °C). There is considerable debate in the industry as to the correct threshold temperature for hydrogen-free sulfidation and, in a change in this edition, the API 571 threshold of 500 °F (260 °C) is adopted herein. Experience has shown that little significant corrosion will occur at operating temperatures below 500 °F (260 °C) for hydrogen free sulfidation services without the influence of naphthenic acid corrosion. Mercaptan corrosion, particularly in condensate service, has been reported below this temperature, but is not explicitly covered in the 2nd Edition of RP 939-C. For hydrogen-containing services, the threshold temperature is set at 450 °F (230 °C).

A lower threshold limit for sulfur content is not provided because significant corrosion has occurred in the reboiler/fractionator sections of some hydroprocessing units (which do not contain hydrogen) at measured sulfur or H₂S levels as low as 1 ppm. Pages: 59

Stress Corrosion Cracking of Carbon Steel in Fuel-Grade Ethanol: Review, Experience Survey, Field Monitoring, and Laboratory Testing (includes Addendum 1 dated October 2013)

Addresses stress corrosion cracking (SCC) in carbon steel equipment used in distribution, transportation, storage, and blending of denatured fuel ethanol. API, with assistance from the Renewable Fuels Association (RFA), conducted research on the potential for metal cracking and product leakage in certain portions of the fuel ethanol distribution system. TR 939-D contains a review of existing literature, results of an industry survey on cracking events and corrosion field monitoring, and information on mitigation and prevention. Pages: 172

Identification, Repair, and Mitigation of Cracking of Steel Equipment in Fuel Ethanol Service

Usage of fuel ethanol as an oxygenate additive in gasoline blends is increasing, both in the United States and internationally. This document discusses stress corrosion cracking (SCC) of carbon steel tanks, piping and equipment exposed to fuel ethanol as a consequence of being in the distribution system, at ethanol distribution facilities, or end user facilities where the fuel ethanol is eventually added to gasoline. Such equipment includes but is not limited to:

- storage tanks,
- piping and related handling equipment, and
- pipelines that are used in distribution, handling, storage, and blending of fuel ethanol.

However, data for pipelines in ethanol service is limited and caution should be used when applying guidelines from this document, which have been derived mainly from applications involving piping and tanks in ethanol storage and blending facilities. SCC of other metals and alloys is beyond the scope of this document, as is the corrosion of steel in this service. Pages: 42

This publication is related to an API licensing, certification, or accreditation program.
RP 941
Steels for Hydrogen Service at Elevated Temperatures and Pressures in Petroleum Refineries and Petrochemical Plants
(includes Errata 1 dated June 2016, Errata 2 dated December 2017, and Addendum 1 dated August 2020)

Summarizes the results of experimental tests and actual data acquired from operating plants to establish practical operating limits for carbon and low alloy steels in hydrogen service at elevated temperatures and pressures. The effects on the resistance of steels to hydrogen at elevated temperature and pressure that result from high stress, heat treating, chemical composition, and cladding are discussed. This recommended practice (RP) does not address the resistance of steels to hydrogen at lower temperatures [below about 400 °F (204 °C)], where atomic hydrogen enters the steel as a result of an electrochemical mechanism.

This RP applies to equipment in refineries, petrochemical facilities, and chemical facilities in which hydrogen or hydrogen-containing fluids are processed at elevated temperature and pressure. The guidelines in this RP can also be applied to hydrogenation plants such as those that manufacture ammonia, methanol, edible oils, and higher alcohols.

The steels discussed in this RP resist high temperature hydrogen attack (HTHA) when operated within the guidelines given. However, they may not be resistant to other corrosives present in a process stream or to other metallurgical damage mechanisms that can occur in the operating HTHA range. This RP also does not address the issues surrounding possible damage from rapid cooling of the metal after it has been in high temperature, high pressure hydrogen service (e.g., possible need for outgassing hydroprocessing reactors). This RP will discuss in detail only the resistance of steels to HTHA.

Presented in this document are curves that indicate the operating limits of temperature and hydrogen partial pressure for satisfactory resistance of carbon steel and Cr-Mo steels to HTHA in elevated temperature, hydrogen service. In addition, it includes a summary of inspection methods to evaluate equipment for the existence of HTHA. Pages: 45

8th Edition | February 2016 | Product Number: C94108 | Price: $152.00

TR 941-A
The Technical Basis Document for API RP 941
(includes Addendum 1 dated June 2019)

Even before the first edition of API Publ 941, Steels for Hydrogen Service at Elevated Temperatures and Pressures in Petroleum Refineries and Petrochemical Plants appeared in 1970, there had been fundamental questions regarding the technical basis for the material performance curves contained in the document (1-6). Based upon sparse laboratory data combined with plant experience, with only a few exceptions, the curves have done an exceptionally good job at safely directing the refining industry in selecting materials based upon operating temperature, hydrogen partial pressure, and the metallurgy of the equipment being considered. Pages: 301

1st Edition | September 2008 | Product Number: C09410 | Price: $215.00

TR 942-A
Materials, Fabrication, and Repair Considerations for Hydrogen Reformer Furnace Outlet Pigtails and Manifolds

Addresses materials, fabrication, and repair issues related to hydrogen and syngas reformer furnace outlet pigtails and manifolds. High reliability of outlet pigtails and manifold components, such as headers, tees, and fittings, is important to the successful long-term operation of hydrogen and syngas reformer furnaces. These components typically operate at high temperatures in the range of 750 to 950 °C (1382 to 1742 °F) where they are potentially subject to high-temperature creep, stress relaxation, hot corrosion, and thermal fatigue damage. In recent years a number of reformer furnace operators have encountered problems of in-service degradation and cracking of outlet pigtails and manifold components, while others have had little or no problems of this type. Both direct experience in addressing specific cases of outlet pigtail and manifold cracking problems and indirect experience gained from surveying industry with regard to these problems were used in preparing this report. The objective of the project was to develop an understanding, based on published literature and industry experience, of why some reformer furnaces have had problems with embrittlement and cracking of outlet pigtails and manifold components in service, while others have not had such problems. Pages: 53

1st Edition | June 2014 | Product Number: C942A01 | Price: $152.00

TR 942-B
Material, Fabrication, and Repair Considerations for Austenitic Alloys Subject to Embrittlement and Cracking in High Temperature 565 °C to 760 °C (1050 °F to 1400 °F) Refinery Services

Focuses on the materials, fabrication, and repair of austenitic stainless steels and nickel-iron-chromium alloys in high temperature 565 °C to 760 °C (1050 °F to 1400 °F) refinery services. Many of these alloys are subject to the embrittlement and cracking after prolonged exposure to these temperatures. Susceptible equipment in the following processing units are addressed: fluid catalytic cracking units, hydrogen/syngas plants, catalytic reformers,okers, and hydropreprocessing units. This report summarizes industry experience and recommends methods to improve reliability and process safety, and increases industry awareness to high temperature embrittlement issues.

As a basis of this report, technical literature, industry experience, and published case studies were reviewed. The review included materials of construction, damage mechanisms, and component-specific fabrication and repair issues. The scope of this report includes the following wrought austenitic alloys: Alloys 800, 800H, 800HT, and 300 series austenitic stainless steels, and corresponding welding consumables. Limits in chemical composition, microstructural requirements, and heat treating practices that mitigate susceptibility to embrittlement and cracking are identified. Potentially viable upgrades to commonly used alloys are identified where applicable.

The remainder of this report is organized as follows: Section 3, Process Units, gives a brief process overview followed by an explanation of the various damage mechanisms found in that unit. Component specific considerations and examples of in-service damage are also included. Inspection recommendations and general repair method considerations are also included. Section 4, Damage Mechanisms, contains detailed discussions of high-temperature damage mechanisms, including fundamental details of the solid state reactions, their rate of reaction, and recommended mitigation measures. Section 4 also incorporates fabrication and repair practices that can be used for cracked or embrittled equipment. Pages: 88

1st Edition | May 2017 | Effective Date: November 1, 2017
Product Number: C942B01 | Price: $187.00

RP 945
Avoiding Environmental Cracking in Amine Units

Discusses environmental cracking problems of carbon steel equipment in amine units. This publication provides guidelines for carbon steel construction materials, including, fabrication, inspection, and repair, to help assure safe and reliable operation. The steels referred to in this document are defined by the ASTM designation system, or equivalent materials contained in other recognized codes or standards. This document is based on current engineering practices and insights from recent industry experience. Pages: 46

4th Edition | September 2022 | Product Number: C94504 | Price: $110.00

Publ 959
Characterization Study of Temper Embrittlement of Chromium-Molybdenum Steels

Evaluates the temper embrittlement characteristics of Cr-Mo pressure vessel steels. The steels are designated A387 in Part 4 of the ASTM Book of Standards. Most of the samples studied were of Grade 22 (2-1/4–1Mo) and a few samples of Grades 11 and 21 were also included, (1-1/4-1/2-1Mo), 30-1Mo). The 64 samples studied represented a wide range of commercially available steel, including qualification welds in 1-in. and 6-in. steel plate, large nozzle cut-outs, and randomly-shaped pieces of forging material. These materials received heat treatment typical of hydro-treater reactor fabrication.
The objective of this program was to characterize typical commercial reactor steels and weldments in terms of toughness and other physical properties prior to being placed in service and the changes anticipated in toughness due to long-time service at elevated temperatures.

It is important to note that the materials studied were typical of commercial production and fabrication up to about 1975 and are not representative of plate, forgings, and weld metal having low temper embrittlement susceptibility generally available after 1975. Pages: 145

1st Edition | January 1982 | Product Number: C95900 | Price: $171.00

**RP 970**
**Corrosion Control Document Systems**

Provides users with the basic elements for developing, implementing, and maintaining a Corrosion Control Document (CCD) for refining and, at the owner's discretion, may be applied at petrochemical and chemical process facilities. A CCD is a document or other repository or system that contains all the necessary information to understand materials damage susceptibility issues in a specific type of operating process unit at a plant site. CCDs are a valuable addition to an effective Mechanical Integrity Program. They help to identify the damage mechanism susceptibilities of pressure containing piping and equipment, factors that influence damage mechanism susceptibilities, and recommended actions to mitigate the risk of loss of containment or unplanned outages. This RP serves as the basis for tracking CCD development, implementation, and maintenance to maintain consistency and to integrate the CCD work process with other plant integrity programs, such as Management of Change (MOC), Process Hazards Analysis (PHA), and Reliability Centered Maintenance (RCM). Pages: 61

2nd Edition | April 2023 | Product Number: C97002 | Price: $202.00

**Std 975**
**Refractory Installation Quality Control—Inspection and Testing of Refractory Brick Systems and Materials**

Provides installation quality control (QC) procedures for aluminum silicate dense and insulating fire brick refractory systems and may be used to supplement owner specifications. Materials, equipment, and personnel are qualified by the methods described, and applied refractory quality is closely monitored, based on defined procedures and acceptance criteria. The responsibilities of inspection personnel who monitor and direct the QC process are also defined. Pages: 40

1st Edition | November 2021 | Product Number: C97501 | Price: $94.00

**Std 976**
**Refractory Installation Quality Control—Inspection and Testing of AES/RCF Fiber Linings and Materials**

Provides installation quality control procedures and lining system design requirements for AES/RCF fiber linings and may be used to supplement owner specifications. Materials, equipment, and personnel are qualified by the methods described, and applied refractory quality is closely monitored, based on defined procedures and acceptance criteria. The responsibilities of inspection personnel who monitor and direct the quality control process are also defined. The lining described in this standard is for internal refractory linings on the process side of the equipment. External insulation and jacketing are not covered in this standard. Pages: 34

1st Edition | March 2018 | Product Number: C97601 | Price: $131.00

**TR 977**
**ASTM C704 Test Variability Reduced to Allow Further Optimization of Erosion-Resistant Refractories for Critical Oil Refining Applications**

Documents the results of a joint project conducted by the API CRE Subcommittee on Refractory Materials and the ASTM C08 Committee to improve the reproducibility of the 2015 edition of ASTM C704/C704M, Standard Test Method for Abrasion Resistance of Refractory Materials at Room Temperature. Erosion-resistant refractories are used in many oil refining applications, such as Fluid Catalytic Cracking Units (FCCUs), to resist the wearing effects of solids particles circulating at elevated velocities in a high-temperature process environment. This technical report also reviews the drivers for continuing improvement in erosion-resistant refractories and the role of ASTM C704/C704M for the selection and installation quality control of refractories used in these installations. This report documents changes made to the setup and procedures to improve the reproducibility of the test. These changes are designed to achieve this end, while providing a rough equivalency consistent with historical data before the changes were made. These results are validated by the results of extensive international round-rubbin and ruggedness testing, and are reported herein. Pages: 27

1st Edition | February 2018 | Product Number: C97701 | Price: $120.00

**TR 978**
**Monolithic Refractories: Manufacture, Properties, and Selection**

Covers the installation and dryout of monolithic refractory lining materials for Hydrocarbon Processing Industry (HPI) applications. It discusses the best practice procedures and techniques used in the installation of refractory concrete, as well as those for air and heat-setting plastics and ramming mixes. In addition, it addresses the need for curing and dryout procedures to achieve successful results. This instruction is consistent with API 936, which is the HPI industry standard for the installation quality control of monolithic refractories. Pages: 82

1st Edition | March 2019 | Product Number: C97801 | Price: $115.00

**TR 979**
**Applications of Refractory Lining Materials**

Covers the use of refractory concrete (castables), plastics, and ramming mixes for applications for the hydrocarbon processing industry (HPI). Its content is complemented by the two other reports in this series:
- API TR 978, Monolithic Refractories: Manufacture, Properties and Selection;
- API TR 980, Monolithic Refractories: Installation and Dryout.


The original content of these reports was focused primarily on steel- and glass-making applications, which represent the largest refractory markets. API, in tailoring the revision of this content to the HPI, has greatly expanded the text pertaining to the specialized oil-refining and petrochemical-processing applications. At the same time, API has retained and updated the information covering applications outside of the HPI (see Section 5) because of the similarities and applicability that this information has for refractory professionals in these other industries. Pages: 63

1st Edition | October 2018 | Product Number: C97901 | Price: $135.00

**TR 980**
**Monolithic Refractories: Installation and Dryout**

Covers the installation and dryout of monolithic refractory lining materials for hydrocarbon processing industry (HPI) applications. It discusses the best practice procedures and techniques used in the installation of refractory concrete, as well as those for air- and heat-setting plastics and ramming mixes. In addition, it discusses the need for curing and dryout and procedures to achieve successful results. This instruction is consistent with Std 936, which is the HPI industry standard for the installation quality control of monolithic refractories. It also serves as the body of knowledge document for the API 936 Refractory Personnel Certification Program. This report is the last in a series of three API reports covering the use of refractory concrete (castables), plastics, and ramming mixes for applications for the hydrocarbon processing industry. Its content is complemented by the two other reports in this series:
- API TR 978, Monolithic Refractories: Manufacture, Properties and Selection;
- API TR 979, Applications of Refractory Lining Materials.

Pages: 66

1st Edition | April 2018 | Product Number: G98001 | Price: $157.00
Refining

To purchase individual API standards, visit apiwebstore.org

TR 981
Thermal Expansion Under Load and Creep of Refractories—An Evaluation and Comparison of Testing Methods
Documents the results of thermal expansion under load (TEUL) and creep in compression testing conducted by ASTM C832 and DIN 993-9 (same test as ISO 3187). The prime objective for this study is to determine if one or both tests should replace the ASTM C16 method. ASTM C16, modified from 1.5-hour to 100-hour hold, has been widely used to qualify brick for sulfur reaction furnace use. In addition to deformation after 100 hours, the creep tests will provide additional information of TEUL and evidence of mineralogical changes during their early life cycle in process operation. Pages: 28
1st Edition | March 2021 | Product Number: C98101 | Price: $88.00

RP 982
Inspection and Assessment of Refractory Linings
Provides recognized industry practices, requirements, and guidance for the installation, in-service inspection, and repair assessment of refractory lining installed into equipment that is used in general refinery services. Refinery equipment included in the scope of this standard includes, but may not be limited to, fluid solids units—including fluid catalytic cracker units (FCCUs), reforming units, fired heaters, incinerators, sulfur recovery units, flue gas ducts, calciners, steam-methane reformers (SMRs), cracker furnaces, boilers, hydrogen plant and transfer lines, and flue gas stacks. Pages: 71
1st Edition | October 2023 | Product Number: C98201 | Price: $163.00

P Petrole um Pr oducts and Petroleum Product Surveys

API/NPRA Survey
A survey of industry refining data for the period May 1 through August 31, 1996. The report includes information on domestically produced gasoline and diesel product quality as well as aggregate domestic refining capacity and average operating data. Pages: 190
1st Edition | July 1997 | Product Number: F10001 | Price: $67.00
Aviation Turbines Fuels, 2001 | Price: $96.00
Heating Oils, 2002 | Price: $106.00
Motor Gasolines, Summer 2001 | Price: $128.00
Diesel Fuel Oils, 2002 | Price: $106.00
Magnetic computer tapes of raw data are available upon request. Reports from previous years are also available.
Order these petroleum product surveys from:
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Publ 4261
Alcohols and Ethers: A Technical Assessment of Their Application as Fuels and Fuel Components
Summarizes information from the technical literature on producing and applying alcohols and ethers as fuels and fuel components for the transportation sector. It assesses the technical advantages and disadvantages of alcohols and ethers with respect to hydrocarbon fuels. Since the amendment of the Clean Air Act in 1977, and subsequently in 1990, public interest in the role of oxygenates in transportation has significantly increased. This edition of Publ 4261 has been updated and expanded to include a review of the oxygenate regulations and the technical literature that has been published since 1998. It provides a technical assessment suitable for policy discussions related to alcohols and ethers in transportation. Pages: 119
3rd Edition | June 2001 | Product Number: C42613 | Price: $176.00

Publ 4262
Methanol Vehicle Emissions
December 1990 | Product Number: F42620 | Price: $136.00

PROCESS SAFETY STANDARDS

RP 752
Management of Hazards Associated with Location of Process Plant Permanent Buildings
Provides guidance for managing the risk from explosions, fires and toxic material releases to on-site personnel located in new and existing buildings intended for occupancy. This RP was developed for use at refineries, petrochemical and chemical operations, natural gas liquids extraction plants, natural gas liquefaction plants, and other onshore facilities covered by the OSHA Process Safety Management of Highly Hazardous Chemicals, 29 CFR 1910.119.
Buildings covered by this RP are rigid structures intended for permanent use in fixed locations. Tents, fabric enclosures and other soft-sided structures are outside the scope of this document. This 3rd Edition of RP 752:2009 supersedes all previous editions, including the technical data provided in those documents.
Significant research and development of technology pertinent to building siting evaluations has been performed since the publication of the previous editions of RP 752. Examples of updated technology include prediction of blast damage to buildings, determination of occupant vulnerabilities, and estimates of event frequencies. Prior versions of RP 752 and the technical data included in them should not be used for building siting evaluations. The 2nd Edition of RP 752 covered all building types both permanent and portable. This 3rd Edition of RP 752 does not cover portable buildings. Portable buildings are now covered by RP 753. It is recognized, however, that portable buildings specifically designed for significant blast load represent a potential area of overlap between RP 753 and RP 752. In accordance with 1.3 of this document:

“Buildings described in API RP 753, Management of Hazards Associated with Location of Process Plant Portable Buildings, First Edition, June 2007, as ‘portable buildings specifically designed to resist significant blast loads’ and intended for permanent use in a fixed location are covered in this document (API RP 752). All other portable buildings are covered by API RP 753.” Pages: 27
Product Number: K75203 | Price: $153.00
RP 753
Management of Hazards Associated with Location of Process Plant Portable Buildings

Provides guidance for reducing the risk to personnel located in portable buildings from potential explosion, fire and toxic release hazards. While occupied permanent buildings (e.g. control rooms, operator shelters) located near covered process area are typically constructed to be blast and fire resistant, conventional portable buildings (i.e. light wood trailers) are typically not constructed to be blast and fire resistant. Past explosion accidents have demonstrated that occupants of conventional portable buildings are susceptible to injuries from structural failures, building collapse, and building debris and projectiles.

Guidance is provided based on the following principles.

- Locate personnel away from covered process areas consistent with safe and effective operations.
- Minimize the use of occupied portable buildings in close proximity to covered process areas.
- Manage the occupancy of portable building especially during periods of increased risk including unit start up or planned shut-down operations.
- Design, construct, install, and maintain occupied portable buildings to protect occupants against potential hazards.
- Manage the use of portable buildings as an integral part of the design, construction, and maintenance operation of a facility.

1st Edition | June 2007 | Reaffirmed: August 2020
Product Number: K75301 | Price: $153.00

RP 754
Process Safety Performance Indicators for the Refining and Petrochemical Industries (ANSI/API RP 754)

Identifies leading and lagging process safety indicators useful for driving performance improvement. As a framework for measuring activity, status, or performance, this document classifies process safety indicators into four tiers of leading and lagging indicators. Tiers 1 and 2 are suitable for nationwide public reporting and Tiers 3 and 4 are intended for internal use at individual facilities. Guidance on methods for development and use of performance indicators is also provided. This RP was developed for the refining and petrochemical industries, but may also be applicable to other industries with operating systems and processes where loss of containment has the potential to cause harm. Applicability is not limited to those facilities covered by the OSHA Process Safety Management Standard, 29 CFR 1910.119, or similar national and international regulations.

3rd Edition | August 2021 | Product Number: K75403 | Price: $182.00

RP 755

Provides guidance to all stakeholders (e.g. employees, managers, supervisors) on understanding, recognizing, and managing employee fatigue in the workplace. Should sites decide to use this document, the owners/operators shall establish policies and procedures to meet the purpose of this recommended practice.

This document was developed for refineries, petrochemical and chemical operations, natural gas liquefaction plants, and other facilities such as those covered by the OSHA Process Safety Management Standard, 29 CFR 1910.119. This document is intended to apply to a workforce that is commuting daily to a job location.

ANSI/API RP 755 applies to all employees working night shifts, rotating shifts, extended hours/days, or call outs who are involved in process safety-sensitive actions. It should also be considered for others making process safety-sensitive decisions. On-site contractors involved in process safety-sensitive actions shall have fatigue risk management systems equivalent to the criteria outlined in this document.

2nd Edition | May 2019 | Product Number: K75502 | Price: $145.00

TR 755-1

Identifies and explains the scientific and operational issues considered during the preparation of RP 755. By providing the reasoning behind the specific wording in the RP 755 document, this document supports each key statement in RP 755 in sequence so that it can be used in parallel with the RP 755 text. To make this document accessible and manageable, key scientific sources and references are provided to help readers gain access to the scientific literature.

Fatigue Risk Management Systems (FRMS) have emerged and been widely recognized as a more effective approach to managing and mitigating employee fatigue risk in the 24/7 workplace. The core feature of the FRMS is that it is a data-driven, risk-informed, safety performance-based system. The FRMS implementation process first identifies all sources of fatigue risk in the business operation, then introduces mitigating policies, technologies, and procedures to reduce the risk, and most importantly then maintains them in a proactively managed continuous improvement system. The history of FRMS was recently summarized.

This method represents a significant step change from the traditional approaches of either relying on maximum limits to hours of work or minimum limits to hours of rest (variously called Hours of Service, Work-Rest Rules, Working Time Directives), or adopting intermittent or piece-meal solutions (e.g. a fatigue training program or a shift schedule redesign), depending on the interests and initiative of local site managers.

One essential feature of FRMS is that it is a system meant to be improved upon on a regular and continuous basis. It is not a set of guidelines designed for one-time compliance but instead provides a framework that will evolve over time, driven by the collection of data on fatigue risk and fatigue outcomes (e.g. fatigue-related incidents).

1st Edition | April 2010 | Product Number: K755101 | Price: $112.00

RP 756
Management of Hazards Associated with Location of Process Plant Tents

Provides guidance for managing the risk from explosions, fires and toxic material releases to on-site personnel located in tents. The term “tent” is used to describe a wide range of structures and is defined in §3.15. This RP was developed for use at refineries, petrochemical and chemical operations, natural gas liquids extraction plants, natural gas liquefaction plants, and other onshore facilities covered by OSHA 29 CFR 1910.119.

The focus of this RP is primarily on process related hazards. However, non-process related hazards may exist which could present risks to tent occupants. Previous accidents have demonstrated that tent occupants are susceptible to injuries from fires originating inside the tent, from tent collapse due to extreme weather, and from falling objects. Some of these hazards are addressed by tent design standards, manufacturer’s recommendations, and local regulations.

1st Edition | September 2014 | Reaffirmed: August 2020
Product Number: C75601 | Price: $136.00
Refining

To purchase individual API standards, visit apiwebstore.org

TR 756-1
Process Plant Tent Responses to Vapor Cloud Explosions—Results of the American Petroleum Institute Tent Testing Program
Beginning in 2011, the American Petroleum Institute (API) performed vapor cloud explosion (VCE) tests to determine the response of tents to the potential explosion hazards that may be present at refineries, petrochemical and chemical operations, natural gas and other onshore process facilities covered by OSHA 29 CFR 1910.119. The testing was conducted to provide data for use by the API committee developing RP 756. This publication, TR 756-1, contains information on the results of the API tent testing program. Pages: 99

5th Edition | September 2020 | Product Number: K756105 | Price: $194.00

HEALTH, ENVIRONMENT, AND SAFETY: GENERAL

Cumulative Impact of Environmental Regulations on the U.S. Petroleum Refining, Transportation and Marketing Industries
1st Edition | Product Number: C00015 | available at https://www.api.org

RP 751
Safe Operation of Hydrofluoric Acid Alkylation Units
Provides requirements (shall) and recommendations (should) for practices and procedures related to safety, operations, design, inspection, and maintenance to support the safe and reliable operation of hydrofluoric acid (HF) alkylation units. Topics include hazard management; operating procedures and worker protection; materials, construction, inspection, and work practices; transportation and inventory control; pressure-relief, product treatment, and utility systems; and risk mitigation. This document contains requirements and recommendations that have been found effective based on broad industry acceptance, proven effective industry practices, testing, and regulatory requirements. Pages: 181

5th Edition | August 2021 | Product Number: K75105 | Price: $194.00

Std 2350
Overfill Protection for Storage Tanks in Petroleum Facilities
(Appends Errata 1 dated April 2021)
(ANSI/API Std 2350)

Applies to storage tanks associated with marketing, refining, pipeline, and terminals operations and with tanks containing Class I or Class II petroleum liquids and is recommended for Class III petroleum liquids. This standard addresses overfill protection for petroleum storage tanks. It recognizes that prevention provides the most basic level of protection, thus while using both terms “protection” and “prevention,” the document emphasizes prevention. The standard’s scope covers overfill (and damage) prevention practices for aboveground storage tanks in petroleum facilities, including refineries, marketing terminals, bulk plants, and pipeline terminals that receive flammable and combustible liquids. The fourth edition continues to build on experience and new technology through the use of management systems. Since operations are the primary overfill prevention safeguard, new definitions and requirements are established for alarms. Risk reduction is also addressed by current and generally accepted industry practices.

The essential elements of this document are based on current industry safe operating practices and existing consensus standards. Federal, state, and local regulations or laws may contain additional requirements for tank overfill protection programs. For existing facilities, the results of a risk-based analysis of aboveground atmospheric petroleum storage tanks may indicate the need for more protection against overfilling. In such cases, some provisions from this standard may be suitable.

The purpose of this standard is to assist owner/operators and operating personnel in the prevention of tank overfills by implementation of a comprehensive overfill prevention process (OPP). The goal is to receive product into the intended storage tank without overfill or loss of containment. This standard does not apply to: underground storage tanks; aboveground tanks of 1320 U.S. gallons (5000 liters) or less; aboveground tanks which comply with PEI 600; pressure vessels; tanks containing non-petroleum liquids; tanks storing LPG and LNG; tanks at service stations; tanks filled exclusively from wheeled vehicles (i.e. tank trucks or railroad tank cars); and tanks covered by OSHA 29 CFR 1910.119 and EPA 40 CFR 68, or similar regulations. Pages: 75

5th Edition | September 2020 | Product Number: K235005 | Price: $135.00

HEALTH, ENVIRONMENT, AND SAFETY: SOIL AND GROUNDWATER

Publ 422
Groundwater Protection Programs for Petroleum Refining and Storage Facilities: A Guidance Document
Reflects continuing industry action and commitment to positively address groundwater protection by developing and implementing individual groundwater protection plans. Provides additional guidance to help petroleum facilities identify the types of issues that may need to be addressed in a groundwater protection plan. Intended to help refineries, terminals associated with transportation pipelines, product distribution terminals, and other downstream petroleum storage units develop groundwater protection plans that are tailored to their individual circumstances. Pages: 9

1st Edition | October 1994 | Product Number: C42201 | Price: $71.00

Publ 800
Literature Survey: Subsurface and Groundwater Protection Related to Petroleum Refinery Operations
This report is the principal product of an API-sponsored project to prepare a background basis for the development of further information on subsurface and groundwater protection at refineries. It contains an explanation of how the literature survey was conducted; annotations for pertinent articles; a discussion of applicable federal statutes and regulations; and annotations for pertinent regulatory programs under the 5 principal statutes that apply to refinery operations. Pages: 145

1st Edition | September 1988 | Product Number: C80000 | Price: $100.00

SECURITY

Std 780
Security Risk Assessment Methodology for the Petroleum and Petrochemical Industries
Prepared by a Security Risk Assessment (SRA) Committee of the American Petroleum Institute (API) to assist the petroleum and petrochemical industries in understanding security risk assessment and in conducting SRAs. The standard describes the recommended approach for assessing security risk widely applicable to the types of facilities operated by the industry and the security issues the industry faces. The standard is intended for those responsible for conducting security risk assessments and managing security at these facilities. The method described in this standard is widely applicable to a full spectrum of security issues from theft to insider sabotage to terrorism. The API SRA Methodology was developed for the petroleum and petrochemical industry, for a broad variety of both fixed and mobile applications. This recommended practice describes a single methodology, rather than a general framework for SRAs, but the methodology is flexible and adaptable to the needs of the user. This methodology constitutes one approach for assessing security vulnerabilities at petroleum and petrochemical industry facilities. However, there are other risk assessment techniques and methods available to industry, all of which share common risk assessment elements. Pages: 113

1st Edition | May 2013 | Reaffirmed: February 2022 | Product Number: K78001 | Price: $206.00
RP 781
Facility Security Plan Methodology for the Oil and Natural Gas Industries

Provides the framework to establish a secure workplace. The plan provides an overview of the threats facing the facility and describes the security measures and procedures designed to mitigate risk and protect people, assets, operations, and company reputation. This API standard was prepared with guidance and direction from the API Security Committee, to assist the petroleum and petrochemical industries in the preparation of a Facility Security Plan (FSP). This standard specifies the requirements for preparing an FSP as well as a discussion of the typical elements included in an FSP.

This standard is intended to be flexible and adaptable to the needs of the user. It is noted that the content of an FSP can vary depending on circumstances such as facility size, location, and operations. This methodology is one approach for preparing an FSP at petroleum and petrochemical facilities. There are other security plan formats available for the industry. It is the responsibility of the user to choose the format and content of the FSP that best meets the needs of a specific facility. The format and content of some FSPs should be dictated by government regulations for covered facilities. This standard is not intended to supersede the requirements of any regulated facility but may be used as a reference document. Pages: 82

1st Edition | September 2016 | Product Number: K78101 | Price: $157.00
If you have any questions or comments regarding API standards, please visit https://www.api.org/products-and-services/standards

UPSTREAM SAFETY STANDARDS

RP 54
Occupational Safety and Health for Oil and Gas Well Drilling and Servicing Operations
(includes Addendum 1 dated June 2021)
Recommends practices and procedures for maintaining safe and healthy working conditions for personnel in drilling and well servicing operations. These recommendations apply to rotary drilling rigs, well servicing rigs, and special services as they relate to operations on location. It is intended that the applicable requirements and recommendations of some sections of the standard be applied, as appropriate, to other sections. The recommendations are not intended to cover seismic drilling or water well drilling operations. These recommendations do not apply to site preparation and site remediation operations. Pages: 62
4th Edition | February 2019 | Product Number: G54004 | Price: $140.00

Std 65-2 ◆
Isolating Potential Flow Zones During Well Construction
Contains best practices for zone isolation in wells to prevent annular pressure and/or flow through or past pressure-containment barriers that are installed and verified during well construction. Well construction practices that may affect barrier sealing performance are mentioned along with methods to help ensure positive effects or to minimize any negative ones. The objectives of this guideline are two-fold. The first is to help prevent and/or control flows just prior to, during, and after primary cementing operations to install or “set” casing and liners into wells. The second objective is to help prevent sustained casing pressure (SCP). The guidance from this document covers recommendations for pressure-containment barrier design and installation and well construction practices that affect the zone isolation process to prevent or mitigate annular fluid flow or pressure. Pages: 83
Product Number: G65202 | Price: $141.00

RP 65-3
Wellbore Plugging and Abandonment
Provides guidance for the design, placement, and verification of cement plugs in wells to be temporarily or permanently abandoned, as well as remediation and verification of annular barriers. Wells temporarily abandoned (suspended) are intended to be re-entered in the future. The placement of barriers may depend on whether the well is to be temporarily or permanently abandoned. Cement plug lengths are not considered in this document. Pages: 52
1st Edition | June 2021 | Product Number: G65301 | Price: $112.00

RP 67
Recommended Practice for Oilfield Explosives Safety
Applicable to chemical explosives used as an energy source to do work in oil- and gas-producing operations, and more specifically to explosives intended for use inside a wellbore. The purpose of this recommended practice (RP) is primarily to prevent the inadvertent initiation of these explosives at the wellsite but also includes some recommendations for safe and secure storage and transportation and handling, as well as requirements for design and manufacture of selected equipment. While some chemicals intended for various noneexplosive applications can prove explosive when misused (such as lithium batteries), it is not the intent of this RP to address these materials. Pages: 85
3rd Edition | October 2019 | Product Number: G06703 | Price: $121.00

RP 74
Recommended Practice for Occupational Safety for Onshore Oil and Gas Production Operation
Recommends practices and procedures for promoting and maintaining safe working conditions for personnel engaged in onshore oil and gas production operations, including special services. Pages: 23
1st Edition | October 2001 | Reaffirmed: January 2013
Product Number: G74001 | Price: $67.00

RP 75
Safety and Environmental Management System for Offshore Operations and Assets
Provides companies engaged in offshore operations with a framework for the establishment, implementation, and maintenance of a Safety and Environmental Management System (SEMS) to manage and reduce risks associated with safety and the environment to prevent incidents and events. This recommended practice applies, in part or whole, to companies engaged in offshore operations, from lease evaluation through decommissioning. This document is not intended to be prescriptive or limiting on the expectations of each SEMS element; rather, it allows flexibility appropriate to the size, scope, and risk of a Company's assets and operations. It is advised that users of this document review and comply with applicable legal and regulatory requirements, and conform with applicable industry codes and standards. Consideration may be given to using this document to help systematically manage other aspects of operations, such as security and health. Pages: 34

Bull 75L
Guidance Document for the Development of a Safety and Environmental Management System for Onshore Oil and Natural Gas Production Operations and Associated Activities
Provides general information and guidance for the development of a safety and environmental management system (SEMS) for onshore oil and natural gas operations, including drilling, production, and well servicing activities. Although there is an extensive amount of information that has been developed on the topic of safety and environmental management systems, this document focuses on this industry sector to help foster continuous improvement in our industry’s safety and environmental performance. It is recognized that many onshore oil and natural gas companies have effective SEMS in place; however, the intent of this document is to provide an additional tool that can assist these and especially other operators in taking the next step toward implementing a complete system at a pace that complements their business plan. For those who already have a mature SEMS in place, this document can be used for continuous improvement of the system. Pages: 12
1st Edition | November 2007 | Product Number: G75L01 | Price: $37.00
**RP 76**
**Contractor Safety Management for Oil and Gas Drilling and Production Operations**

Intended to assist operators, contractors, and subcontractors (third parties) in the implementation of a contractor safety program and improve the overall safety performance while preserving the independent contractor relationship. It is intended for the Upstream Segment of the petroleum industry; however, since the operator requirements and the contracted work are diverse, this publication may not be applicable to all operations at each company or to all contract work performed in those operations. Many oil and gas exploration and production companies contract for equipment and personnel services for a wide range of activities, including drilling production, well servicing, equipment repair, maintenance, and construction. Certain activities of contractors have the potential to take place either contractor and/or operator personnel and/or equipment at risk. It is important that operations are carried out in a safe manner. Operators and contractors need to provide safe work places and to protect the safety of their work places and to protect the safety of their workforces and the general public. When they work together to improve safety, both benefit. Pages: 60

2nd Edition | November 2007 | Reaffirmed: January 2013
Product Number: G07602 | Price: $62.00

**MULTI-SEGMENT PUBLICATIONS**

**Firefighting Foam Transition Guidance**

Provides the industry with suggestions and considerations for the transition from C8 legacy fluorinated foams concentrates to another type of foam concentrate [such as C6 or synthetic fluorine-free foam (SFFF)]. For each step of the MOC, a separate document is available that provides considerations and examples on how an entity may choose to execute the transition. While it is ideal to have a drop-in foam concentrate replacement with minimum changes in processes or practices to use during this transition, the MOC process plans for any changes that must be accounted for. Pages: 32


**RP 752**
**Management of Hazards Associated with Location of Process Plant Permanent Buildings**

Provides guidance for managing the risk from explosions, fires and toxic material releases to on-site personnel located in new and existing buildings intended for occupancy. This RP was developed for use at refineries, petrochemical and chemical operations, natural gas liquids extraction plants, natural gas liquefaction plants, and other onshore facilities covered by the OSHA Process Safety Management of Highly Hazardous Chemicals, 29 CFR 1910.119.

Buildings covered by this RP are rigid structures intended for permanent use in fixed locations. Tents, fabric enclosures and other soft-sided structures are outside the scope of this document. This 3rd Edition of RP 752:2009 superseded all previous editions, including the technical data provided in those documents.

Significant research and development of technology pertinent to building siting evaluations has been performed since the publication of the previous editions of RP 752. Examples of updated technology include prediction of blast damage to buildings, determination of occupant vulnerabilities, and estimates of event frequencies. Prior versions of RP 752 and the technical data included in them should not be used for building siting evaluations. The 2nd Edition of RP 752 covered all building types both permanent and portable. This 3rd Edition of RP 752 does not cover portable buildings. Portable buildings are now covered by RP 753. It is recognized, however, that portable buildings specifically designed for significant blast load represent a potential area of overlap between RP 753 and RP 752. In accordance with 1.3 of this document:

“Buildings described in API RP 753, Management of Hazards Associated with Location of Process Plant Portable Buildings, First Edition, June 2007, as ‘portable buildings specifically designed to resist significant blast loads’ and intended for permanent use in a fixed location are covered in this document (API RP 752). All other portable buildings are covered by API RP 753.” Pages: 27

Product Number: K75203 | Price: $153.00

**RP 753**
**Management of Hazards Associated with Location of Process Plant Portable Buildings**

Provides guidance for reducing the risk to personnel located in portable buildings from potential explosion, fire and toxic release hazards. While occupied permanent buildings (e.g. control rooms, operator shelters) located near covered process area are typically constructed to be blast and fire resistant, conventional portable buildings (i.e. light wood trailers) are typically not constructed to be blast and fire resistant. Past explosion accidents have demonstrated that occupants of conventional portable buildings are susceptible to injuries from structural failures, building collapse, and building debris and projectiles.

Guidance is provided based on the following principles.

- Locate personnel away from covered process areas consistent with safe and effective operations.
- Minimize the use of occupied portable buildings in close proximity to covered process areas.
- Manage the occupancy of portable building especially during periods of increased risk including unit start up or planned shut-down operations.
- Design, construct, install, and maintain occupied portable buildings to protect occupants against potential hazards.
- Manage the use of portable buildings as an integral part of the design, construction, and maintenance operation of a facility.

Pages: 22

1st Edition | June 2007 | Reaffirmed: August 2020
Product Number: K75301 | Price: $153.00

**RP 754**
**Process Safety Performance Indicators for the Refining and Petrochemical Industries**

(ANSI/API RP 754)

Identifies leading and lagging process safety indicators useful for driving performance improvement. As a framework for measuring activity, status, or performance, this document classifies process safety indicators into four tiers of leading and lagging indicators. Tiers 1 and 2 are suitable for nationwide public reporting and Tiers 3 and 4 are intended for internal use at individual facilities. Guidance on methods for development and use of performance indicators is also provided. This RP was developed for the refining and petrochemical industries, but may also be applicable to other industries with operating systems and processes where loss of containment has the potential to cause harm. Applicability is not limited to those facilities covered by the OSHA Process Safety Management Standard, 29 CFR 1910.119, or similar national and international regulations. Pages: 134

3rd Edition | August 2021 | Product Number: K75403 | Price: $182.00

126

- This publication is a new entry in this catalog.
- This publication is related to an API licensing, certification, or accreditation program.

Provides guidance to all stakeholders (e.g., employees, managers, supervisors) on understanding, recognizing, and managing employee fatigue in the workplace. Should sites decide to use this document, the owners/operators shall establish policies and procedures to meet the purpose of this recommended practice.

This document was developed for refineries, petrochemical and chemical operations, natural gas liquefaction plants, and other facilities such as those covered by the OSHA Process Safety Management Standard, 29 CFR 1910.119. This document is intended to apply to a workforce that is commuting daily to a job location.

ANSI/API RP 755 applies to all employees working night shifts, rotating shifts, extended hours/days, or call outs who are involved in process safety-sensitive actions. It should also be considered for others making process safety-sensitive decisions. On-site contractors involved in process safety-sensitive actions shall have fatigue risk management systems equivalent to the criteria outlined in this document. Pages: 17

2nd Edition | May 2019 | Product Number: K75502 | Price: $145.00

Fatigue Risk Management Systems (FRMS) have emerged and been widely recognized as a more effective approach to managing and mitigating employee fatigue risk in the 24/7 workplace. The core feature of the FRMS is that it is a data-driven, risk-informed, safety performance-based system. The FRMS implementation process first identifies all sources of fatigue risk in the business operation, then introduces mitigating policies, technologies, and procedures to reduce the risk, and most importantly then maintains them in a proactively managed continuous improvement system. The history of FRMS was recently summarized.

This method represents a significant step change from the traditional approaches of either relying on maximum limits to hours of work or minimum limits to hours of rest (variously called Hours of Service, Work-Rest Rules, Working Time Directives), or adopting intermittent or piece-meal solutions (e.g. a fatigue training program or a shift schedule redesign), depending on the interests and initiative of local site managers.

One essential feature of FRMS is that it is a system meant to be improved upon on a regular and continuous basis. It is not a set of guidelines designed for one-time compliance but instead provides a framework that will evolve over time, driven by the collection of data on fatigue risk and fatigue outcomes (e.g. fatigue-related incidents). Pages: 49

1st Edition | April 2010 | Product Number: K755101 | Price: $112.00

Fatigue Risk Management Systems for Personnel in the Refining and Petrochemical Industries (ANSI/API RP 755) was recently summarized.

Management of Hazards Associated with Location of Process Plant Tents

Provides guidance for managing the risk from explosions, fires and toxic material releases to on-site personnel located in tents. The term “tent” is used to describe a wide range of structures and is defined in §3.15. This RP was developed for use at refineries, petrochemical and chemical operations, natural gas liquids extraction plants, natural gas liquefaction plants, and other onshore facilities covered by OSHA 29 CFR 1910.119. The history of this RP is primarily on process related hazards. However, non-process related hazards may exist that could present risks to tent occupants. Previous accidents have demonstrated that tent occupants are susceptible to injuries from fires originating inside the tent, from tent collapse due to extreme weather, and from falling objects. Some of these hazards are addressed by tent design standards, manufacturer’s recommendations, and local regulations. Pages: 25

1st Edition | September 2014 | Reaffirmed: August 2020
Product Number: C75601 | Price: $136.00

Process Plant Tent Responses to Vapor Cloud Explosions—Results of the American Petroleum Institute Tent Testing Program

Beginning in 2011, the American Petroleum Institute (API) performed vapor cloud explosion (VCE) tests to determine the response of tents to the potential explosion hazards that may be present at refineries, petrochemical and chemical operations, natural gas and other onshore process facilities covered by OSHA 29 CFR 1910.119. The testing was conducted to provide data for use by the API committee developing RP 756. This publication, TR 756-1, contains information on the results of the API tent testing program. Pages: 597

1st Edition | September 2014 | Product Number: C756101 | Price: $206.00


Intended for an audience of middle managers to senior executives who have different levels of knowledge about human factors engineering. It is designed to equip them with a basic understanding of the causes of human errors and to suggest ways for reducing human errors at individual facilities. It also describes how to incorporate human reliability analysis (HRA) into process safety management activities. Pages: 85

1st Edition | March 2001 | Product Number: K77001 | Price: $82.00
<table>
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<td><strong>RP 2009</strong></td>
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<td>Safe Welding, Cutting, and Hot Work Practices in the Petroleum and Petrochemical Industries</td>
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<td>Provides information to assist in the safe performance of welding, cutting, and other hot work activities to be done safely in petroleum and petrochemical operations. The understanding of potential hazards, and application of this knowledge, can help reduce the probability and severity of incidents and the risk of harmful health effects from those activities. Personnel engaged in hot work should have a comprehensive understanding of the potential hazards associated with the activity and materials involved. RP 2009 was updated to include added precautions to prevent fires and incidents during welding operations, as well as an awareness of the hazards of inhalation of welding fumes. Additionally, it includes specific guidance to evaluate procedures for certain types of work equipment in service, supports UN Sustainable Development Goal #9 for Resilient Infrastructure, and is included in the U.S. Department of Labor OSHA’s resources materials for Process Safety Management. Pages: 43</td>
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| **RP 2001** | 1st | February 2022 | $206.00 | K78001 |
| Fire Protection in Refineries | | | | |
| Provides a better understanding of refinery fire protection and the steps needed to promote the safe storage, handling, and processing of petroleum and petroleum products in refineries. A basic premise of this standard is that fire prevention provides the fundamental foundation for fire protection. This publication covers basic concepts of refinery fire protection. It reviews the chemistry and physics of refinery fires; discusses how the design of refinery systems and infrastructure impact the probability and consequences of potential fires; describes fire control and extinguishing systems typically used in refineries; examines fire protection concepts that should be covered in operating and maintenance practices and procedures; and provides information on organization and training for refinery emergency responders. Many of the concepts, systems, and equipment discussed in this document are covered in detail in referenced publications, standards, or governmental requirements. Pages: 90 |

| **RP 2003** | 8th | March 2020 | $206.00 | K20038 |
| Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents | | | | |
| Presents the current state of knowledge and technology in the fields of static electricity, and stray currents applicable to the prevention of hydrocarbon ignition in the petroleum industry and is based on both scientific research and practical experience. The principles discussed in this recommended practice are applicable to other operations where ignitable liquids and gases are handled. Their use should lead to improved safety practices and evaluations of existing installations and procedures. Pages: 76 |

| **RP 2007** | 4th | November 2018 | $132.00 | C20274 |
| Ignition Hazards and Safe Work Practices for Abrasive Blasting of Atmospheric Storage Tanks in Hydrocarbon Service | | | | |
| Provides safe work practices for the prevention and control of vapor, ignition, and other potential hazards during abrasive blasting of aboveground storage tanks in liquid hydrocarbon service at atmospheric pressure. It also provides assistance to employers in developing operating procedures that provide for hazard recognition to significantly reduce ignition risks during abrasive blasting of hydrocarbon storage tanks in service that may contain or have the potential to develop a flammable atmosphere in the vapor space. This RP applies to safe work practices required for abrasive blasting of exterior shells and exterior roofs of all aboveground atmospheric storage tanks in liquid hydrocarbon service. It also applies to safe work practices for abrasive blasting conducted on the roofs and inner portions of the exposed surfaces of shells (that portion of the shell above the roof level) on open-top (external) floating roof tanks. This RP also covers recognition and control of ignition hazards that are specific to and may be present during abrasive blasting of aboveground storage tanks in liquid hydrocarbon service at atmospheric pressure. The ignition sources covered in this RP include static electricity, internal combustion engines, electric motors, friction sparks, hot metal surfaces, and external-to-the-work ignition sources. Pages: 27 |

| **RP 2028** | 3rd | December 2010 | $65.00 | K20283 |
| Flame Arresters in Piping Systems | | | | |
| Covers the use and limitations of flame arresters installed in piping systems in the petroleum and petrochemical industries. It provides a general overview of flame arresters currently in use and some potential concerns or limitations. Applicable combustion and flame propagation parameters are discussed including the distinction between arresting flames versus arresting detonations. Pages: 12 |

| **RP 2030** | 4th | September 2014 | $114.00 | K20304 |
| Provides guidance for the petroleum industry and some petrochemical industry applications (for non-water-reactive petrochemicals with physical and combustion characteristics comparable to hydrocarbons) in determining where water spray systems might be used to provide protection from fire damage for equipment and structures. Pages: 21 |
chap 2021
Safe Hot Tapping Practices in the Petroleum and Petrochemical Industries
Provides information to assist in safely conducting hot tapping operations on equipment in service in the petroleum and petrochemical industries. No document can address all situations nor answer all potential questions; however, the understanding of potential hazards, and application of this knowledge, can help reduce the probability and severity of incidents. Pages: 27
2-Year Extension: February 2015 | Product Number: K22015 | Price: $94.00

RP 2210A
Safe Work in Inert Confined Spaces in the Petroleum and Petrochemical Industries
Covers design, materials, face-to-face dimensions, pressure-temperature ratings, and examination, inspection, and test requirements for two types of check valves:

- Type ‘A’ check valves are short face-to-face and can be: wafer, lug, or double flanged; single plate or dual plate; gray iron, ductile iron, steel, nickel alloy, or other alloy designed for installation between Classes 125 and 250 cast iron flanges as specified in ASME B16.1, between Classes 150 and 300 ductile iron flanges as specified in ASME B16.42, between Classes 150 and 2500 steel flanges as specified in ASME B16.5, and between Classes 150 and 600 steel pipeline flanges as specified in MSS SP-44 or steel flanges as specified in ASME B16.47.

- Type ‘B’ bolted cover swing check valves are long face-to-face as defined in 5.1.2 and can be: flanged or butt-welding ends of steel, nickel alloy, or other alloy material. End flanges shall be as specified in ASME B16.5 or other alloy material. End flanges shall be as specified in ASME B16.25. Pages: 34

RP 2218
Fireproofing Practices in Petroleum and Petrochemical Processing Plants
Intended to provide guidance for selecting, applying, and maintaining fireproofing systems designed to limit the extent of fire-related property loss from pool fires in the petroleum and petrochemical industries. Where comparable hazards exist, and to the extent appropriate, it may be applied to other facilities that could experience similar severe fire exposure and potential losses. This RP identifies fireproofing needs for petroleum and petrochemical plants specifically focusing on property loss protection for pool fires scenarios in on-shore processing plants. Pages: 60
3rd Edition | July 2013 | Reaffirmed: March 2020
Product Number: K22183 | Price: $174.00

RP 2219
Safe Operation of Vacuum Trucks Handling Flammable and Combustible Liquids in Petroleum Service
Provides information concerning the safe operation of vacuum trucks engaged in all aspects of handling flammable and combustible liquids, associated waste water, produced water, basic sediment and water (BS&W), caustics, spent acids, or other fluids stemming from petroleum operations, products, powders, and the hazard of dust explosions. This publication discusses the types of vacuum pumps and cargo tanks associated with vacuum truck operations, the common hazards associated with those vacuum truck operations, and representative safe work practices and precautions to help prevent accidents and injuries. Appendix G provides brief descriptions of a variety of incidents involving vacuum trucks, including offloading into open areas. These may be useful in reviewing specific operating procedures or developing materials for safety meetings or pre-job briefings. Pages: 60
4th Edition | June 2016 | Product Number: K22194 | Price: $179.00

Pub 2375
This annual summary reports on cases recordable in 1996 under the U.S. Bureau of Labor Statistics’ recordkeeping guidelines. The survey is based on data submitted to the American Petroleum Institute by 176 oil and gas companies, employing 285,885 persons. The report includes information regarding injuries, illnesses, fatalities, lost workday cases, and incidence rates by function.
June 1997 | Product Number: K23751 | Price: $104.00

Pub 2376
June 1998 | Product Number: K23761 | Price: $104.00

Pub 2377
March 1999 | Product Number: K23771 | Price: $112.00

Pub 2378
June 2000 | Product Number: K23781 | Price: $112.00

Pub 2379
March 2001 | Product Number: K23790 | Price: $112.00

Pub 2380
March 2002 | Product Number: K23801 | Price: $112.00

Pub 2381
June 2003 | Product Number: K23811 | Price: $112.00

Pub 2382
May 2004 | Product Number: K23821 | Price: $112.00

Pub 2383
March 2005 | Product Number: K23831 | Price: $112.00
Safety and Fire Protection

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Publ 2384
This annual summary reports on cases recordable in 2005 under the US Bureau of Labor Statistics' record keeping guidelines. The survey is based on data submitted to the American Petroleum Institute by oil and gas companies. The report includes information regarding injuries, illness, and fatalities, lost workday cases, and incidence rates by function.
May 2006 | Product Number: K23841 | Price: $112.00

Publ 2385
June 2007 | Product Number: K23851 | Price: $112.00

Publ 2386
May 2008 | Product Number: K23861 | Price: $112.00

Publ 2387
March 2009 | Product Number: K23871 | Price: $112.00

Publ 2388
Reports on cases recordable in 2009 under the U.S. Bureau of Labor Statistics' recordkeeping guidelines. The survey is based on data submitted to API by oil and gas companies. The report includes information regarding injuries, illness, and fatalities, lost workday cases, and incidence rates by function.
April 2010 | Product Number: K23881 | Price: $112.00

1989 Summary of Occupational Injuries, Illnesses and Fatalities in the Petroleum Industry
January 1989 | Product Number: K19996 | Price: $64.00

1990 Summary of Occupational Injuries, Illnesses and Fatalities in the Petroleum Industry
July 1991 | Product Number: K19988 | Price: $89.00

1991 Summary of Occupational Injuries, Illnesses and Fatalities in the Petroleum Industry
September 1992 | Product Number: K19987 | Price: $89.00

1992 Summary of Occupational Injuries, Illnesses and Fatalities in the Petroleum Industry
August 1993 | Product Number: K19986 | Price: $89.00

1993 Summary of Occupational Injuries, Illnesses and Fatalities in the Petroleum Industry
June 1994 | Product Number: K19985 | Price: $104.00

June 1995 | Product Number: K19984 | Price: $104.00

May 1996 | Product Number: K19983 | Price: $104.00

Publ 2510A
Fire Protection Considerations for the Design and Operation of Liquefied Petroleum Gas (LPG) Storage Facilities
 Supplements Std 2510 and addresses the design, operation, and maintenance of liquefied petroleum gas (LPG) storage facilities from the standpoint of prevention and control of releases, fire protection design, and fire control measures. The history of LPG storage facility safety experience, facility design philosophy, operating and maintenance procedures, and various fire protection and fire-fighting approaches are presented. The storage facilities covered are LPG installations (storage vessels and associated loading/unloading/transfer systems) at marine and pipeline terminals, natural gas processing plants, refineries, petrochemical plants, and tank farms. Pages: 45
Product Number: K2510A | Price: $110.00

STORAGE TANK SAFETY STANDARDS

Std 2015 ●
Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks
Applicable to stationary atmospheric and low-pressure (up to and including 15 psig) aboveground petroleum storage tanks used in all sectors of the petroleum and petrochemical industry, including crude oil and gas production; refining; petrochemicals; pipelines and terminals; bulk storage; and ethanol facilities. This standard provides requirements for safely planning, coordinating, and conducting tank entry and cleaning operations, from removal from service through return to service. Pages: 146
8th Edition | January 2018 | Product Number: K20158 | Price: $215.00

RP 2021
Management of Atmospheric Storage Tank Fires
Provides experience-based information to enhance the understanding of fires in atmospheric storage tanks containing flammable and combustible materials. It presents a systematic management approach that can assist tank fire prevention. If fires do occur, this information can help responders optimize fire suppression techniques to reduce the severity of an incident and reduce the potential for escalation. Pages: 83
Product Number: K20214 | Price: $145.00

RP 2026 ●
Safe Access/Egress Involving Floating Roofs of Storage Tanks in Petroleum Service
Addresses the hazards associated with access/egress onto external and internal floating roofs of in-service petroleum storage tanks and identifies some of the most common practices and procedures for safely accomplishing this activity. This RP is intended primarily for those persons who are required to perform inspection, service, maintenance, or repair activities that involve descent onto floating roofs of in-service petroleum tanks. Pages: 28
4th Edition | July 2022 | Product Number: K202604 | Price: $110.00

RP 2207 ●
Preparing Tank Bottoms for Hot Work
Addresses only the safety aspects of hot work performed on petroleum storage tank bottoms. It discusses safety precautions for preventing fires, explosions, and associated injuries. The term “hot work,” as used in this publication, is defined as an operation that can produce a spark or flame hot enough to ignite flammable vapors. RP 2009 provides more in-depth information on safe hot work practices, and its requirements are not duplicated here. Pages: 28
8th Edition | April 2022 | Product Number: K22078 | Price: $121.00
Std 2350
Overfill Protection for Storage Tanks in Petroleum Facilities
(includes Errata 1 dated April 2021)
(ANSI/API Std 2350)

Applies to storage tanks associated with marketing, refining, pipeline, and terminals operations and with tanks containing Class I or Class II petroleum liquids and use is recommended for Class III petroleum liquids. This standard addresses overfill protection for petroleum storage tanks. It recognizes that prevention provides the most basic level of protection, thus while using both terms "protection" and "prevention," the document emphasizes prevention. The standard's scope covers overfill (and damage) prevention practices for aboveground storage tanks in petroleum facilities, including refineries, marketing terminals, bulk plants, and pipeline terminals that receive flammable and combustible liquids. The fourth edition continues to build on experience and new technology through the use of management systems. Since operations are the primary overfill prevention safeguard, new definitions and requirements are established for alarms. Risk reduction is also addressed by current and generally accepted industry practices.

The essential elements of this document are based on current industry safe operating practices and existing consensus standards. Federal, state, and local regulations or laws may contain additional requirements for tank overfill protection programs. For existing facilities, the results of a risk-based analysis of aboveground atmospheric petroleum storage tanks may indicate the need for more protection against overfilling. In such cases, some provisions from this standard may be suitable.

The purpose of this standard is to assist owner/operators and operating personnel in the prevention of tank overfills by implementation of a comprehensive overfill prevention process (OPP). The goal is to receive product into the intended storage tank without overfill or loss of containment.

This standard does not apply to: underground storage tanks; aboveground tanks of 1320 U.S. gallons (5000 liters) or less; aboveground tanks which comply with PEI 600; pressure vessels; tanks containing non-petroleum liquids; tanks storing LPG and LNG; tanks at service stations; tanks filled exclusively from wheeled vehicles (i.e. tank trucks or railroad tank cars); and tanks covered by OSHA 29 CFR 1910.119 and EPA 40 CFR 68, or similar regulations. Pages: 75

5th Edition | September 2020
Product Number: K235005 | Price: $135.00
Air Research

EMISSIONS: GENERAL

Carbon Dioxide (CO₂) Emergency Response Tactical Guidance Document

This field operations guide is not an educational or decision-making tool. This guide contains a set of operational tools and references to assist in the response to a pipeline release of carbon dioxide (CO₂). The priorities for CO₂ response are people (safety of response personnel and the public); environment (prevention of environmental, human health, and welfare effects); assets (minimizing damage to structures and equipment); and relations (keep customers, community, and federal, state, and local government agencies informed). Pages: 33

1st Edition | August 2023 | You may download a PDF of this document from https://www.api.org/-/media/files/policy/carbon-capture/co2-tactical-guidance

API Guidance Document for GHG Reporting

Drives consistency of voluntary reporting by individual oil and natural gas companies of a core set of company-wide GHG indicators. This is intended to enhance comparability across company-by-company climate-related reporting in the oil and natural gas industry, in order to provide decision useful information to the financial sector, policy makers, industry customers, and other stakeholders. Pages: 40


Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry

API Tools for Estimating GHG Emissions

Accurate estimation of greenhouse gas emissions is indispensable to responsibly addressing climate change. Through API, the U.S. oil and natural gas industry has provided a suite of tools for estimating emissions. It includes API’s updated 2009 compendium of emissions estimation methodologies, software for emissions estimation and inventorying, and guidelines (created by the International Petroleum Industry Environmental Conservation Association) to assist in the accounting and reporting of emissions. Pages: 807


DR 141

Global Emissions of Carbon Dioxide from Petroleum Sources

Describes carbon dioxide emission estimates developed for a broadly defined petroleum industry whose five segments include (1) exploration and extraction; (2) crude petroleum transportation to refineries; (3) refining operations; (4) refinery products transportation; and (5) end uses. Emission estimates for carbon dioxide have been developed for each industry segment and for each country. Activity factors describe the activity level for a particular industrial activity. Corresponding emission factors for each activity factor were developed from U.S. Environmental Protection Agency and industry documents. Pages: 91

July 1991 | Product Number: I00141 | Price: $65.00

Publ 326

The Cost Effectiveness of VOC and NOx Emission Control Measures

Provides air pollution control planners and other interested parties in ozone nonattainment areas with a “menu” of possible control options using the most up-to-date information and accurate analyses for significant sources of volatile organic compounds (VOCs) and NOₓ. The menu provides a preliminary demonstration of how cost-effective packages of attainment strategies and control measures can be developed to reduce VOC emissions by 15% by 1996. Appendices provide a detailed analysis of costs, effectiveness, and application limitations. Pages: 354

September 1994 | Product Number: J32600 | Price: $160.00

Publ 332

Comparison of Screening Values from Selected Hydrocarbon Screening Instruments

Describes a study carried out at two refineries to compare differences in equipment leak screening values obtained from four instruments commonly used to measure fugitive emissions. The effect of screening distance was also evaluated, and the results from the study were compared to those of an earlier study conducted in 1979. Adjustment factors to relate screening values from one instrument are presented, which are applicable to marketing, transportation, and exploration and production facilities as well as refineries. Pages: 128

August 1995 | Product Number: J33200 | Price: $98.00

Publ 342 and Publ 343


A number of federal, state, and local regulations are designed to control fugitive emissions of volatile organic compounds and hazardous air pollutants. API sponsored this project to present options and recommendations on procedures for obtaining inspection and maintenance data from certain process equipment with the potential to leak fugitive emissions. The two resulting manuals focus on the recommended fugitive emission practices in the petroleum industry, specifically for refineries, marketing terminals, and the oil and gas production industries. Pages: 204

June 1998

Product Number for Publ 342: J34200 | Price: $69.00

Product Number for Publ 343: J34300 | Price: $69.00

Publ 344

Critical Review of Source Sampling and Analysis Methodologies for Characterizing Organic Aerosol and Fine Particulate Source Emission Profiles

Intended for use in designing future measurement programs for characterizing emissions from stationary sources that contribute to fine particle concentrations in the atmosphere. The benefits and drawbacks of various measurement approaches are discussed, and a recommended approach for combustion sources is presented. Pages: 128

June 1998 | Product Number: J34400 | Price: $80.00

Publ 348

Air Toxics Emission Factors for Combustion Sources Using Petroleum-Based Fuels, Volume 1—Development of Emission Factors Using API/WSPA Approach

This project was performed with the cooperation of the California Air Resources Board (CARB) and Western States Petroleum Association to develop updated air toxic emission factors for combustion sources using petroleum-based fuels. The emission factors developed using the best available source testing information in this project will help the U.S. Environmental Protection Agency to revise AP-42. In addition, the emission...
Health and Environmental Issues

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factors will be integrated into CARB’s California Air Toxics Emission Factor database. Environmental, health, and safety engineers can use these emission factors to develop more accurate and complete emission inventories without additional source testing, which could help facilities in the permitting process. Pages: 88

August 1998 | Product Number: J34800 | Price: $109.00

Publ 4653
Fugitive Emission Factors for Crude Oil and Product Pipeline Facilities

Presents the results of a study to determine equipment component fugitive emission factors for crude oil and product pipeline facilities. The emission factors presented in this report will allow pipeline operators to estimate total hydrocarbon emissions from equipment components located at pipeline facilities in light crude service, heavy crude service, and product service. Pages: 50

June 1997 | Product Number: I46530 | Price: $86.00

Publ 4703

In 1997, the U.S. Environmental Protection Agency (EPA) promulgated new ambient air standards for particulate matter (PM) smaller than 2.5 micrometers in diameter (PM 2.5). Source emissions data are needed to assess the contribution of petroleum industry combustion sources to ambient PM 2.5 concentrations. This report presents particulate measurement results from a 550,000 pounds per hour steam boiler firing refinery process gas. The particulate stack measurements were made using both a dilution tunnel research test method and traditional EPA sampling methods. Pages: 119

July 2001 | Product Number: I47030 | Price: $96.00

Publ 4704

In 1997, the U.S. Environmental Protection Agency (EPA) promulgated new ambient air standards for particulate matter (PM) smaller than 2.5 micrometers in diameter (PM 2.5). Source emissions data are needed to assess the contribution of petroleum industry combustion sources to ambient PM 2.5 concentrations. This report presents particulate measurement results from a 114 million British thermal unit (MMBtu) per hour gas-fired refinery process heater. The particulate stack measurements were made using both a dilution tunnel research test method and traditional EPA sampling methods. Pages: 118

August 2001 | Product Number: I47040 | Price: $96.00

Publ 4712
Gas-Fired Steam Generator—Test Report Site C: Characterization of Fine Particulate Emission Factors and Speciation Profiles from Stationary Petroleum Industry Combustion Sources

In 1997, the U.S. Environmental Protection Agency (EPA) promulgated new ambient air standards for particulate matter (PM) smaller than 2.5 micrometers in diameter (PM 2.5). Source emissions data are needed to assess the contribution of petroleum industry combustion sources to ambient PM 2.5 concentrations. This report presents that the gas fired steam generator has a maximum heat input of 62.5 MMBtu/HR with an average rate of approximately 50 MMBtu/hr. Pages: 100

July 2001 | Product Number: I47120 | Price: $90.00

Publ 4720
Comparison of API and EPA Toxic Air Pollutant Emission Factors for Combustion Sources

Compares and explains differences in published toxic air pollutant emission factors for combustion sources and recommends priorities for gathering additional emission factor information. Pages: 50

September 2002 | Product Number: I47200 | Price: $100.00

Publ 4772
Measuring Particulate Emissions from Combustion Sources

Since the inception of the Clean Air Act, the petroleum refining industry has been faced with the need to determine criteria pollutant emissions from combustion sources. While some of these species, such as NOx, SO2, and CO remain in the vapor phase during and after combustion and are relatively simple to measure, particulate matter (PM) measurements are much more challenging. This is because while some PM such as fly ash or catalytic cracking catalyst fines is clearly solid material that is readily collected and measured on a sampling filter, other species that may exist in the vapor phase during combustion can later condense into aerosols downstream from the combustion zone. This can occur before or after any control devices, depending upon the temperature and composition of the combustion gases. Consequently, it has been customary to refer to PM as being composed of two PM components, filterable and condensable, the relative amounts of each depending on the stack gas composition and temperature, control devices in use at the unit, and the method for measuring PM. While measuring filterable PM is relatively straightforward (i.e. PM collected on a filter), condensable PM is a more esoteric quantity and its contribution to total PM emissions is very much dependent upon the choice of the measurement method. The U.S. Environmental Protection Agency apparently recognized this issue, and until the interest in measuring and controlling PM 2.5 emissions emerged in the 1990s, their PM sampling methods were centered on measuring only filterable PM. At the time that these methods were originally instituted, the best available pollution control devices were mainly limited to filterable PM and could not control the condensable portion of PM emissions. As interest in the health effects associated with PM emissions increased, efforts were centered on determining the contribution of the PM 2.5 fraction that was believed to most responsible for these effects and principally composed of condensable matter. This report will review the conditions leading to the formation of condensable particulate matter from stack gas components along with the methods used to measure PM emissions from refinery combustion sources. Pages: 27

September 2008 | Product Number: I47720 | Price: $68.00

Publ 4775
Simulating the Effect of Aerobic Biodegradation on Soil Vapor Intrusion into Buildings—Evaluation of Low Strength Sources Associated with Dissolved Gasoline Plumes

Aerobic biodegradation can contribute significantly to the attenuation of petroleum hydrocarbon vapors in the unsaturated zone; however, most regulatory guidance for assessing potential human health risks via vapor intrusion to indoor air either neglect biodegradation or only allow for one order of magnitude additional attenuation for aerobically degradable compounds, which may be overly conservative in many cases. This paper describes results from three-dimensional numerical model simulations of vapor intrusion for petroleum hydrocarbons to assess the influence of aerobic biodegradation on the attenuation factor for a variety of source concentrations and depths for buildings with basements and slab-on-grade construction. Provided that oxygen is present in the vadose zone, aerobic biodegradation of petroleum hydrocarbons in the unsaturated zone will reduce the soil gas concentrations and the potential risks from vapor intrusion to indoor air compared to nondegrading compounds. At lower source concentrations and/or deeper source depths, aerobic biodegradation may result in a reduction in vapor intrusion attenuation factors by many orders of magnitude. The magnitude of the reduction depends on site-specific conditions, which should be considered in the development of a conceptual site model for each site. However, oxygen supply and degradation rates are likely to be sufficient at many sites to mitigate potential risks from vapor intrusion for low vapor concentration sources (less than
about 2 mg/L-vapor total hydrocarbons. The simulations conducted in this study provide a framework for understanding the degree to which bio- attenuation will occur under a variety of scenarios and provide insight into site conditions that will result in significant biodegradation. This improved understanding may be used to select site-specific attenuation factors for degradable compounds and develop soil vapor screening levels appropriate for particular combinations of source concentrations, source depth, and building characteristics, which should be defined as part of a site conceptual model.

Page: 53

April 2009 | Product Number: I47750 | Price: $117.00

Publ 4776

A Guide to Understanding, Assessment and the Regulation of PAHs in the Aquatic Environment

Designed to be an introductory guide to understanding and assessing polycyclic aromatic hydrocarbons (PAHs) in the aquatic environment (water and sediments). API prepared this guide primarily for refinery personnel and home office environmental staff who may have to address PAH issues. In addition, this guide may also be useful to staff in regulatory agencies that work with PAHs in wastewater discharge permits, waste load allocations (total maximum daily loadings), and sediment investigation and remediation.

The guide provides an overview on the chemistry, fate, and sources of PAHs in the environment and the regulatory implications. The guide also includes descriptions of the different sources of PAHs (petrogenic, pyrogenic, diagenic, biogenic) and techniques for differentiating these sources through their characteristic fingerprints, including straightforward ways to help identify or rule out potential sources.

Pages: 60

September 2011 | Product Number: I47760 | Price: $116.00

EMISSIONS: EXPLORATION AND PRODUCTION

Publ 4589

Fugitive Hydrocarbon Emissions from Oil and Gas Production Operations

The emission factors derived in this report indicate that fugitive emissions from production facilities are considerably lower than they were in the late 1970s. Investigators use portable detectors to screen more than 180,000 components at 20 offshore and onshore facilities. Mass emission rates from "bagged" emitters, valves, connectors, and other components, such as seals and vents, are used to develop emission factors for individual components and groups of components. A workbook included in the report provides site operators with three different options to calculate emissions from their facilities. See also Publ 4615. Pages: 263

December 1993 | Product Number: I45890 | Price: $154.00

Publ 4615

Emission Factors for Oil and Gas Production Operations

Supplements the information found in Publ 4589 and contains revised emission factors developed from 1993 API data using correlation equations established by the U.S. Environmental Protection Agency in 1994. The report contains emissions factors for five types of production operations—light crude production, heavy crude production, gas production, gas processing plants, and offshore production. It also contains profiles of speciated emissions including air toxics and assesses regional differences in fugitive emissions and control efficiency of inspection and maintenance programs. Component inventory data, screening data, and leak emission data are also included. See also Publ 4589. Pages: 56

January 1995 | Product Number: I46150 | Price: $67.00

Publ 4638

Calculation Workbook for Oil and Gas Production Equipment Fugitive Emissions

This workbook, which is the result of five years of field testing of equipment components at production facilities across the United States, is a valuable tool for petroleum producers who are interested in estimating fugitive emissions from their oil and gas production sites. Four methods of calculating fugitive emissions are presented: EPA average emission factor method, EPA screening value range emission method, EPA correlation method, and leak quantification method. Pages: 62

July 1996 | Product Number: I46380 | Price: $67.00

Publ 4661

Exploration and Production Emission Calculator II (EPEC II) User's Guide

The Exploration and Production Emission Calculator Version 2.0 (EPEC II) is a software tool that can be used to estimate emissions for exploration and production facilities. EPEC II integrates user inputs, emission calculations, and data summaries for many equipment types common to exploration and production facilities. The calculation techniques and emission factors utilized by the EPEC II software were, in most cases, established by the U.S. Environmental Protection Agency, API, and the Gas Research Institute. Published references that provide background information for the calculation methods used in EPEC II are given for each equipment type in both the software and in each section of this user's guide.

Pages: 96


Publ 4662

Evaluation of a Petroleum Production Tank Emissions Model

E&P TANK was evaluated for petroleum production tanks in an emission measurement project sponsored by API and the Gas Research Institute. Emission testing was performed on storage tank vents located at seven sites in widely diverse oil and gas producing regions across the United States. Measured emissions were found to be in agreement with E&P TANK model predictions.

Pages: 338

October 1997 | Product Number: I46620 | Price: $128.00

Publ 4679

Amine Unit Air Emissions Model and User's Guide, AMINECalc Version 1.0

AMINECalc is a user-friendly Windows®-based software program that estimates hydrocarbon emissions from amine-based sour gas and natural gas liquid sweetening units. The output generated by the software can be used for regulatory reporting by unit operators according to the requirements of the Clean Air Act Amendments of 1990. AMINECalc performs three types of calculation options: (1) mass balance calculation, (2) gas process (gas feed) simulation, and (3) NGL process (liquid feed) simulation. Mass emission rates of hazardous air pollutants, including benzene, toluene, ethylbenzene, and xylenes (BTEX), and volatile organic compounds can be estimated with the use of AMINECalc. System requirements for running AMINECalc Version 1.0 are IBM PC 486 compatible or higher, 8 MB RAM or more, and Windows® 95/98/NT. Approximately 2 MB of hard disk space are required to hold the program and its supporting run-time libraries. For better interface viewing, it is recommended that the user set the monitor to a high color 16 bit (or higher) resolution. See also Publ 4680. Pages: 76

January 1999 | Product Number: I46790 | Price: $535.00

Publ 4680

Amine Unit Air Emissions Model Evaluation

The implementation of the 1990 Clean Air Act Amendments in the United States has created the need for a reliable method to estimate and report hydrocarbon emissions from amine units. A simulation package, called Amine Unit Air Emission Model (AMINECalc) Version 1.0, was developed. This report evaluates the AMINECalc model by comparing the simulation results with field data collected from operating gas plants. It also recommends improvements and modifications to refine the predictions. See also Publ 4679. Pages: 96

December 1998 | Product Number: I46800 | Price: $131.00
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**Publ 4683**  
Correlation Equations to Predict Reid Vapor Pressure and Properties of Gaseous Emissions for Exploration and Production Facilities  
Establishes simple techniques for exploration and production (E&P) operators of petroleum storage tank facilities to use for the preparation of site-specific emission inventories to meet environmental regulations. Analyses were performed of oil and gas sampling results and emissions modeling results for more than 100 crude oil E&P storage tanks. Correlation equations or statistical averages were recommended to estimate Reid Vapor Pressure, vented flash gas molecular weight, vented working and standing gas molecular weight, hydrocarbon speciation (including hazardous air pollutants), and separator gas specific gravity. Pages: 82  
December 1998 | Product Number: I46830 | Price: $86.00

**Publ 4697**  
Production Tank Emissions Model (E&P TANK, Version 3.0)  
E&P TANKS (API Publ 4697) is a computer-based software designed to use site-specific information to predict emission from petroleum production storage tanks, now compatible with 32-bit and 64-bit Windows 7 as well as Windows 2000/XP/Vista. It estimates flashing, working, and standing losses and calculates losses using specific operations for each user’s tank. Cited by the Environmental Protection Agency (EPA), it allows the user to enter specific tank condition information to generate air emission reports. API has discontinued the sale of E&P Tanks v3.0; no new licenses for the software will be issued. Existing customers should contact support@eptanks.com for assistance in transferring an existing E&P Tanks v3.0 license from one user to another user. API will continue to offer support for existing customers who encounter errors inputting data into software in accordance with E&P Tanks user guide (Publication 4697).  
(Note that API provides no support for earlier versions of E&P Tanks.)

**EMISSIONS: REFINING**

**Publ 4587**  
Remote Sensing Feasibility Study of Refinery Fenceline Emissions  
Reviews the state of the art of optical remote sensing (ORS) technology and examines the potential use of ORS systems combined with ancillary measurements, such as meteorological and tracer gas release data to determine fugitive emission rates. The report also highlights some issues to consider in planning an ORS field study and clarifies the attendant tradeoffs for issues such as selection of appropriate ORS systems, consideration of detection limits and beam placement, choice of dispersion models, use of tracer gas releases, time scale and timing of field studies, and the requisite meteorological measurements. Pages: 105  
April 1994 | Product Number: I45870 | Price: $76.00

**Publ 4677**  
Emissions from refinery process drains are under increasing scrutiny, particularly with regard to volatile organic compounds (VOCs) and hazardous air pollutants because of the Clean Air Act Amendments of 1990. This publication is volume one of a three-part study initiated by API to update the AP-42 emission factor for refinery process drains, which may overestimate refinery process drain fugitive emissions. This volume contains simplified emission factors that can be used to quickly estimate total VOC emissions from refinery process drains. See also Publ 4639, Publ 4678, and Publ 4681. Pages: 132  
April 1999 | Product Number: I46770 | Price: $105.00

**Publ 4678**  
Volume two of a three-part study initiated by API to update the AP-42 emission factor for refinery process drains, which may overestimate refinery process drain fugitive emissions. This volume describes theoretical concepts and equations that may be used in a model (APIDRAIN) to estimate speciated volatile organic compound emissions. The model can provide insight on how to change process drain variables (flow rate, temperature, etc.) to reduce emissions. See also Publ 4639, Publ 4677, and Publ 4681. Pages: 104  
April 1999 | Product Number: I46780 | Price: $105.00

**Publ 4681**  
Volume three of a three-part study—the computer model with user’s guide to estimate emissions from refinery process drains. APIDRAIN is a user-friendly Windows®-based software program operating under the Microsoft Excel® for Windows® environment. The model allows the user to sum up the emissions from a refinery process unit area or from the entire refinery. The model can quickly and easily predict the contribution of process drain emissions to volatile organic compound emissions. The model can provide insight on how to change process drain variables (flow rate, temperature, etc.) to reduce emissions. See also Publ 4639, Publ 4677, and Publ 4681. Pages: 217  
May 1993 | Product Number: I45881 | Price: $124.00

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This publication is a new entry in this catalog.  
This publication is related to an API licensing, certification, or accreditation program.
few common principles of the Windows® operating environment are needed (such as point-and-click and navigation of tab and arrow keys). See also Publ 4639, Publ 4677, and Publ 4678. Pages: 92
April 1999 | Product Number: I46810 | Price: $446.00

Publ 4713
Test Report: Fluidized Catalytic Cracking Unit at a Refinery (Site A), Characterization of Fine Particulate Emission Factors and Speciation Profiles from Stationary Petroleum Industry Combustion Sources
There are few existing data on emissions and characteristics of fine aerosols from petroleum industry combustion sources, and the limited information that is available is incomplete and outdated. API developed a test protocol to address this data gap, specifically to:
- develop emission factors and speciation profiles for emissions of primary fine particulate matter (i.e. particulate present in the stack flue gas including condensable aerosols), especially organic aerosols from gas-fired combustion devices, and
- identify and characterize secondary particulate (i.e. particulate formed via reaction of stack emissions in the atmosphere) precursor emissions.
This report presents the results of a pilot project to evaluate the test protocol on a refinery fluid catalytic cracking unit. Pages 113
March 2002 | Product Number: I47130 | Price: $157.00

Publ 4723-A
Refinery Stream Composition Data—Update to Speciation Data in API 4723
Since the publication of API 4723 in 2002, new regulatory requirements have resulted in many changes in refinery processes that may have altered process stream compositions. Changing feedstocks, new process additives, and new catalysts may also have affected the concentrations of chemical species present in specific process streams. Based on an assessment of the range and depth of more recent stream speciation data, the Petroleum Environmental Research Forum (PERF) elected to update the stream speciation profiles in API 4723 using more recent composition sampling. The updated profiles are provided in this report. PERF members believe that the newer data are more representative due to improved sampling and analytical techniques and that these newer analyses better reflect changes in refinery operations over recent years. A large database of records was collated for the current study, representing information from 25 refineries. The original study reported on 24 chemical species and the current study provides data on 89 species. The original study reported on 65 refinery process streams and the current project provides data on 68 process streams. The material contained in this report will be of use in estimating the emissions of specific chemical species, preparing permit applications, and performing other environmental assessments. API, PERF, and the project participants make no claims as to the suitability or acceptability of the stream composition data reported herein for specific reporting or regulatory purposes. Pages: 278
December 2018 | Product Number: I4723A | Price: $158.00

EMISSIONS: VEHICLES

Publ 4642
A Study to Quantify On-Road Emissions of Dioxins and Furans from Mobile Sources: Phase 2
Presents the results of a study to assess on-road emissions of dioxins and furans from light- and heavy-duty vehicles in the United States. This study was conducted in response to the U.S. Environmental Protection Agency’s (EPA) draft dioxin reassessment document, which was based on data developed from studies conducted outside of the United States. Emissions were measured in the Fort McHenry Tunnel in Baltimore, MD, based on techniques tested and proven in Phase 1 of this study. The emission factor determined for heavy-duty diesel vehicles in this work was less than the EPA estimate. Pages: 96
December 1996 | Product Number: I46420 | Price: $141.00

Publ 4646
Evaluation of Fuel Tank Flammability of Low RVP Gasolines
Twenty-two test fuels were varied with respect to Reid vapor pressure (RVP), pentane-to-butane ratio, and addition of ethanol and methyl tert-butyl ether (MTBE), to evaluate the conditions under which vapors from reformulated gasoline contained in automobile fuel tanks become flammable. The results show that temperature limits of flammability correlate with RVP; the addition of ethanol or MTBE or both affects the upper flammability limits; and the ratio of pentane to butane has no consistent effect at similar RVP levels. Pages: 144
December 1996 | Product Number: I46460 | Price: $105.00

EXPOSURE: ASSESSMENT AND MONITORING

Publ 4617
A Monte Carlo Approach to Generating Equivalent Ventilation Rates in Population Exposure Assessments
Describes a study to improve breathing rate simulations in computer-based models used to estimate the exposures of urban populations to ozone and carbon monoxide. Algorithms producing equivalent ventilation rate values according to age, gender, activity, activity duration, and breathing rate category were developed from measured rates in primary-school children, high-school children, outdoor adult workers, and construction workers. Seven additional time/activity databases not used in the current pNEM methodology are described as well as models simulating maximum sustainable ventilation rates as a function of exercise duration, age, and gender. Pages: 168
March 1995 | Product Number: I46170 | Price: $86.00

Publ 4622
Describes the results of a survey of API member companies to acquire data relating to occupational exposure to MTBE for various activities associated with petroleum facilities. It provides a detailed description of the survey questionnaire as well as a statistical analysis of some 1,833 workplace concentration measurements associated with potential occupational exposures. Pages: 105
August 1995 | Product Number: I46220 | Price: $67.00

Publ 4625
Service Station Personnel Exposures to Oxygenated Fuel Components
Describes a study in four ozone nonattainment areas to measured exposures of refueling attendants and mechanics to fuel oxygenate species—methyl tertiary butyl ether, tertiary amyl methyl ether, tertiary butyl alcohol, ethanol, and butyl alcohol—at service stations. The aromatics—benzene, toluene, xylene, para-xylene, and ethylbenzene—were also measured. Full shift (approximately 8-hour time-weighted average) and short-term (15–20 minutes) samples were collected at each station. Volatility and meteorological measurements were also taken. Pages: 144
August 1995 | Product Number: I46250 | Price: $71.00

Publ 4629
Hexavalent Chromium Exposures During Hot Work
Details the findings from an air sampling survey contracted by API to evaluate inhalation exposures to hexavalent chromium (chromium (VI)) during seven types of hot work: carbon arc cutting (CAC), flux cored arc welding (FCAW), gas metal arc welding (GMAW or MIG), grinding, gas tungsten arc welding (GTAW or
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TIG), oxyfuel gas cutting (OFC or torch cutting), and shielded metal arc welding (SMAW or stick). After the First Edition of this report was published, it was determined that 15 samples from one of the projects were listed as carbon steel base metal and should have been listed as stainless steel. While the original report was careful to point out the use of electrodes typical for stainless work, it was felt that a complete update was needed. Eighty-three samples were collected in October and November 2005 at two petroleum sites during maintenance turnarounds by API member companies. An additional 188 samples were collected April–June 2006 at three different petroleum company sites by ICU Environmental Health and Safety. Of the 271 total samples, 63 samples were at or above the Occupational Safety and Health Administration (OSHA) action level of 2.5 μg/m³ and 51 were at or above the OSHA permissible exposure limit of 5 μg/m³. Pages: 12

June 2007 | Product Number: I46290 | Price: $93.00

MODELING

Publ 4546

Contains an evaluation of a group of 14 hazardous gas dispersion models. All available measurement programs were considered for the evaluation, covering both the releases of dense gases and nondense tracer gases; eight data sets are used in the evaluation. The models are reviewed for their scientific validity. Statistical procedures and residual plots are used to characterize performance. A number of the models give predictions that reasonably match field data. Pages: 351

October 1992 | Product Number: I45460 | Price: $154.00

Publ 4628
A Guidance Manual for Modeling Hypothetical Accidental Releases to the Atmosphere

Presents methods for modeling hypothetical accidental releases of fluids and gases into the atmosphere from process operations. Given a particular type of release and the chemicals or petroleum fractions involved, methods for modeling the release and subsequent dispersion phenomena are treated in a step-wise, comprehensive manner. Detailed simulation of eight hypothetical release scenarios are presented to demonstrate how the modeling procedures can be implemented. Pages: 212

November 1996 | Product Number: I46280 | Price: $154.00

Publ 4669
Review of Air Quality Models for Particulate Matter

API has published a review of existing source and receptor models available for analyzing particulate matter (PM) concentrations. This report critically reviews existing air modeling tools for PM, recommends models for State Implementation Plan applications, and identifies areas where the models need improvement. If you would like API to provide you with a hard copy of this publication for a cost of $45.00, please contact the Intellectual Property Department at API, 1200 Massachusetts Avenue NW, Suite 1100, Washington, DC 20001-5571; e-mail: api@publications.api.org; phone: 202-682-8156. Pages: 311

March 1998

OZONE

Publ 305
Protecting Agricultural Crops from Ozone Exposures—Key Issues and Future Research Directions

Identifies and reviews some of the key issues related to assessing the effects of ozone exposure on vegetation. This report analyzes information on ozone components of ozone exposure that elicit adverse effects on vegetation; ways to describe these components in the form of ozone exposure indices that may be useful in the standard-setting process for protecting vegetation; the change in nonattainment status that may occur should the existing ozone national ambient air quality standards be modified; and the need for future research efforts to explore the development of a suitable multiparameter index to protect vegetation from ozone exposure. Pages: 156

August 1991 | Product Number: J30500 | Price: $90.00

Publ 309
Current Status and Research Needs Related to Biogenic Hydrocarbons

Describes the literature on the state of science on biogenic hydrocarbons. Among the areas covered are biogenic emission measurements, ambient concentration measurements, emission inventories, chemical kinetics, and modeling studies from 1960 to 1992. The results of the review are used to identify areas of understanding as well as uncertainty in present-day knowledge. A list of references with 163 abstracts is included. Pages: 240

June 1992 | Product Number: J30900 | Price: $122.00

Publ 4616
The Importance of Using Alternative Base Cases in Photochemical Modeling

A series of Urban Airshed Model sensitivity studies were conducted using two summer O₃ episodes. Plausible alternative conditions were established to define acceptable base cases, some of which provided model performance comparable to the best achieved for the episodes. The alternative base cases used in this study produced significant differences in estimates of the air quality benefits of hypothetical emissions reductions. The study strongly recommends that current photochemical modeling practices include this type of analysis to reduce the risk of focusing on the wrong ozone precursor, underestimating control requirements, or incurring costs to implement unnecessary controls. Pages: 364

September 1994 | Product Number: I46160 | Price: $149.00

Environment and Safety Data

The following summaries report on cases that are recorded under the U.S. Bureau of Labor Statistics’ recordkeeping guidelines. The surveys are based on data submitted to API by oil and gas companies. The reports include information regarding injuries, illness, fatalities, lost workday cases, and incidence rates by function.

1989 Summary of Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry

January 1989 | Product Number: K19996 | Price: $64.00

1990 Summary of Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry

July 1991 | Product Number: K19988 | Price: $89.00

1991 Summary of Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry

September 1992 | Product Number: K19987 | Price: $89.00

1992 Summary of Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry

August 1993 | Product Number: K19986 | Price: $89.00

1993 Summary of Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry

June 1994 | Product Number: K19985 | Price: $104.00


June 1995 | Product Number: K19984 | Price: $104.00

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**Publ 2386**
May 2008 | Product Number: K23861 | Price: $112.00

**Publ 2387**
March 2009 | Product Number: K23871 | Price: $112.00

**Publ 2388**
April 2010 | Product Number: K23881 | Price: $112.00

**Publ 4714**
A Guide to Polycyclic Aromatic Hydrocarbons for the Non-Specialist

Provides an introduction to polycyclic aromatic hydrocarbons (PAHs) for persons working in the petroleum industry. It describes in general terms what PAHs are and how they are formed; PAH environmental transport, fate, and health effects; regulatory requirements related to PAHs; and analytical methods for measuring PAH concentrations in the environment. This information is of particular relevance to the petroleum industry due to the natural presence of PAHs in crude oil, the formation of PAHs during refining processes, and the potential for production of PAHs during the combustion of petroleum products. The intended audience for this report includes environmental professionals who must address PAH regulatory issues and field personnel who are responsible for the sampling and analyses of PAHs. Pages: 36

February 2002 | Product Number: I47141 | Price: $86.00

**Human Health Related Research**

**TR 400**
Toluene: A Preliminary Study of the Effect of Toluene on Pregnancy of the Rat

Describes a preliminary experiment performed on the pregnant rat to determine appropriate exposure levels of toluene, for future investigation of embryofetal toxicity in the rat when administered via the inhalation route from days 5 to 15 of pregnancy inclusive. The inhalation route of administration was chosen as the most likely route of exposure in humans. The exposure levels were chosen following a review of currently available information. See related document TR 401. Pages: 113

June 1993 | Product Number: I00400 | Price: $67.00

**TR 401**
Toluene: The Effect on Pregnancy of the Rat

Describes a study to assess the toxicity of toluene on the pregnant rat as well as on the developing fetus. Pregnant rats were exposed to 250, 750, 1500, and 3000 ppm toluene via inhalation for 6 hours a day from days 6 to 15 of pregnancy. Control rats were exposed to filtered air for the same length of time. Throughout the exposure period, animals were observed for clinical signs of toxicity. On day 20, the females were sacrificed and examined for abnormalities. The number and distribution of live young as well as the number of fetal deaths and abnormalities were also recorded. See related document TR 400. Pages: 215

June 1993 | Product Number: I00401 | Price: $95.00
Health and Environmental Issues

TR 403
Closed-Patch Repeated Insult Dermal Sensitization Study of TAME in Guinea Pigs

Describes a study to evaluate the allergic contact sensitization potential of tert-amyl methyl ether (TAME) in guinea pigs. Observations for mortality were made daily. Body weights were obtained and general health monitored weekly. Dermal evaluations were made approximately 24 and 48 hours after exposure. Pages: 32

February 1995 | Product Number: I00403 | Price: $67.00

TR 404
An Inhalation Oncogenicity Study of Commercial Hexane in Rats and Mice, Part I—Rats

This abridged report, the first part of a two-part set, evaluates the oncogenic potential of commercial hexane administered to four groups of 50 Fischer 344 rats at concentrations of 0, 900, 3000 and 9000 ppm in air. Summary text as well as pertinent data on changes in body weight, pathology, and individual and overall tumor incidence including differences in survivorship between control and exposed groups are provided. The amendment and table of contents to the unabridged final report are included. Pages: 152

January 1995 | Product Number: I00404 | Price: $86.00

TR 405
An Inhalation Oncogenicity Study of Commercial Hexane in Rats and Mice, Part II—Mice

This abridged report, the second part of a two-part set, evaluates the oncogenic potential of commercial hexane administered to four groups of 50 B6C3F1 mice at concentrations of 0, 900, 3000 and 9000 ppm in air. Summary text and pertinent data on differences in survivorship between control and exposed groups, changes in body weight, and pathology are provided. The table of contents to the unabridged final report is included. Pages: 106

January 1995 | Product Number: I00405 | Price: $67.00

TR 409
Primary Skin Irritation Study in Rabbits of API 91-01 and PS-6 Unleaded Test Gasolines

Describes a study conducted to assess primary dermal irritation data for two motor fuels according to Toxic Substances Control Act and Federal Hazardous Substances Act guidelines. Test rabbits were exposed dermally to unleaded gasoline according to a specified protocol and observed daily for signs of skin irritation. Such information is valuable for accurate hazard assessment and first aid treatment. Pages: 58

March 1995 | Product Number: I00409 | Price: $67.00

TR 410
Chromosome Aberrations in Chinese Hamster Ovary (CHO) Cells Exposed to Tertiary Amyl Methyl Ether (TAME)

Evaluates the clastogenic potential of TAME using CHO cells compared to the solvent control group. Based on the findings of this study, TAME was concluded to be positive for the induction of structural chromosome aberrations in CHO cells. Pages: 56

December 1996 | Product Number: I00410 | Price: $95.00

TR 411
Chinese Hamster Ovary (CHO) HGPRT Mutation Assay of Tertiary Amyl Methyl Ether (TAME)

Describes a study conducted to evaluate the mutagenic potential of the test article, TAME based on quantitation of forward mutations at the hypoxanthine-guanine phosphoribosyl transferase (HGPRT) locus of CHO cells. Under the conditions of this study, TAME was concluded to be negative in the CHO/HGPRT mutation assay. Pages: 46

December 1996 | Product Number: I00411 | Price: $95.00

TR 412 and TR 414
A Range-Finding Developmental Inhalation Toxicity Study of Unleaded Gasoline Vapor Condensate in Rats and Mice via Whole-Body Exposure and an Inhalation Developmental Toxicity Study of Unleaded Gasoline Vapor Condensate in the Rat via Whole-Body Exposure

This two-part inhalation study sought to specifically evaluate the potential of unleaded gasoline for developmental toxicity in rodents. The composition of the unleaded gasoline vapor condensate and the treatment pattern used are representative of real-world exposure conditions encountered at service stations and in other occupational settings. The results show that developmentally there were no differences between treated and control groups in malformations, total variations, resorptions, fetal body weight, or viability. Under the conditions of the study, unleaded gasoline vapors did not produce evidence of developmental toxicity. (This volume includes publications TR 412 and TR 414.) Pages: 300

April 1998 | Product Number: I00412 | Price: $105.00

Publ 4592
Odor Threshold Studies Performed with Gasoline and Gasoline Combined with MTBE, ETBE and TAME

Examines the effects on odor detection and recognition of adding oxygenates such as methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), and tertiary amyl methyl ether (TAME), to gasoline. Commercial grade MTBE is also evaluated for its taste threshold in water. The odor detection threshold is the minimum concentration at which 50 % of a given population can differentiate between a sample containing the odorant and a sample of odor-free air. The recognition threshold is the minimum concentration at which 50 % of a given population can recognize the odorant. The addition of 11 % to 15 % by volume MTBE or 15 % by volume of TAME or ETBE reduce the odor detection and recognition thresholds of gasoline. Pages: 76

January 1994 | Product Number: I45920 | Price: $86.00

Publ 4623
Anecdotal Health-Related Complaint Data Pertaining to Possible Exposures to Methyl Tertiary Butyl Ether (MTBE): 1993 and 1994 Follow-Up Surveys

Describes the development and administration of an informal survey of API member companies and state agencies to acquire anecdotal complaint data relating to MTBE exposure. Data associated with 71 occupational and 13 nonoccupational health-related complaints including reported symptoms are presented. Pages: 33

September 1995 | Product Number: I46230 | Price: $67.00

Publ 4634
Index and Abstracts of API Health-Related Research

This compendium of health-related research provides author, organization, and subject indices for research investigations and scientific reviews conducted for API between 1959 and 1994. It covers industrial hygiene and exposure assessment, toxicology, environmental biology, product safety, and community and occupational health research areas. Informatives abstracts provide useful background on each study and give information on publication availability. Pages: 160

September 1995 | Product Number: I46340 | Price: $86.00

Publ 4647
Brain Gial Fibrillary Acidic Protein (GFAP) as a Marker of Neurotoxicity During Inhalation Exposure to Toluene

Evaluates the concentration of GFAP in the rat's brain as a practical biomarker of toluene-induced neurotoxicity. Adult male rats received inhalation exposure to toluene scheduled to approximate occupational exposure for up to 42 days. During and after exposure, the concentration of GFAP was determined in four brain regions and compared with standard criteria of neurotoxicity: behavioral or neuropathological changes. Pages: 44

June 1997 | Product Number: I46470 | Price: $86.00
Evaluating tradeoffs between natural recovery and active restoration. The scenarios developed to represent a broad spectrum of possible oil spills were based on selected case studies. The report concludes that in general, available restoration techniques are not very effective for enhancing natural recovery and may, in certain cases, cause more severe impacts than the oil spill alone. Pages: 171

Publ 316
Identifying and Measuring Nonuse Values for Natural and Environmental Resources: A Critical Review
Takes an in-depth look at the theoretical arguments for using the contingent value method (CVM) as a scientifically valid and reliable tool for valuing nonuse public goods, specifically, environmental resources. The theory of option value is used to frame the concept of nonuse; prominent studies that feature nonuse measurement are highlighted. The potential biases of the CVM method are mentioned with suggestions on improving values. Pages: 134

Publ 4689
Chemical Human Health Hazards Associated with Oil Spill Response
Contains an overview of human health hazards that could be encountered by personnel involved with spills or leaks of petroleum products. The discussion includes potential risks of basic components and products of concern. Environmental factors that may affect exposure and a brief summary of other exposure considerations are also included. Pages: 51

Publ 4743
Hazard Narrative for Tertiary-Butyl Alcohol (TBA), CAS Number 75-65-0
The purpose of this investigation was to conduct a quantitative risk assessment according to U.S. Environmental Protection Agency guidelines in which data on the mode of action by which TBA induced renal tumors in rats and thyroid tumors in mice was considered. When data from animal studies, such as the TBA bioassays, are extrapolated to humans to provide estimates of lifetime cancer risks, then potential differences in pharmacokinetics (metabolism) and pharmacodynamics (sensitivity and mode of action) between the animal species and humans is considered in the estimation of human equivalent doses and in extrapolation from high doses typically used in the animal bioassays to low doses to which humans may be potentially exposed. Pharmacokinetic, toxicity, and mode of action data for TBA were reviewed and data selected for quantitative dose-response modeling. Pages: 76

Publ 4594
Results of Toxicological Studies Conducted for the American Petroleum Institute Health and Environmental Sciences Department
Lists and provides the results through December 1994 of all toxicological studies performed on petroleum-based materials, including gasoline and gasoline streams, middle distillates, lubes, heavy fuels, solvents, shale oils, and miscellaneous products. It also provides details of the tests performed and the species tested. A three-ring binder is provided to house this edition and future updates. Pages: 190

Publ 304
Evaluation of Restoration Alternatives for Natural Resources Injured by Oil Spills
Builds upon previous work in the field of oil spill impact assessment and habitat restoration to assess the technical feasibility and practicality of proactive restoration following oil spills and presents an approach for evaluating tradeoffs between natural recovery and active restoration. The scenarios developed to represent a broad spectrum of possible oil spills were based on selected case studies. The report concludes that in general, outstanding responses by the refineries (115 out of the total U.S. population of 176 refineries participated) aided in making confident estimates of the amount of waste managed by the U.S. refining industry. Pages: 184

Publ 302
In early 1988, API undertook a project to develop a compendium of the waste minimization practices for several different segments of the petroleum industry. The compendium discusses a large variety of practices that can and
Health and Environmental Issues

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are being utilized by the industry to reduce both the volume and toxicity of wastes. From “good housekeeping practices” for marketing facilities to the recycling of solvents, stormwater, and other traditional waste streams at refineries, the compendium illustrates the various practices available to minimize wastes in the industry. Pages: 152

November 1991 | Product Number: J30200 | Price: $98.00

Publ 303

This report is a follow-up to Publ 300 and documents the results of the 1989 Refining Solid Waste Survey. The quantitative results of the generation of the 28 waste and residual streams and their management according to the environmental management hierarchy (i.e. source reduction, recycling, treatment, and disposal) is presented. In addition, the document contains a discussion of the state of source reduction activities underway within the industry, including a quantitation of source reduction achievements on the 28 streams, and the methods used to calculate source reduction. Pages: 93
June 1992 | Product Number: J30300 | Price: $98.00

Publ 311
Environmental Design Considerations for Petroleum Refining Processing Units

Demonstrates the application of pollution prevention concepts in the design of a refinery crude processing unit. Included are realistic waste and emission reduction changes that would be economically and technically attractive to refiners. The document is intended to serve as a reference for refinery designers during the preliminary design phase of building a new crude unit or revamping an existing crude unit. Pages: 214
February 1993 | Product Number: J31100 | Price: $160.00

Publ 31101
Executive Summary: Environmental Design Considerations for Petroleum Refining Crude Processing Units

Executive summary to Publ 311. Pages: 13
February 1993 | Product Number: J31101 | Price: $63.00

Publ 312
Responding to Environmental Challenge: The Petroleum Industry and Pollution Prevention

Informal proceedings of a pollution prevention plenary session held at API’s 1990 Health and Environment Annual Meeting. Speakers representing federal and state government, public interest groups, and various petroleum industry segments presented their views on pollution prevention. This document also describes API’s initiatives for pollution prevention research. Pages: 16
1990 | Product Number: J31200 | Price: Free*

Publ 317
Industry Experience with Pollution Prevention Programs

The API Pollution Prevention Task Force has been actively involved in promoting pollution prevention within the industry since 1990. Members of the Task Force have accumulated a comprehensive body of knowledge on the subject of pollution prevention and have compiled a resource brochure on the key elements that make pollution prevention programs successful. Pages: 4
June 1993 | Product Number: J31700 | Price: Free*

Publ 324

This document is third in a series that presents the results of API’s annual survey of the types and amounts of wastes and residuals generated and managed by the petroleum refining industry. For 1990, source reduction activities doubled over the previous year. The quantity of residuals generated increased to 18.2 million wet tons as compared to 16.3 million wet tons in 1989. Much of the increased quantity reflects generation peaks associated with construction and remediation activities. Two long-term trends are worth noting: (1) the amount of total residuals being recycled continues to rise, and (2) the amount of hazardous wastes going to land treatment and disposal continues to fall. Pages: 123
August 1993 | Product Number: J32400 | Price: $97.00

Publ 329

This document is the fourth in a series that describes the 1991 data from API’s annual survey of the types and amounts of residual materials generated and managed by the refining industry. In 1991, the industry generated 14.8 million wet tons of residual materials—the smallest quantity generated since API began this collection effort in 1987. The industry also reported that pollution prevention activities accounted for a reduction in 715,000 wet tons of materials. A trend analysis was performed on the last five years. Oil companies can use the data in this report to compare their residual generation and management practices with the rest of the industry. Pages: 172
June 1994 | Product Number: J32900 | Price: $109.00

Publ 331
Environmental Performance Indicators: Methods for Measuring Pollution Prevention

Presents methods that can be used to measure progress toward pollution prevention. It investigates a series of measurement parameters presented in five categories: program-based, activity-based, mass-based, normalized efficiency, and concentration-based. Within each category of measures, the benefits and limitations are discussed and illustrated with industry examples. Pages: 30
September 1994 | Product Number: J33100 | Price: $69.00

Publ 333
Generation and Management of Residual Materials

This report is the fifth in a series of reports detailing waste and residual management practices in the refining sector. It presents the results of the 1992–1993 survey and includes information on how the industry has achieved compliance with the land disposal restrictions on Resource Conservation and Recovery Act (RCRA) listed hazardous K-wastes (K0448-K052). It also documents the influence of the primary sludge rule and new toxicity characteristic under RCRA. Pages: 170
February 1995 | Product Number: J33300 | Price: $109.00

Publ 336

This report is the sixth in a series of reports detailing waste and residual management practices in the refining sector. It presents the results of the 1992–1993 survey and includes information on how the industry has achieved compliance with the land disposal restrictions on Resource Conservation and Recovery Act (RCRA) listed hazardous K-wastes (K0448-K052). It also documents the influence of the primary sludge rule and new toxicity characteristic under RCRA. Pages: 170
August 1996 | Product Number: J33600 | Price: $109.00

Publ 339

This report is the seventh in a series of reports presenting the results of the API Annual Refining Residual Survey. It provides a detailed assessment of the size of refinery throughput, the types of crude oil utilized, the regions in which the refineries are located, the types of wastewater treatment processes used, the amounts of different residual streams produced and how they are managed, and the average cost of residual stream management. Pages: 98
August 1996 | Product Number: J33900 | Price: $109.00

This publication is related to an API licensing, certification, or accreditation program.
activities, refinery capacities, and regions in which refineries are located. The
data in this report indicate a decrease of greater than 25% in the quantity of
residuals generated by the refining industry from 1994 to 1995. Further, the
industry trend towards increased recycling of residuals has continued. In
1995, over half of the refinery residuals generated were recycled rather than
being treated or disposed. Pages: 106

July 1997 | Product Number: J33900 | Price: $109.00

Publ 345
Performance
This report is the eighth in a series of reports presenting the results of the API
Annual Refining Residual Survey. Included in the report are detailed
assessments of generated quantities and management practices for 14
residual streams representing approximately 80% of all residuals managed
at U.S. refineries. Industry trend towards increased recycling of residuals has
continued. In 1996, well over half of the refinery residuals generated were
recycled rather than being treated or disposed. Pages: 106
June 1998 | Product Number: J34500 | Price: $109.00

Soil and Groundwater Research
https://www.api.org/groundwater

Publ 4722
API and the California MTBE Research Partnership have produced a new
software utility to help site managers, water purveyors, and regulators
evaluate the sensitivity of a groundwater resource to a potential release of
compounds of concern [e.g. a methyl tertiary-butyl ether (MTBE)-oxygenated
fuel]. The toolkit examines three aspects of sensitivity: resource value,
receptor vulnerability, and natural sensitivity. The user supplies site-specific
information, and the toolkit returns a “scorecard” addressing the three
aspects of sensitivity. Although this utility was designed with petroleum
hydrocarbon releases in mind, it can be used when dissolved chlorinated
and inorganic compounds are the chemicals of concern. The toolkit runs on
Microsoft Excel® and comes with a user's guide. Pages: 51
August 2002 | Product Number: I47220 | Price: $65.00

API Soil and Groundwater Research Bulletins
API Soil and Groundwater Research bulletins summarize research results
from project overseen by API's Soil and Groundwater Technical Task Force.
The Task Force disseminates information and research results through
publications, presentations, and interaction with industry clients and
regulatory agencies.
The bulletins listed below can be downloaded at https://www.api.org/
oil-and-natural-gas/environment/clean-water/ground-water/bulletins

Bulletin No. 1
Summary of Processes, Human Exposures and Remediation
Technologies Applicable to Low Permeability Soils
September 1996

Bulletin No. 3
Ten Frequently Asked Questions About MTBE in Water
March 1998

Bulletin No. 5
Evaluation of Sampling and Analytical Methods for Measuring
Indicators of Intrinsic Bioremediation
March 1998

Bulletin No. 8
Characteristics of Dissolved Petroleum Hydrocarbon Plumes: Results
from Four Studies
December 1998

Bulletin No. 9
Non-Aqueous Phase Liquid (NAPL) Mobility Limits in Soil
June 2000

Bulletin No. 10
Simulation of Transport of Methyl Tert-Butyl Ether (MTBE) to
Ground-Water from Small-Volume Releases of Gasoline in the
Vadose Zone
June 2000

Bulletin No. 11
Strategies for Characterizing Subsurface Releases of Gasoline
Containing MTBE
August 2000

Bulletin No. 12
No-Purge Sampling: An Approach for Long-Term Monitoring
October 2000

Bulletin No. 13
Dissolution of MTBE from a Residually Trapped Gasoline Source
September 2001

Bulletin No. 14
Predicting the Effect of Hydrocarbon and Hydrocarbon-Impacted Soil
on Groundwater
September 2001

Bulletin No. 15
Vadose Zone Natural Attenuation of Hydrocarbon Vapors: An
Empirical Assessment of Soil Gas Vertical Profile Data
December 2001

Bulletin No. 16
Migration of Soil Gas Vapors to Indoor Air: Determining Vapor
Attenuation Factors Using a Screening-Level Model and Field Data
from the CDOT-MTL
April 2002

Bulletin No. 17
Identification of Critical Parameters for the Johnson and Ettinger
(1991) Vapor Intrusion Model
May 2002

Bulletin No. 18
Answers to Frequently Asked Questions About Managing Risk at
LNAPL Sites
June 2018

Bulletin No. 19
Evaluation of Small-Volume Releases of Ethanol-Blended Gasoline
at UST Sites
October 2003
group of 12 hydrocarbons and hetero-organic compounds based on their abundance in petroleum products and anticipated future interest from regulatory agencies. Pages: 200

September 1994 | Product Number: I45930 | Price: $71.00

**Pub 4601**
Transport and Fate of Dissolved Methanol, MTBE and Monoaromatic Hydrocarbons in a Shallow Sand Aquifer

Describes a field investigation into the effect of oxygenates methanol and methyl tertiary-butyl ether (MTBE) on the fate and transport of benzene, toluene, ethylbenzene, and xylenes (BTEX) in groundwater. Natural gradient tracer experiments were conducted to simulate the transport of dissolved plumes resulting from subsurface releases of oxygenated fuels. In these experiments, methanol, MTBE, and BTEX concentrations were monitored by sampling from a dense network of multilevel piezometers, and plume contours were mapped through application of moment analysis. A laboratory study on the effects of methanol and MTBE on the biodegradation of BTEX in groundwater was also conducted. The relative mobility and persistence of BTEX and the oxygenates were characterized based on field and laboratory study data. Pages: 338

April 1994 | Product Number: I46010 | Price: $134.00

**Pub 4627**

Reviews more than 200 technical articles published between 1988 and 1991 in the area of on-site and in-situ bioremediation of petroleum hydrocarbons. It focuses specifically on current field and laboratory research related to petroleum hydrocarbon biodegradation including biodegradation of crude oil and solvents. Recent work in fate and transport modeling that can be applied to petroleum hydrocarbon contamination in groundwater is also covered. The review is designed to complement an earlier (pre-1988) review published by the U.S. Navy. Pages: 146

June 1995 | Product Number: I46270 | Price: $67.00

**Pub 4633**
Barium in Produced Water: Fate and Effects in the Marine Environment

Provides a summary of what is currently known about the physical and chemical behavior of barium in produced water and in the ocean. It discusses the factors that influence the rate of precipitation of barium as barite. The toxicity of barium to marine and freshwater organisms and humans is discussed in relation to the concentrations and forms in which it occurs in aquatic environments. Pages: 68

September 1995 | Product Number: I46330 | Price: $65.00

**Pub 4643**
Estimation of Infiltration and Recharge for Environmental Site Assessment

A risk-based corrective action analysis of a site suspected of chemical contamination requires site-specific knowledge of the rate water infiltrates through the soil to the water table. A comprehensive discussion of the current physical/chemical methods and mathematical models available to quantify those rates along with suggestions for selecting an appropriate technique, depending on site conditions, are provided in this report. Pages: 204

July 1996 | Product Number: I46430 | Price: $105.00

**Pub 4654**
Field Studies of BTEX and MTBE Intrinsic Bioremediation

A gasoline release field site in the Coastal Plain of North Carolina was monitored for more than three years to allow calculation of in-situ biodegradation rates. Laboratory microcosm experiments were performed to further characterize the biodegradation of benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary-butyl ether (MTBE) under ambient, in-situ conditions. Finally, groundwater modeling studies were conducted to...
facilitate the interpretation of field data and to evaluate various approaches for predicting the fate and effects of these gasoline constituents in the subsurface. Pages: 244

October 1997 | Product Number: I46540 | Price: $82.00

Pubi 4674
Assessing the Significance of Subsurface Contaminant Vapor Migration to Enclosed Spaces—Site-Specific Alternative to Generic Estimates

Vapors in enclosed spaces pose two levels of concern. First, enclosed-space vapors may be found at concentrations near those that pose immediate flammability and/or health risks. These sites warrant immediate attention and response as required by most state and federal regulatory guidance. In the second class of sites, concentrations are lower and the concern is for longer term health risks. This report focuses exclusively on this second class of sites, where advection and diffusion occur through a soil layer and into an enclosed space, and time is available to adequately address the problem on a site-specific basis. The options considered in this document include the following:

- direct measurement through sampling of enclosed-space vapors,
- use of near-foundation or near-surface soil gas sampling results,
- use of site-specific homogeneous and layered soil diffusion coefficients in generic algorithms, and
- assessment of bioattenuation potential. Pages: 56

December 1998 | Product Number: I46740 | Price: $86.00

Pubi 4734
Modeling Study of Produced Water Release Scenarios

Provides a scientific basis for operators, regulators, and landowners to facilitate the interpretation of field data and to evaluate various approaches for predicting the fate and effects of these gasoline constituents in the subsurface. Pages: 244

January 2005 | Product Number: I47340 | Price: $134.00

Pubi 4758
Strategies for Addressing Salt Impacts of Produced Water Releases to Plants, Soil, and Groundwater

The exploration and production industry uses great care during the handling and disposal of the produced water that is generated as part of oil and gas production. However, unintentional releases can occur. Depending on the chemical composition of the produced water and the nature of the local environment, salts associated with such releases can impair soils, vegetation, and water resources.

Provides a collection of simple rules of thumb, decision charts, models, and summary information from more detailed guidance manuals to help you address the following assessment and response issues:

- Will a produced water release cause an unacceptable impact on soils, plants, and/or groundwater?
- In the event of such an impact, what response actions are appropriate and effective? Pages: 29

1st Edition | September 2006 | Product Number: I47580 | Price: $76.00

Pubi 4784
Quantification of Vapor Phase-Related Natural Source Zone Depletion Processes

Natural source zone depletion (NSZD) has emerged as an important concept within the realm of environmental remediation. NSZD is a term used to describe the collective, naturally occurring processes of dissolution, volatilization, and biodegradation that results in mass losses of light non-aqueous phase liquid (LNAPL) petroleum hydrocarbon constituents from the subsurface.

This document provides practical guidance on NSZD theory, application, measurement methods, and data interpretation. It is intended to be used by practitioners to help plan, design, and implement NSZD monitoring programs in support of petroleum hydrocarbon site remediation. Pages: 124

1st Edition | May 2017 | Product Number: I47840 | Price: $131.00

REMEDIAL TECHNOLOGIES

DR 225
Remediation of a Fractured Clay Till Using Air Flushing: Field Experiments at Sarnia, Ontario

This study was conducted over a three-year period at a well-characterized test site located in Canada near Sarnia, Ontario. A synthetic gasoline blend of known mass, volume, and composition was released into a test cell. Samples were collected and analyzed for gasoline range organics to establish the three-dimensional distribution of the release. Conventional air flushing technologies, soil vapor extraction and in-situ air sparging, were able to remove ~40% of the spilled mass during the initial two months of operation. Following active remediation, primarily low-volatility compounds remained in the soil and almost no benzene or toluene remained. Based on mass balance data, a significant portion of the benzene, toluene, ethylbenzene, and xylene compounds was biodegraded. Pages: 220

October 1998 | Product Number: I00225 | Price: $105.00

Pubi 4525
A Compilation of Field-Collected Cost and Treatment Effectiveness Data for the Removal of Dissolved Gasoline Components from Groundwater

Documents, summarizes, and evaluates cost and treatment effectiveness data for air stripping and carbon adsorption systems designed to remove dissolved petroleum hydrocarbons from groundwater. The compounds of primary interest were benzene, toluene, ethylbenzene, and xylene isomers (BTEX) as well as the oxygenates methyl tertiary-butyl ether and isopropyl ether. Operating data were gathered from 57 field sites throughout the United States, and treatment system profiles were generated for each site. The data will be used to assist companies in planning pump-and-treat remediation systems for removal of BTEX and oxygenates from groundwater. Pages: 240

November 1990 | Product Number: I45250 | Price: $86.00

Pubi 4609
In-Situ Air Sparging: Evaluation of Petroleum Industry Sites and Considerations for Applicability, Design and Operation

Describes the important literature findings as well as the hands-on experiences of the petroleum industry at 59 air sparging sites. Design and operational data are analyzed for relationships that can be used to optimize the technology or provide a better understanding of its fundamental processes. Topics covered include: site characterization; pilot testing; system design and installation; and system operation, monitoring, and performance. Pages: 132

May 1995 | Product Number: I46090 | Price: $105.00
Health and Environmental Issues

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Publ 4631
Petroleum Contaminated Low Permeability Soil: Hydrocarbon Distribution Processes, Exposure Pathways and In-Situ Remediation Technologies

Presents a set of 10 papers on light nonaqueous phase liquids (LNAPLs) in low permeability soils. Collectively, the papers address four key areas: (1) processes affecting the migration and removal of LNAPLs; (2) exposure potential posed by clay soil and hydrocarbons via soil, groundwater, and air pathways; (3) models for predicting LNAPL removal; and (4) techniques of remediation. Pages: 298

September 1995 | Product Number: I46310 | Price: $95.00

Publ 4655
Field Evaluation of Biological and Non-Biological Treatment Technologies to Remove MTBE/Oxygenates from Petroleum Product Terminal Wastewaters

A pilot/demonstration study was conducted on three treatment technologies—the fluidized bed biological reactor process, the activated sludge process incorporated with iron flocculation, and the ultraviolet light/hydrogen peroxide process—to evaluate their effectiveness in the treatment of petroleum marketing terminal wastewater contaminated with methyl tert-butyl ether (MTBE). Contaminated groundwater was the primary constituent of the wastewater, which also contained benzene, toluene, ethylbenzene, and xylenes (BTEX). All three technologies were able to remove at least 95% of the MTBE and BTEX in the feed waters. Pages: 194

August 1997 | Product Number: I46550 | Price: $134.00

Publ 4671
Technical Bulletin on Oxygen Releasing Materials for In-Situ Groundwater Remediation

Oxygen releasing materials (ORMs) are commercially available materials that are being used to enhance bioremediation treatment of petroleum hydrocarbon contaminated groundwater aquifers. This technical bulletin provides a systematic approach for evaluating the utility of ORM treatment and for designing ORM installations. It summarizes the current state of understanding of this technology to provide guidance for site managers evaluating options for enhanced groundwater remediation. Pages: 52

July 1998 | Product Number: I46710 | Price: $76.00

Publ 4715
Evaluating Hydrocarbon Removal from Source Zones and its Effect on Dissolved Plume Longevity and Concentration

Provides valuable information and utilities for regulators and practitioners interested in understanding the possible benefits of free-product removal. This report provides theory and concepts needed to evaluate light nonaqueous phase liquid (LNAPL) source distribution, chemistry, dissolution, and the effects various remediation strategies may have on risk reduction for the groundwater and vapor exposure pathways. The companion software, API-LNAST, links the multiphase and chemical processes controlling in-situ LNAPL distribution, mobility, and cleanup to quantify estimates of the time-dependent concentrations within the LNAPL source and the downgradient dissolved plume. API-LNAST users can screen whether incremental LNAPL removal provides any risk-reduction benefit over a time frame of interest, e.g., 30 years.


Publ 4730
Groundwater Remediation Strategies Tool

Provides strategies for focusing remediation efforts on (1) the change in contaminant mass flux in different subsurface transport compartments (e.g., the vadose zone, smear zone, or a zone within an aquifer of interest) and (2) the change in remediation timeframe. In this approach, groundwater flow and contaminant concentration data are combined to estimate the rate of contaminant mass transfer past user-selected transects across a contaminant plume. The method provides the user with a means to estimate the baseline mass flux and remediation timeframe for various transport compartments and then evaluate how different remedies reduce the mass flux and the remediation timeframe in each transport compartment. Pages: 71

December 2003 | Product Number: I473000 | Price: $138.00

Publ 4760
LNAPL Distribution and Recovery Model (LDRM)

Simulates the performance of proven hydraulic technologies for recovering free-product petroleum liquid releases to groundwater. The LDRM provides information about light nonaqueous phase liquid (LNAPL) distribution in porous media and allows the user to estimate LNAPL recovery rates, volumes, and times. Documentation for the LDRM is provided in two volumes. Volume 1—Distribution and Recovery of Petroleum Hydrocarbon Liquids in Porous Media—documents the LDRM and provides background information necessary to characterize the behavior of LNAPL in porous media with regard to performance of LNAPL liquid recovery technologies. Volume 2—User and Parameter Selection Guide—provides step-by-step instructions for the LDRM software. Four example problem applications are presented which highlight model use, parameter estimation using the API LNAPL Parameters Database, and limitations of scenario-based models.

January 2007 | Software and documentation can be downloaded at https://www.api.org/oil-and-natural-gas/environment/clean-water/ground-water/lnapl/ldrm

Publ 4762
API LNAPL Transmissivity Workbook: A Tool for Baildown Test Analysis-User Guide

LNAPL transmissivity is a measure of lateral mobility of free-product hydrocarbon liquid within the groundwater environment. The magnitude of LNAPL transmissivity has been suggested as a possible endpoint criterion for LNAPL mass removal using LNAPL hydraulic recovery systems. Such hydraulic recovery systems include skimmer wells, single-pump wells, dual-pump wells, and trenches. Coupled with the LNAPL CSIM, the magnitude of LNAPL transmissivity will assist in the selection of recovery system. As such, methods and their consistent application for estimating LNAPL transmissivity are significant. Perhaps the simplest methods for estimating LNAPL transmissivity are borehole slug test methods, or baildown tests, in which a volume of LNAPL is rapidly removed from a well and the rate of fluid-level recovery (water and LNAPL) is measured and analyzed. Several analytical methods are available to analyze the data from baildown tests to estimate LNAPL transmissivity and described herein. Following a brief description of suggested well configuration, pre-test and test measurements and methods, application of the spreadsheet tool is discussed. Subsequent sections provide a more detailed discussion of significant parameters and basis for the various analysis procedures. A number of example applications are presented. Further details on the different methods are provided in the appendices. Pages: 40


SITE CHARACTERIZATION

Publ 4599
Interlaboratory Study of Three Methods for Analyzing Petroleum Hydrocarbons in Soils

Presents the results of an interlaboratory study of three methods—diesel-range organics, gasoline-range organics, and petroleum hydrocarbons—used to analyze hydrocarbons in soils. Each method is validated, its performance judged from measurements of accuracy and precision, and practical qualification levels are estimated for each method. The full text of each method is included in the report. Pages: 166

July 1994 | Product Number: I47990 | Price: $105.00
Health and Environmental Issues

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Publ 4635
Compilation of Field Analytical Methods for Assessing Petroleum Product Releases

Presents a compilation of the most widely used field analytical methods available to perform on-site analyses of organic compounds in soil and groundwater. These methods include total organic vapor analyzers, field gas chromatography, immunoassay, infrared analyzers, and dissolved oxygen/oxidation-reduction potential electrodes. Practical applications and limitations of each method are discussed and an objective-oriented data quality classification scheme is presented to assist in selecting an appropriate method. Information is also presented on emerging technologies. Pages: 100

December 1996 | Product Number: I46350 | Price: $95.00

Publ 4657
Effects of Sampling and Analytical Procedures on the Measurement of Geochemical Indicators of Intrinsic Bioremediation: Laboratory and Field Studies

Evaluates the effects of various sampling and analytical methods of collecting groundwater geochemical data for intrinsic bioremediation studies. Sampling and analytical methods were tested in the laboratory and in the field. Several groundwater sampling and analytical methods may be appropriate for measuring geochemical indicators of intrinsic bioremediation. The methods vary in accuracy, level of effort, and cost. Pages: 86

November 1997 | Product Number: I46570 | Price: $67.00

Publ 4658
Methods for Measuring Indicators of Intrinsic Bioremediation: Guidance Manual

Intended to be a resource for practitioners of intrinsic bioremediation allowing selection of sampling and analytical methods that meet project-specific and site-specific needs in scoping field investigations, providing procedures that will improve the representative quality of the collected data, and considering potential biases introduced into data through the sampling and analytical techniques employed in the site investigation. Pages: 96

November 1997 | Product Number: I46580 | Price: $76.00

Publ 4659

The DAF plays a key role in assessing potential impact from the soil-to-groundwater pathway at sites where groundwater quality is, or may be, affected by a leak, spill, or other accidental release of hydrocarbons or other chemicals of concern. A simplistic, graphically-based approach for determining generic and site-specific DAFs was developed, allowing for varying levels of site specificity. Currently, to develop a DAF, one must make complicated calculations by hand or use computer-based modeling software. This publication consists of two documents. The first document describes the technical basis for the graphical approach for determining site-specific dilution attenuation factors. The second document, the user’s guide, provides a concise set of instructions for use of the graphical approach. Pages: 233

February 1998 | Product Number: I46590 | Price: $128.00

Publ 4668
Delineation and Characterization of the Borden MTBE Plume: An Evaluation of Eight Years of Natural Attenuation Processes

In 1988, a natural gradient tracer test was performed in the shallow sand aquifer at Canada Forces Base Borden to investigate the fate of a methyl tertiary-butyl-ether (MTBE) plume introduced into the aquifer. Solutions of groundwater mixed with oxygenated gasoline were injected below the water table along with chloride (Cl\(^-\)), a conservative tracer. The migration of benzene, toluene, ethylbenzene, and xylenes (BTEX); MTBE; and Cl\(^-\) was monitored in detail for about 16 months. The mass of BTEX in the plume diminished significantly with time due to intrinsic biodegradation. MTBE, however, was not measurably attenuated. In 1995-1996, a comprehensive groundwater sampling program was undertaken to define the mass of MTBE still present in the aquifer. Only about 3% of the initial MTBE mass was found, and it is hypothesized that biodegradation played an important role in its attenuation. Additional evidence is necessary to confirm this possibility. Pages: 88

June 1998 | Product Number: I46680 | Price: $67.00

Publ 4670
Selecting Field Analytical Methods—A Decision-Tree Approach

Presents a decision-tree approach for selecting and using field analytical methods for on-site analyses of organic compounds in soil, groundwater, and soil gas samples at petroleum release sites. This approach will assist project or site managers with guidance on-site investigations from initial site assessment to site closure. The decision-tree charts are supported by quality control packages to increase the credibility of the data by documenting method performance. The publication also provides training suggestions for personnel who will perform the testing. Easy to use checklists for field quality control and formal documentation are included. Pages: 88

August 1998 | Product Number: I46700 | Price: $95.00

Publ 4699
Strategies for Characterizing Subsurface Releases of Gasoline Containing MTBE

Applies the principles of risk-informed decision making to the evaluation of methyl tertiary-butyl ether (MTBE)-affected sites by adding exposure and risk considerations to the traditional components of the corrective action process. The risk factors at a given site are evaluated through a “conceptual site model,” which is an inventory of all known or potential oxygenate sources, pathways, and receptors. Based on these risk factors, three levels of assessment are defined: standard, limited, and detailed. The appropriate level of assessment is initially determined based on receptor data, which can typically be obtained from a survey of nearby wells and land uses. A subsurface investigation may then be conducted to obtain information on sources and pathways. The level of assessment can be “upgraded” or “downgraded” as warranted by the resulting source and pathway information. Includes a review of the chemical properties and subsurface behavior of MTBE and other oxygenated fuel additives. It also provides an overview of characterization monitoring issues at oxygenate release sites, as well as a detailed review of the tools and techniques used for subsurface assessment. The expedited site assessment process and the use of modern direct-push tools are particularly emphasized, since these approaches are especially well suited for use at MTBE-affected sites. Pages: 120


Publ 4709
Risk-Based Methodologies for Evaluating Petroleum Hydrocarbon Impacts at Oil and Natural Gas E&P Sites

The process of calculating human health risk-based screening levels for total petroleum hydrocarbons (TPH) is described in an easy-to-understand question and answer format. [Risk-based screening levels (RBSLS) are chemical-specific concentrations in environmental media that are considered protective of human health.] Risk assessment concepts developed by the U.S. Environmental Protection Agency and research groups such as the Petroleum Environmental Research Forum and the Total Petroleum Hydrocarbon Criteria Working Group are used to calculate RBSLS for TPH in crude oil and condensates obtained from around the world. These methodologies were also applied to polycyclic hydrocarbons, metals, and benzene in TPH. Additional resources contained in this manual include a description of the physical and chemical characteristics of crude oil, condensate, and exploration and production (E&P) wastes (contrasted with refined products), a summary of the federal regulatory status of E&P wastes, and a listing of key equations used for calculating RBSLS. Pages: 100

February 2001 | Product Number: I47090 | Price: $90.00

This publication is a new entry in this catalog. This publication is related to an API licensing, certification, or accreditation program.
Health and Environmental Issues

Publ 4711
Methods for Determining Inputs to Environmental Petroleum Hydrocarbon Mobility and Recovery Models

This publication is an invaluable reference for operators, consultants and regulators responsible for cleanup of subsurface petroleum releases. Important fluid and soil property parameters are explained. Methods to measure each parameter are presented in order of relevance for use in environmental free-product mobility/recovery assessments. Fluid property parameters covered include density, viscosity, surface tension, and interfacial tension. Laboratory-scale soil property parameters include: capillary pressure vs. saturation, relative permeability vs. saturation, water and nonaqueous phase liquid saturation, and Brooks-Corey and van Genuchten model parameters. Field-scale bail-out and production tests are explained and cited. Sample collection and handling procedures are summarized. A listing and abstract of relevant ASTM methods are provided in the appendix. Pages: 72

July 2001 | Product Number: I47110 | Price: $121.00

Publ 4731
Light Non-Aqueous Phase Liquid (LNAPL) Parameters Database—Version 2.0—Users Guide

A collection of information about samples that have had their capillary parameters determined, as well as other physical parameters measured. Capillary properties are critical in multiphase calculations, and those results have very high sensitivity to these properties. The primary purpose of this database is to provide information to users who are trying to characterize the movement and distribution of LNAPL within a site that has a limited set of direct observations of the capillary properties of the site. Other databases of related parameters have typically been derived from measurements in the agricultural or the petroleum extraction industries; neither being necessarily representative of near-surface environmental conditions. This database gives the user the opportunity to understand the range of capillary characteristics observed at sites that are geologically similar, but where there are more direct and laboratory observations available.

December 2003 | Product Number: I47310 | Price: $138.00

The database is available from API's website: https://www.api.org/oil-and-natural-gas/environment/clean-water/ground-water/lnapl/parameter-database

Publ 4739
API Interactive LNAPL Guide—Version 2.0.4

A comprehensive and easy-to-use electronic information system and screening utility. The guide is designed to provide an overview approach for evaluating light nonaqueous phase liquid (LNAPL) at a site, assessing its potential risk, quantitatively defining mobility and recoverability; developing remedial strategies, and examining methods to enhance site closure opportunities.

The guide includes the following:

- 11 primers covering all aspects of LNAPL from LNAPL basics to remediation;
- 14 assessment tools, including API-LNAST Version 2.0, “Charbeneau” spreadsheets for LNAPL recovery (August 2003), the API LNAPL Parameter Database;
- LNAPL decision-making frameworks;
- videos and animated figures; and
- an extensive reference list.


Publ 4761
Technical Protocol for Evaluating the Natural Attenuation of MtBE

Addresses data collection, evaluation, and interpretation procedures that consider the physical, chemical, and biological properties of methyl tert-butyl ether (MtBE) and other oxygenates and degradation byproducts. A tiered approach is provided that can be used by stakeholders to interpret several lines of evidence to evaluate natural attenuation on a site-specific basis. Several resources are provided to support an MNA evaluation, including the following:

- a review of basic scientific principles relevant to the evaluation of MtBE natural attenuation, including biodegradation and physicochemical attenuation mechanisms;
- a discussion of data that can be used to assess MtBE (and other oxygenates or degradation byproducts) natural attenuation;
- technical references for relevant chemical properties, analytical methods, and field sampling techniques;
- guidance for data quality assurance and interpretation, including statistical analysis; and
- guidance on the presentation of natural attenuation data/information to facilitate regulatory and other stakeholder review and acceptance of MNA remedies.

Pages: 186


Environmental Stewardship Program Publications

RP 75
Safety and Environmental Management System for Offshore Operations and Assets

Provides companies engaged in offshore operations with a framework for the establishment, implementation, and maintenance of a Safety and Environmental Management System (SEMS) to manage and reduce risks associated with safety and the environment to prevent incidents and events. This recommended practice applies, in part or whole, to companies engaged in offshore operations, from lease evaluation through decommissioning.

This document is not intended to be prescriptive or limiting on the expectations of each SEMS element; rather, it allows flexibility appropriate to the size, scope, and risk of a Company's assets and operations. It is advised that users of this document review and comply with applicable legal and regulatory requirements, and conform with applicable industry codes and standards. Consideration may be given to using this document to help systematically manage other aspects of operations, such as security and health. Pages: 34


Publ 9100
Model Environmental, Health and Safety (EHS) Management System and Guidance Document

Comes with a binder complete with both Publ 9100A and Publ 9100B—see descriptions listed below. Pages: 65

October 1998 | Product Number: R9100S | Price: $171.00

Publ 9100A
Model Environmental, Health and Safety (EHS) Management System

Intended to be used as a voluntary tool to assist companies interested in developing an EHS management system or enhancing an existing system. The model, which applies a quality systems approach to managing EHS activities, focuses on people and procedures by pulling together company EHS policies, legal requirements, and business strategies into a set of company or facility expectations or requirements.

Please refer to the companion document Publ 9100B for additional information. Publ 9100A and Publ 9100B are intended to be companion documents and can be purchased as a set or individually. Pages: 20

October 1998 | Product Number: R9100A | Price: $82.00
accurate and reliable leak detection of aboveground storage tanks can be needed for high performance are explored. The report concludes that achieved through the use of acoustic methods. Pages: 86

January 1994 | Product Number: J32300 | Price: $80.00

Pub 325
An Evaluation of a Methodology for the Detection of Leaks in Aboveground Storage Tanks

Describes the results of the fourth phase of a program to define and advance the state of the art of leak detection for aboveground storage tanks (ASTs). Three leak detection technologies are examined—passive-acoustic, soil-vapor monitoring, and volumetric—over a wide range of tank types, petroleum fuels, and operational conditions. This study also assesses the applicability of a general leak detection methodology involving multiple tests and product levels as well as determines the integrity of 14 ASTs using two or more test methods. Pages: 94

May 1994 | Product Number: J32500 | Price: $98.00

Pub 327
Aboveground Storage Tank Standards: A Tutorial

Presents procedures and examples to help designers, owners, and operators of aboveground storage tanks understand and comply with API's recommended practices, standards, and specifications concerning leak prevention. These API documents provide requirements designed to minimize environmental hazards associated with spills and leaks. The tutorial also shows how the API inspection and maintenance requirements influence the design of such tanks. It does not attempt to address additional rules and requirements imposed by individual jurisdictions or states. Pages: 70

September 1994 | Product Number: J32700 | Price: $80.00

Pub 328
Laboratory Evaluation of Candidate Liners for Secondary Containment of Petroleum Products

Provides comparative data on the physical properties of liner materials as a function of their controlled exposure to fuels and/or additives. Six membrane and two clay liners were tested. Project test results were used to rank the liners in terms of vapor permeation and relative changes in properties such as chemical resistance and liquid conductivity measured after immersion. Pages: 142

January 1995 | Product Number: J32800 | Price: $90.00

Pub 334
A Guide to Leak Detection for Aboveground Storage Tanks

Written for terminal managers, tank owners, operators, and engineers, this report provides useful background on leak detection technologies—volumetric, acoustic, soil-vapor monitoring, and inventory control—for aboveground storage tanks. Characteristics affecting the performance of each technology are discussed. Pages: 38

September 1992 | Product Number: J33400 | Price: $80.00

Pub 340
Liquid Release Prevention and Detection Measures for Aboveground Storage Facilities

Written for managers, facility operators, regulators, and engineers involved in the design and selection of facility components and prevention of liquid petroleum releases, this report presents an overview of available equipment and procedures to prevent, detect, or provide environmental protection from
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such releases. Also presented are the advantages, disadvantages, and relative costs, as well as maintenance and operating parameters of various control measures. Pages: 116

October 1997 | Product Number: J34000 | Price: $90.00

Publ 341
A Survey of Diked-Area Liner Use at Aboveground Storage Tank Facilities
In 1997, API conducted a survey designed to evaluate the effectiveness of diked-area liner systems and to document operational problems involved with their use. The survey data indicated that the effectiveness of liners in protecting the environment is limited because liner systems frequently fail. The data further showed that there are few releases from aboveground storage tanks that would be addressed by diked-area liners. Because there were few releases, the data do not directly demonstrate the effectiveness or ineffectiveness of liner systems in containing releases; however, it was concluded that measures that prevent aboveground storage tank releases are more effective in protecting the environment and are more cost-effective in the long run. Pages: 32

February 1998 | Product Number: J34100 | Price: $80.00

Publ 346
Results of Range-Finding Testing of Leak Detection and Leak Location Technologies for Underground Pipelines
This study reviewed the current leak detection and leak location methods for pressurized underground piping commonly found at airports, refineries, and fuel terminals. Four methods for testing underground pipes of 6 in. to 18 in. in diameter and 250 ft to 2 miles in length were selected for field demonstration. These technologies were constant-pressure volumetric testing, pressure-decay testing, chemical tracer testing, and acoustic emission testing. No single leak detection system was found to work in all situations; site-specific conditions may affect any method, and combinations of methods may provide the most effective approach. Pages: 252

November 1998 | Product Number: J34600 | Price: $90.00

Publ 353
Managing Systems Integrity of Terminal and Tank Facilities
Although the risk management principles and concepts in this document are universally applicable, this publication is specifically targeted at integrity management of aboveground liquid petroleum storage facilities. The applicable petroleum terminal and tank facilities covered in this document are associated with distribution, transportation, and refining facilities as described in Std 2610 and Publ 340. This document covers the issues of overall risk management, risk assessment, risk ranking, risk mitigation, and performance measures applicable to an overall integrity management program. The appendices include two possible methodologies for conducting a risk assessment and a workbook that can be used to perform the risk assessment method outlined in Appendix A. Pages: 316

1st Edition | October 2006 | Product Number: J35300 | Price: $158.00

Publ 4716
Buried Pressurized Piping Systems Leak Detection Guide
Analyzes the performance of different types of leak detection technologies that were applied to buried pressurized piping systems used in airport hydrant fueling and petroleum product terminals. The study was conducted by Argus Consulting and Ken Wilcox Associates on behalf of the Air Transport Association of America and API. This report is intended to provide an overview of the study methodology and results. Pages: 47

April 2002 | Product Number: I47160 | Price: $102.00

Surface Water Research

DR 342
Toxicity Bioassays on Dispersed Oil in the North Sea: June 1996 Field Trials
The purpose of the study described in this report was to gain more information on water column impacts by taking advantage of the ongoing efficacy and monitoring studies done by the Norwegian Clean Seas Association for Operating Companies (NOFO) in order to conduct field toxicity tests.

The goal of this study was to obtain field effects data using shipboard, real-time toxicity tests with field water. These data can then be used in the future to link field effects to laboratory toxicity data. Pages: 108

June 2002 | Product Number: I34200 | Price: $151.00

DR 343
Automated Validation System for the Offshore Operators Committee Mud and Produced Water Discharge Model
Describes the development of an automated validation system for the Offshore Operators Committee Mud and Produced Water Discharge Model (the "OOC Model"), a computer program that predicts the initial fate of drilling fluids, drill cuttings, and produced water discharged into the marine environment. The system automates the process of validating OOC Model predictive capabilities by comparing model predictions with the results of laboratory and field studies of plume behavior. The system was developed to automate the laborious process of confirming that model code enhancements do not degrade the predictive abilities of the OOC Model. The automated validation system approach described here also serves as a template for routine documentation of discharge model performance that could be applied to other models used by industry, consultants, or regulatory agencies. Two of relevant studies found in a literature search were incorporated into the suite of automated test cases for the OOC Model. Summaries of the data sets used for OOC Model validation were prepared in such a way that they could be used conveniently outside of the automated system to validate of any relevant discharge model.

November 2002 | CD-ROM Only

Publ 4664
Mixing Zone Modeling and Dilution Analysis for Water-Quality-Based NPDES Permit Limits
This report is designed to:

• provide an overview of the U.S. Environmental Protection Agency’s (EPA) policies and technical guidance on the role of mixing zones in the National Pollutant Discharge Elimination System (NPDES) permitting process;
• present state mixing zone regulations, policies, and guidance;
• introduce important concepts related to the hydrodynamics of effluent dilution in receiving waters and the design of outfall diffusers;
• review available mixing zone models;
• identify EPA sources for the models;
• discuss strategic issues for dischargers to consider when applying models; and
• describe the use of dye tracer studies as alternatives or supplements to mixing zone models. Pages: 176

April 1998 | Product Number: I46640 | Price: $105.00

Publ 4672
The Use of Treatment Wetlands for Petroleum Industry Effluents
Treatment wetlands are becoming widely used for cleansing some classes of wastewater effluents. Although the use of treatment wetlands is well established for wastewater categories such as municipal waste, stormwater, agricultural wastewater, and acid mine drainage water, their use in treating a variety of industrial wastewaters is less well developed. Constructed
treatment wetlands hold considerable promise for managing some wastewaters generated by the petroleum industry. Several large-scale wetland projects currently exist at oil refineries, and numerous pilot studies of constructed treatment wetlands have been conducted at terminals, gas and oil extraction and pumping stations, and refineries. This report summarizes current information about the use of treatment wetlands for managing petroleum industry wastewaters and also presents background information on the general performance, design, and operation of treatment wetlands based on experience with a variety of wastewater types. Pages: 222

October 1998 | Product Number: I46720 | Price: $105.00

Publ 4676
Arsenic: Chemistry, Fate, Toxicity, and Wastewater Treatment Options
Arsenic is a naturally occurring element in rocks, soils, water, sediments, and biological tissues. It is also present in fossil fuels. Arsenic in the environment has both anthropogenic and natural sources, and certain anthropogenic sources have caused localized adverse effects on ecological systems and human health. Based on extensive review of the literature, this monograph is intended to serve as a reference volume on the sources of arsenic in the environment, the chemistry and fate of arsenic compounds, biomedical effects, the toxicity of arsenic to aquatic and terrestrial species, wastewater treatment options, and regulatory standards for arsenic in the environment. Pages: 196

October 1998 | Product Number: I46760 | Price: $105.00

Publ 4688
Temporary Treatment Options for Petroleum Distribution Terminal Wastewaters
Provides guidance to terminal operators and engineers in evaluating mobile treatment systems for wastewater generated at petroleum distribution terminals. Some of the variables that must be considered include the characteristics of the wastewater, the permitting process, and contractor experience. This document provides sufficient information to guide an operator/engineer through evaluation of mobile treatment systems, including problem definition, treatment technology selection, contractor selection, and implementation. Pages: 73

November 1999 | Product Number: I46880 | Price: $133.00

Publ 4694
Laboratory Analysis of Petroleum Industry Wastewaters
Assists in arranging for and understanding laboratory analysis of petroleum industry wastewaters. Designed for environmental coordinators, managers, corporate staff, and others who must address environmental compliance reporting and regulatory issues. It is also useful for field personnel responsible for obtaining wastewater sample analyses to fulfill environmental regulatory requirements. Guidance and information are provided for setting data quality objectives; planning analyses; selecting a laboratory; and reviewing laboratory reports, detection and quantification limits, quality assurance/quality control practices, method references, method-defined analytes, and statistical calculations. Examples of case studies, laboratory reports, and data calculations are given throughout the manual. Checklists are provided to help users understand, plan, and review laboratory data. Pages: 175

December 1999 | Product Number: I46940 | Price: $133.00

Publ 4695
Understanding and Preparing Applications for Petroleum Facility NPDES Discharge Permits
Assists member companies and others in preparing applications and negotiating with permit authorities for National Pollutant Discharge Elimination System (NPDES) permits for wastewater discharges. The manual is intended to help permittees and permit applicants to understand the permit process from application to final permit and to provide tools and strategies for ensuring that the permit is fair and properly implements the applicable regulations. Much of the information in this manual is based on practical experience with many NPDES permits and applications. Examples and case histories are provided to help the user understand the permit application process. Pages: 220

December 1999 | Product Number: I46950 | Price: $140.00

Publ 4698
A Review of Technologies to Measure the Oil and Grease Content of Produced Water from Offshore Oil and Gas Production Operations
Identifies and evaluates practical alternative methods for routine monitoring of oil and grease in produced waters. Traditional monitoring methods relied on Freon-113r extraction of oil and grease; however, owing to the phase-out of Freon-113r these methods can no longer be used, and new methods must be sought. This study evaluates two infrared detection methods and one fluorescence detection method for identifying and measuring oil and grease in produced waters. Performance information and the correlation of analytical results with the U.S. Environmental Protection Agency's hexane extraction method, Method 1664, are provided. Pages: 138

November 1999 | Product Number: I46980 | Price: $133.00

Publ 4717
Predictors of Water-Soluble Organics (WSOs) in Produced Water—A Literature Review
Reviews the scientific literature on the identity and physical/chemical characteristics of the WSOs in produced water in relation to characteristics of fossil fuels and their reservoirs. Pages: 24

March 2002 | Product Number: I47170 | Price: $80.00

Publ 4721
Analytical Detection and Quantification Limits: Survey of State and Federal Approaches
The purpose of this review was to determine the analytical detection and quantification limit policies of various state agencies. Of particular interest were policies for setting wastewater discharge permit limits at or below detection or quantification limits, for determining compliance with such limits, and for using alternative approaches to determining detection or quantification limits. Although the main focus of this review was on state policies involving water quality issues, included in the review were the policies of programs in other environmental areas as well as in federal regulations and statutes. Pages: 129

June 2002 | Product Number: I47210 | Price: $151.00

Publ 4736
Identification of Key Assumptions and Models for the Development of Total Maximum Daily Loads
Provides the reader with an understanding of the use of models in the development and implementation of total maximum daily loading (TMDL) studies. The report focuses on the types of models used for TMDLs, the key assumptions underlying the models, how models are selected for specific surface waters and impairments, the data required to apply the models to a specific surface water and impairment, and how the predictive capability of the models is assessed. Pages: 64

November 2006 | Product Number: I47360 | Price: $161.00

Publ 4750
Cyanide Discharges in the Petroleum Industry: Sources and Analysis
Because both industrial and municipal dischargers have been issued National Pollutant Discharge Elimination System permits with low (5–20 μg/L) effluent limits for cyanide, there has been considerable interest in the reliability of the available test methods at these low concentrations. This report provides guidance on the measurement, as well as the presence and environmental fate, of cyanide compounds and related chemical species in petroleum industry wastewater effluents. Pages: 42

November 2008 | Product Number: I47500 | Price: $102.00
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Publ 4751
Evaluation of Water Quality Translators for Mercury
Discusses the technical issues and constraints associated with translation of a mercury fish tissue concentration into a water quality criterion, in the use and implementation of the U.S. Environmental Protection Agency’s fish-tissue-based criterion for methylmercury. The report focuses on available analytical methods for evaluating mercury in fish and water; proposed methods for translating a fish tissue concentration for mercury into a concentration in water; and implementation of the mercury criterion in the development of total maximum daily loads and water quality-based effluent limits. Pages: 37
1st Edition | December 2005 | Product Number: I47510 | Price: $76.00

Publ 4756
Interim Permitting Manual—Navigating NPDES Permit Issues on Impaired Waters
Addresses many water quality standards issues that facilities may encounter, including existing uses, use attainability analyses to revise designated uses, fish consumption advisories, whole effluent toxicity criteria, and sediment criteria. The manual will provide guidance on a number of listing issues, including listings due to violations of narrative criteria and fish consumption advisories, delisting, listing waters that are impaired but do not need a total maximum daily loading (TMDL) because they are expected to meet standards through other means, and challenging an erroneous listing determination. The second part of this manual will discuss permitting discharges to impaired waters during the interim period before TMDLs are developed. The manual will describe the development of water quality-based effluent limitations on impaired waters and will also discuss a number of issues for affected facilities to consider during the permitting process, including timing (when the permit should be issued), watershed permitting, verifying the impairment determination before the permit is issued, other controls available to bring the water into attainment, reasonable potential calculations, voluntary reduction measures, nonnumeric effluent limitations, and calculating numeric effluent limitations. Pages: 41
November 2006 | Product Number: I47560 | Price: $82.00

Publ 4782
Petroleum Refining Industry Contribution to Nationwide Surface Water Nutrient Loadings
This analysis was commissioned by API to provide member companies and the public with a better understanding of the water quality problems associated with nutrient discharges to the nation’s surface waters, the current federal and state regulatory responses to nutrient-related water quality problems, the scientific and implementation challenges of nutrient controls, and the petroleum refining industry’s relative contribution to nationwide nutrient discharges to surface waters. This study is based on using available published data on nutrient enrichment of U.S. surface waters; the U.S. Environmental Protection Agency (EPA) and state nutrient control guidance, policy, and water quality standards; prior analysis performed for API by a third-party consultant; petroleum refinery effluent quality data from the EPA Integrated Compliance Information System/National Pollutant Discharge Elimination System (ICIS-NPDES); and permit data collected from the files of the Texas Commission on Environmental Quality (TCEQ). Pages: 35
August 2016 | Product Number: I47820 | Price: $81.00

Publ 4783
Water Management and Stewardship in Midstream, Downstream, and Delivery Operations in the Oil and Gas Industry
This report uses the oil and gas (petroleum) life cycle as an organizing framework for explanation and discussion. The scope of this study is focused on the midstream, downstream, and delivery components of the oil and gas life cycle. Upstream components of the life cycle will be addressed in a future report. This study is intended to inform stakeholders about how the oil and gas industry uses water in the midstream, downstream, and delivery phases of the petroleum life cycle and the various industry-led and regulatory practices employed to conserve and protect water resources. Pages: 46
December 2016 | Product Number: D47830 | Price: $81.00

BIOMONITORING

TR 402
Toxicity to Freshwater Alga, Selenastrum apricornutum
Describes a study conducted to assess the effect of tert-amyl methyl ether on the growth of the freshwater alga, Selenastrum capricornutum. At 24-hour intervals, cell counts and observations of the health of the cells were recorded. EC10, EC50, and EC90 values (the concentration of test material that reduced cell densities by 10%, 50%, and 90%, respectively) were calculated based on cell density 72 and 96 hours after exposure. Pages: 76
February 1995 | Product Number: I00402 | Price: $67.00

TR 406
TAME—Acute Toxicity to Daphnids Under Flow-Through Conditions
Describes the measurement of acute toxicity of tertiary amyl methyl ether (TAME) to daphnids under flow-through conditions. Nominal concentrations of TAME—690, 410, 250, 150, and 89 mg A.I./L—were maintained in exposure vessels and mean exposure concentrations calculated. Biological observations and physical characteristics were recorded at test initiation and at 3, 6, 24, and 48 hours. Pages: 76
February 1995 | Product Number: I00406 | Price: $67.00

TR 407
TAME—Acute Toxicity to Mysid Shrimp (Mysidopsis bahia) Under Static Renewal Conditions
Describes the measurement of acute toxicity of tertiary amyl methyl ether (TAME) to mysid shrimp under static renewal conditions. Nominal concentrations of TAME—1.6, 4.0, 7.3, 15, 30, and 60 mg A.I./L—were maintained by renewing solutions at 24, 48, and 72 hours of exposure. Observations were recorded at test initiation and every 24 hours until the test was terminated. Pages: 84
February 1995 | Product Number: I00407 | Price: $67.00

TR 408
TAME—Acute Toxicity to Rainbow Trout Under Flow-Through Conditions
Describes the measurement of acute toxicity of tertiary amyl methyl ether (TAME) to rainbow trout under flow-through conditions. During the test, nominal concentrations of TAME—950, 570, 340, 210, and 120 mg A.I./L—were maintained and mean exposure concentrations calculated. Biological observations and physical characteristics were recorded at test initiation and every 24 hours thereafter until test termination. Pages: 80
February 1995 | Product Number: I00408 | Price: $68.00

Publ 4610
Critical Review of Draft EPA Guidance on Assessment and Control of Bioconcentratable Contaminants in Surface Waters
Reviews the U.S. Environmental Protection Agency’s proposed methods and underlying assumptions for assessing bioconcentratable contaminants in petroleum industry effluents. It focuses on the effluent option and its application to National Pollutant Discharge Elimination System (NPDES)-permitted discharges from oil refineries, petroleum product marketing terminals, and oil/gas production platforms. The review also includes a general evaluation of the suitability of the tissue residue option for evaluating oil industry effluents. Pages: 134
January 1995 | Product Number: I46100 | Price: $76.00
Bioaccumulation: How Chemicals Move from the Water into Fish and Other Aquatic Organisms

Provides an intermediate-level primer on the accumulation of chemicals by aquatic organisms with emphasis on polycyclic aromatic hydrocarbons. Key factors governing bioaccumulation are described to enhance understanding of this complex phenomenon. Approaches for assessing the bioaccumulation potential of chemicals are examined and an evaluation of each method's advantages and shortcomings is offered. Pages: 54

May 1997 | Product Number: I46560 | Price: $95.00

The Toxicity of Common Ions to Freshwater and Marine Organisms

Whole effluent toxicity (WET) tests have become a common tool in the evaluation of effluent for discharge acceptability. Recent investigations have indicated that deficiencies or excesses of "common" ions (inorganic ions that are nearly always present in most aquatic systems at nontoxic concentrations) can cause significant acute or chronic toxicity in WET tests. This report presents the results of a review of toxicological and physiological data on inorganic ions that have been implicated in causing significant toxicity—bicarbonate, borate, bromide, calcium, chloride, fluoride, magnesium, potassium, strontium, and sulfate. Pages: 114

April 1999 | Product Number: I46660 | Price: $105.00

Bioaccumulation: An Evaluation of Federal and State Regulatory Initiatives

August 2000 | Product Number: I47010 | Price: $96.00

Analysis and Reduction of Toxicity in Biologically Treated Petroleum Product Terminal Tank Bottoms Water

Objectives of this study were to measure toxicity in biologically treated petroleum product terminal tank bottoms waters, identify the chemical constituents causing that toxicity, identify treatment options, and measure the effectiveness of the treatment techniques in removing the constituents and reducing toxicity. Nine gasoline and two diesel tank bottoms water samples were collected from petroleum product terminals at various geographical locations. The samples were normalized to a fixed chemical oxygen demand, then subjected to biological treatment. Treated samples were tested for acute toxicity in 24-hour exposure tests using Mysidopsis bahia and for chronic toxicity in 7-day static renewal toxicity tests also using Mysidopsis bahia. Biological treatment was observed to effectively remove metals but produced highly variable degrees of chemical oxygen demand, biochemical oxygen demand, and total organic carbon. Pages: 84

April 1998 | Product Number: I46650 | Price: $86.00

Impacts of Petroleum Product Marketing Terminals on the Aquatic Environment

Examines the potential impact of petroleum product marketing terminal (PPMT) wastewater discharges to aquatic environments to ascertain if there is a need for more stringent regulations. Wastewater discharges by PPMTs were evaluated, the constituents normally present in these waste streams were identified, and their possible aquatic impacts were investigated. It was determined that PPMT wastewater discharges pose little environmental risk; therefore, stricter regulations for PPMT discharges are unwarranted. Pages: 52

April 1999 | Product Number: I46730 | Price: $105.00
Health and Environmental Issues

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Publ 4690
A Guide for the Use of Semipermeable Membrane Devices (SPMDs) as Samplers of Waterborne Hydrophobic Organic Contaminants
Provides basic information and guidance on SPMD technology and its appropriate use in aquatic systems. Emphasis is given to methods, applications, and theoretical issues related to the use of SPMDs for monitoring priority pollutant polycyclic aromatic hydrocarbons, but other classes of hydrophobic organic contaminants are covered as well. This document includes key information on SPMD background, rationale, theory and modeling, technical considerations, supplier/source, chemical analysis and quality control, bioassay screening, comparability to biomonitors, examples of use, and sources of addition information. However, covering all potential environmental applications (e.g., vapor phase sampling) and relevant research results is beyond the scope of this work. Finally, use of this guide does not obviate the need for proper review and oversight procedures prior to the initiation of a project with SPMDs. Pages: 172
March 2002 | Product Number: I46900 | Price: $143.00

Publ 4700
Primer for Evaluating Ecological Risk at Petroleum Release Sites
Designed to help site and facility managers acting as site investigators decide how and to what extent to address ecological risks that may result from a release of petroleum products. The focus is on "downstream" operations related to transportation, distribution, or marketing of petroleum products, but the general principles may be adapted to other parts of the industry as well. The ecological risk assessment process is briefly described, and guidance is given about the preliminary investigation to assess the possible nature and extent of risk. This information is an initial part of a tiered decision-making process used to determine the depth and breadth of the site investigation. Pages: 52
May 2001 | Product Number: I47000 | Price: $112.00

EFFLUENTS: REFINING

DR 148
Identification of Organic Toxicants in Treated Refinery Effluents
Effluents from five oil refineries were examined for the presence of chronic toxicity caused by nonpolar, organic compounds. U.S. Environmental Protection Agency (EPA) guidelines for Phase I toxicity characterization procedures were used. The refinery effluent containing the most nonpolar toxicity was selected for more detailed analyses and identification of the nonpolar toxicants using Phase II procedures. Extraction and elution conditions were modified to increase chronic toxicity recovery and also reduce the complexity of the nonpolar organic effluent fraction containing toxicity. Results showed that simple modifications of EPA guidance for C18 solid phase extraction procedures, combined with proper toxicity testing conditions, successfully tracked and isolated toxicity in an effluent fraction. Findings also indicated that sources of refinery effluent toxicants were a phenol associated with a jet fuel additive, and two brominated organics believed to be reaction products of cooling tower water treatment chemicals, rather than from crude oil constituents. Pages: 64
December 1997 | Product Number: I00148 | Price: $67.00

Publ 352
This report is the ninth in a series of reports presenting the results of the API Annual Refining Residual Survey. Included in the report are detailed assessments of generated quantities and management practices for 14 residual streams representing approximately 80% of all residuals managed at U.S. refineries. Prior to the 1997 survey, the management techniques had included recycling to the cat cracker, which referred to routing a residual to a catalytic cracking unit. Further study revealed that the quantity for residuals actually recycled to a cracking unit was very small—perhaps nonexistent—and was therefore deleted from the 1997 survey. Data for prior years were adjusted. Industry trend toward increased recycling of residuals has continued. Pages: 108
September 1999 | Product Number: J35200 | Price: $133.00

OIL SPILLS

Evaluation and Comparison of Habitat and Resource Equivalency Analysis as Used to Conduct OPA NRDA
Focuses on the use of (Resource Equivalency Analysis) REA and Habitat Equivalency Analysis (HEA) when assessments are conducted under OPA. In this setting, the models are typically implemented with input from both the responsible party (RP) and the trustees. It has been suggested that, when used in this manner, REA and HEA need no strong technical underpinnings; if they are useful in reaching settlements, they have served a useful function. Provides a general understanding of REA and HEA, including their origins, relationship to economic methods, and application in real-world spill settings. Pages: 65
1st Edition | June 2022 | You may download a PDF of this document from https://www.oilspillprevention.org

Swift Water SpillResponse Guide
Contains a set of operational tools and references to assist in the response to spilled oils on inland swift waters, which are waters traveling at speeds greater than 2.5 mph. Pages: 41
1st Edition | April 2021 | Product Number: GD1605
You may download a PDF of this document from https://www.oilspillprevention.org

Bull D16
Suggested Procedure for Development of a Spill Prevention Control and Countermeasure Plan
Assists the petroleum industry in understanding the SPCC regulation in light of the latest rule (40 CFR Part 112) and to offer guidance for developing SPCC Plans wherever they are needed. Included is a template for developing SPCC plans (i.e., onshore excluding production; onshore oil production, oil drilling or worker; offshore oil drilling, production, or worker) in accordance with the regulation and guidance, instruction, and clarification for completing each section of the template. The purpose of this rulemaking was to establish procedures, methods, and equipment to prevent and contain discharges of oil from non-transportation-related onshore and offshore facilities, thus preventing pollution of navigable waters of the United States. The development of this bulletin was commissioned by API and performed by O’Brien’s Response Management Inc. The purchase of D16 includes: Bulletin D16, the Plan Template, and a CD-ROM with the Microsoft® Word version of the Plan Template. Pages: 65
5th Edition | April 2011 | Product Number: GD1605
Price: $279.00 | Template Only: Price: $103.00

DR 145
Identification of Oils that Produce Non-Buoyant In-Situ Burning Residues and Methods for Their Recovery
There is an environmental concern about the possibility of sinking residues from in-situ burns (ISBs), leading to the potential for damage to the aquatic bottom zone. The objective of the study presented in this publication was to start the process of establishing operational tools and procedures for dealing with such nonbuoyant burn residues. There were two tasks: develop protocols for identifying ISB residues likely to sink, and evaluate options for dealing with those residues in the field. Pages: 62
February 2002 | Product Number: I00148 | Price: $67.00

TR 425
Options for Minimizing Environmental Impacts of Inland Spill Response
The purpose of this guide is to support contingency planners and emergency responders in evaluating response techniques and selecting those techniques that will most effectively prevent or minimize adverse environmental impacts from inland spills. In this guide, inland spills are defined as those that affect terrestrial and freshwater habitats, whereas coastal and marine spills affect water bodies and habitats that are under the influence of tides and marine waters. Inland spills have unique characteristics and behavior, may have the
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potential to pose greater risks to the public, and often necessitate more
intensive removal methods, compared to coastal and marine spills. Therefore,
choosing the best response options and implementing these in the most
environmentally appropriate manner can minimize adverse impacts of a
response. Pages: 102

October 2016 | Product Number: I42500 | For a free copy of this document,
please visit http://www.oilspillprevention.org/~/media/Oil- Spill-Prevention/
spillprevention/r-and-d/inland/options-for-minimizing-e20161228t134857.pdf

TR 1149-3
Canine Oil Detection: Field Trials Report

Field trials were undertaken in June 2015 to evaluate the applicability of
canine oil detection teams (referred to as K9-SCAT) to support assessment
surveys to locate and delineate the horizontal extent of subsurface oil for
shoreline and inland spills response operations. The study is part of the
American Petroleum Institute (API) Joint Industry Task Force (JITF) Shoreline
Protection & Clean-Up Technical Working Group within the Oil Spill
Preparedness and Response program. Pages: 59

June 2016 | Product Number: I114930 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/Oil-
Spill-Prevention/spillprevention/r-and-d/shoreline-protection/canine-

TR 1149-4
Canine Oil Detection (K9-SCAT) Guidelines

The purpose of these Guidelines is to provide information on the potential for
detection canines to support a shoreline or inland oiled area assessment
(SCAT) program. This information includes how oil detection dogs use their
sense of smell and what they can do to locate and delineate surface and
subsurface oil, the current state of knowledge regarding situations and types
of support surveys that a K9-SCAT team can undertake as part of a SCAT
program, and how to plan and design a K9-SCAT survey and collect the
appropriate data to document that mission. Pages: 81

July 2016 | Product Number: I114940 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/Oil-
Spill-Prevention/spillprevention/r-and-d/shoreline-protection/canine-

TR 1151-4
Mechanical Treatment of Sand Beaches Historical Library Report

This report describes the Mechanical Treatment Library, which represents part
of a multiphase study conducted by the American Petroleum Institute to
improve the mechanized treatment of spilled oil on sand beaches. Pages: 5

June 2016 | Product Number: I115140 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/Oil-
Spill-Prevention/spillprevention/r-and-d/shoreline-protection/mechanical-
treatment-of-sand-beaches-his.pdf

TR 1152
Industry Recommended Subsea Dispersant Monitoring Plan

Describes a proposed method for monitoring the efficacy of subsea
dispersant injection (SSDI) to inform operational oil spill response decision-
making by the Unified Command (UC). It is intended to be used as a model
that can be modified to meet the needs of a specific incident. This plan is
intended to complement the Subsea Dispersant Operations Plan, and it is
 imperative that effective communications be maintained between the
organizational units that implement both. Pages: 5

November 2020 | Product Number: I115201 | For a free copy of this
document, please visit http://oilspillprevention.org/~/media/Oil-Spill-
Prevention/spillprevention/r-and-d/dispersants/api-1152-e1-industry-
recommended-subsea.pdf

TR 1153-1
Tidal Inlet Protection Strategies (TIPS): Phase 1—Final Report

This report presents an approach for the development of Tidal Inlet Protective
Strategies (TIPS) that are based on knowledge of the physical systems
involved and feasibility of tactical options. Strategies and tactics identified
using the results of this study are subject to real-time conditions and pre-
spill planned strategies should be re-evaluated during a response. The report
considers potential tactics at a level appropriate for strategic planning, but is
not intended to provide instructions for the implementation of those tactics.
The guide is intended to be used by strategic planners and responders, and
may be appropriate for inclusion in an Area Contingency Plan (ACP) or a
Geographic Response Plan (GRP). Pages: 53

January 2014 | Product Number: I115310 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/oil-
spill-prevention/spillprevention/r-and-d/shoreline-protection/tidal-
inlet-protection-strategies-final.pdf

TR 1153-2
Tidal Inlet Protection Strategies (TIPS) Field Guide

This field guide is intended to be used by strategic planners and responders
with the purposes of explaining the physical dynamics and characterization
of a tidal inlet, identifying oil transport and operational constraints and
opportunities for tidal inlet protection, identifying potential strategies for
protection, and providing considerations and checklists for tidal inlet
protection. Pages: 27

January 2016 | Product Number: I115320 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/Oil-
Spill-Prevention/spillprevention/r-and-d/shoreline-protection/tips-
field-guide-final.pdf

TR 1154-1
Sunken Oil Detection and Recovery

The purpose of this report is to identify and document current best practices
and proven technologies possessing the potential to more effectively (1)
detect, delineate, and characterize, (2) contain, and (3) recover sunken oil,
defined as the accumulation of bulk oil on the bottom of a water body; and
recommend research and development for the highest potential new
technologies. Pages: 116

February 2016 | Product Number: I115410 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/Oil-
Spill-Prevention/spillprevention/r-and-d/shoreline-protection/sunken-oil-technical-
report-pp2.pdf

TR 1154-2
Sunken Oil Detection and Recovery Operational Guide

This operational guide is a companion document to the technical report,
Sunken Oil Detection and Recovery, which identifies and documents current
best practices and alternative technologies possessing the potential to more
effectively detect, contain, and recover sunken oil, defined as the
accumulation of bulk oil on the bottom of a water body. The technical report
includes summaries and lessons learned from 36 case studies of oil spills
where a significant amount of the oil sank. For each technology, it includes a
detailed description of the method, advantages and disadvantages, and
summary tables—the kinds of information needed to select the most effective
approaches to sunken oil detection and recovery. Please refer to the
technical report for supporting information not in this guide. Pages: 28

February 2016 | Product Number: I115420 | For a free copy of this
document, please visit http://www.oilspillprevention.org/~/media/Oil-
Spill-Prevention/spillprevention/r-and-d/inland/sunken-oil-ops-
guide.pdf
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TR 1155-1
Shoreline In Situ Treatment (Sediment Mixing and Relocation) Library Report

The American Petroleum Institute (API) completed a study to improve the knowledge and understanding of shoreline sediment mixing and relocation techniques. The objective of the study is to provide the following tools: (1) Shoreline In Situ Treatment Library: an online library containing academic, scientific, technical, and operational literature, including links to electronic documents, where available; (2) Shoreline In Situ Treatment Fact Sheet: a non-academic educational guide, providing an overview of in situ treatment and Oil Particle Aggregate (OPA) formation for training and planning (TR 1154-2); and (3) Shoreline In Situ Treatment Job Aid: a non-academic operations tool for use during a response by Operations, the Environmental Unit (EU), and Shoreline Cleanup Assessment Technique (SCAT) teams for in situ treatment planning and operations, and to demonstrate to agencies how effectiveness and effects would be monitored (TR 1154-3). This report describes the first item of this program, the Shoreline In Situ Treatment Library, which is intended to locate and make available documents relevant to shoreline in situ (sediment mixing and relocation) treatment techniques. The library is provided in simple MS Excel spreadsheet and MS Access database formats, which are described in this report. Pages: 5

June 2016 | Product Number: I115510 | For a free copy of this document, please visit www.oilspillprevention.org/~media/Oil-Spill-Prevention/spillprevention/r-and-d/shoreline-protection/shoreline-in-situ-treatment-report.pdf

TR 1155-2
Shoreline In Situ Treatment (Sediment Mixing and Relocation) Fact Sheet

This fact sheet explains the use of shoreline in situ techniques, including wet and dry mixing (also known as tilling or aeration) and sediment relocation (also known as surf washing or berm relocation) for oil spill cleanup. Burning is outside the scope of this fact sheet. Pages: 20


TR 1155-3
Shoreline In Situ Treatment (Sediment Mixing and Relocation) Job Aid

The purpose of this job aid is to provide:

• a non-technical tool for planning and conducting shoreline in situ treatment for use by Shoreline Cleanup Assessment Technique (SCAT) teams as they develop shoreline treatment recommendations (STRs); Environmental Unit personnel and planners during the decision process; and Shoreline Operations to implement the treatment tactics.

• Decision guides and checklists to assist in understanding the advantages and consequences of shoreline in situ treatment options, and the decision, review, and approval process for shoreline in situ treatment.

This job aid provides guidance for the planning and implementation of in situ techniques on shorelines and rivers, including wet and dry mixing (also known as tilling or aeration) and sediment relocation (also known as surf washing or berm relocation) for oil spill cleanup. Burning on the shoreline is outside the scope of this job aid. Pages: 26


TR 1253
API Selection and Training Guidelines for In Situ Burning Personnel

This guidance is intended to be international in its scope with United States regulatory requirements used as exemplars that may be replaced by applicable jurisdictional requirements. References to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulation (29 CFR 1910.120) and the Incident Command System (ICS) may be replaced by local jurisdictional requirements outside of the United States. In the absence of applicable local requirements, HAZWOPER and ICS should be considered as a recognized standard of practice. This guidance is not intended to instruct the reader on how to conduct an in situ burn, or overlap with either of the in situ burn manuals (TR 1251 and TR 1252). The purpose of this guidance is to provide a systematic approach to assist users in the selection of responder qualifications and the training requirements for responders to in situ burning of spilled oil in the open water environment, ice conditions on water bodies, and the inland environment, including spills affecting waterways and those lakes not considered open water. It is not intended to describe when to use in situ burning. Pages: 84

October 2016 | Product Number: I12530 | For a free copy of this document, please visit http://www.oilspillprevention.org/~media/Oil-Spill-Prevention/spillprevention/r-and-d/in-situ-burning/training-guide-for-isl-personnel.pdf

TR 1254
In-Situ Burning Guidance for Safety Officers and Safety and Health Professionals

Supports the incident Safety Officer (SOFR) and other safety and health professionals involved or having responsibilities in the incident response during oil spills where the strategy of controlled in-situ burning (ISB) can be used. Typically, oil spill response operations, including those involving ISB, are conducted using the organization structure prescribed by the National Incident Management System Incident Command Systems (NIMS/ICS) (DHS, 2009). The SOFR is position appointed as part of the Command Staff. As stated in NIMS/ICS guidance, the SOFR’s function “is to develop and recommend measures for ensuring personnel safety and to assess and/or anticipate hazardous and unsafe situations.” (DHS, 2009). This would include operations relating to ISB if this response action is selected for use during an oil spill. Pages: 114


TR 1256
In Situ Burning: A Decision Maker’s Guide

This report is intended to describe the use of and requirements for in situ burning (ISB) as an effective response technology for oil spills on land (including wetlands), on water, or in ice and snow. It was developed to serve as a reference for oil spill response policy makers and decision makers (government, industry, and other stakeholders). This report discusses requirements for ISB and includes a summary of oil chemistry, behavior, and weathering, which are important factors when making decisions to use ISB. Further, it allows decision makers to better understand the anticipated benefits and limitations to be considered when using this technology for an oil spill. Pages: 74


Publ 4558
Options for Minimizing Environmental Impacts of Freshwater Spill Responses

Developed for contingency planners and field responders, this guide provides information on 29 response methods and classifies their relative environmental impact for combinations of 4 oil types and 12 freshwater environments and habitats. Spill topics of concern in freshwater settings are discussed, including public health, conditions under which oil might sink in freshwater, oil behavior in ice conditions, permafrost, and firefighting foam use. Pages: 146

February 1995 | Product Number: I45580 | Price: $95.00
Health and Environmental Issues

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Bull 4565
Species and Habitat Conservation—Industry Fundamentals
Provides oil and natural gas operators with information on conservation measures to support planning and execution of onshore oil and natural gas projects in the United States for conventional and unconventional (shale) developments. The species and habitat conservation fundamentals presented are processes and practices used to manage potential risks of project-related impacts on wildlife and habitats. These processes and practices are aimed primarily at industry professionals responsible for managing the potential risks of project impacts on biodiversity, but may also be used by contractors, subcontractors, and vendors. Pages: 44

1st Edition | November 2022 | Product Number: G456501 | Price: $94.00

Publ 4640
The growing concern for petroleum contamination in freshwater ecosystems led API to generate an annotated bibliography to serve as a valuable resource of existing literature on petroleum and its impact on the freshwater environment. It cites literature from 1946 through 1993 on the impact of petroleum products and oil spill cleanup agents on the biota of freshwater ecosystems, on the chemistry and fate of petroleum and cleanup agents in freshwater, and on the review of cleanup methods in freshwater systems. The electronic companion infobase has been prepared in two versions to enhance the value of the annotations: (1) the VIP editable version of the infobase allows the user to add new references, make personal annotations (e.g., bookmarks, notes, highlights, and pop-ups), and delete unwanted references, and (2) the standard noneditable version is read-only. Both versions are completely searchable; each word in the bibliography is indexed. Pages: 224

March 1997 | (noneditable) Product Number: I46400 | Price: $66.00
(VIP editable) Product Number: I46401 | Price: $81.00

Publ 4649
The Use of Chemical Countermeasures Product Data for Oil Spill Planning and Response, Volumes I and II
Addresses many of the issues related to potential uses of chemical countermeasure products in mitigating the environmental impacts of spilled oil. Volume I summarizes workshop deliberations and presents consensus recommendations from the sessions on environmental effects, effectiveness, and decision making. Volume II contains 13 background papers for workshop participants on various scientific and operational topics, e.g., aquatic toxicity, oil weathering, and decision making. Pages: 380

April 1995 | Product Number: I46490 | Price: $62.00

Publ 4675
Fate and Environmental Effects of Oil Spills in Freshwater Environments
Provides basic information necessary for the formulation of spill response strategies that are tailored to the specific chemical, physical, and ecological constraints of a given spill situation. It summarizes environmental effects from inland oil spills into fresh surface waters. It provides technical information for persons responsible for inland spill response and cleanup, for researchers, and for others dealing with protection of the environment from possible oil spill hazards. This research identifies, describes, and compares the behavior, fate, and ecological implications of crude oil and petroleum products in inland waters. Pages: 160

December 1999 | Product Number: I46750 | Price: $154.00

Publ 4684
Compilation and Review of Data on the Environmental Effects of In-Situ Burning of Inland and Upland Oil Spills
Burning of spilled oil provides a relatively easy, low-cost cleanup method by reducing removal, transportation, and disposal costs as well as reducing the time required for cleanup. This study was commissioned by API to identify those environmental conditions under which burning should be considered as a response option for oil spilled in inland and upland habitats. This report presents a summary of the case histories and lessons learned from previous uses of burning in inland environments, with and without oil. While some information on human health and safety is included, the focus of this report is on the environmental fate and effects of in-situ burning. Pages: 198

March 1999 | Product Number: I46840 | Price: $128.00

Publ 4689
Chemical Human Health Hazards Associated with Oil Spill Response
Contains an overview of human health hazards that could be encountered by personnel involved with spills or leaks of petroleum products. The discussion includes potential risks of basic components and products of concern. Environmental factors that may affect exposure and a brief summary of other exposure considerations are also included. Pages: 51

August 2001 | Product Number: I46890 | Price: $90.00

Publ 4691
Fate of Spilled Oil in Marine Waters: Where Does It Go? What Does It Do? How Do Dispersants Affect It?
This is the first of three short summary publications commissioned for preparation by API for oil spill response decision-makers to provide concise easy-to-use information on understanding the fate of spilled oil and dispersants, their use, effectiveness, and effects. When making decisions regarding dispersant use, or any other oil spill response countermeasure, it is important to have a clear understanding of the overall fate of the oil entering the environment. With this publication you will receive a complete yet concise review of oil chemistry and oil weathering. Also provided is information on how to interpret dispersant information more effectively and how dispersants alter or affect the weathering processes of oil. Pages: 30

March 1999 | Product Number: I46910 | Price: Free*

Publ 4692
A Decision-Maker’s Guide to Dispersants: A Review of the Theory and Operational Requirements
This is the second of three short summary publications commissioned for preparation by the API for oil spill response decision-makers to provide concise easy-to-use information on understanding the fate of spilled oil and dispersants, their use, effectiveness, and effects. This publication provides a summary of dispersant technology. It focuses on chemical dispersant technology and the information needs of decision-makers regarding the use of chemical dispersants and their potential benefits and risks. A reference that every oil spill response decision-maker must have! Pages: 52

March 1999 | Product Number: I46920 | Price: Free*

Publ 4693
Effects of Oil and Chemically Dispersed Oil in the Environment
Crude oil is a complex, highly variable mixture of hydrocarbons and other trace compounds, and exposure may cause a variety of adverse effects. Dispersants are mixtures of chemicals, solvents, and surfactants used to reduce oil viscosity and help the oil break up and disperse into the water column. This booklet is intended to help bridge the gap in understanding information about exposure and effects of untreated oil and chemically dispersed oil in the marine environment. Pages: 50

May 2001 | Product Number: I46930 | Price: Free*
Health and Environmental Issues

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Publ 4706
Environmental Considerations for Marine Oil Spill Response
API is offering a new revision of Environmental Considerations for Marine Oil Spill Response, generally known as the “Marine Manual.” API, the National Oceanographic and Atmospheric Administration, the U.S. Coast Guard and the U.S. Environmental Protection Agency developed the Marine Manual for oil spill contingency planners and field responders. The information allows both planners and responders to identify techniques that minimize the ecological impact of both the response action and the spilled oil. Matrix tables allow comparison of 28 different methods for response, and classify their relative environmental impacts for combinations of 5 different oil types and 25 marine habitats. Pages: 322
July 2001 | Product Number: I47060 | Price: $82.00

Publ 4719
Requesting Regulatory Concurrence for Subsea Dispersant Use
Provides guidelines, forms, and checklists recommended for use by industry. The API guidelines describe the RRT concurrence request process, proposed information submission recommendations that are specific to subsea dispersant injection, and the use of Spill Impact Mitigation Analysis (SIMA) and other forms of tradeoff analyses as decision support tools. Also included are practical flowcharts and checklists specific to Incident Management Team (IMT) positions that are integral to subsea dispersant use, and guidance on the preparation of subsea dispersant operations and monitoring plans. This document provides operational guidelines intended for actual events or exercises and provides a basis for engagement from a range of relevant stakeholders. Pages: 44
June 2017 | Product Number: I47911 | Price: $86.00

Publ 4724
Recovery of Four Oiled Wetlands Subjected to In-Situ Burning
Four sites, including a diversity of oil types burned and habitats, were selected for follow-up review and evaluation of the effects of in-situ burning (ISB): Mosquito Bay spill in Louisiana, burned in April 2001; Lakehead Pipe Line spill in Ruffy Brook, Minnesota, burned in July 2000; Louisiana Point pipeline spill, burned in February 2000; and Chevron Pipe Line Milepost 68 near Corinne, Utah, burned twice, in March and April 2000. Site visits were conducted in July (Minnesota and Utah) and October (two sites in Louisiana). All available data on each site were collected from those involved in the burns and the post-burn monitoring. State and local monitoring data provided additional information. The site was photographed from the same position and perspective as photographs taken during and shortly after the spill and burn, creating time-series photography as a visual record of the use of in-situ burning and vegetative recovery. In combination with quantitative field measurements, photography provides an excellent understanding of the specific site conditions and how the results might apply to other sites. Because this report includes a large number of color photographs for the sites, which would make traditional printing of hardcopy reports very expensive, the report is being published in digital format on CD-ROM.
June 2003 | Product Number: I47240 | Price: $93.00

Publ 4735
In-Situ Burning: The Fate of Burned Oil
The in-situ burn (ISB) is an oil spill response option that has been used far less frequently than mechanical countermeasures (booms, skimmers, etc.), and consequently, familiarity with ISB operations is limited. Decision-makers need a comprehensive understanding of the oil, how it acts in the environment, and aspects of the burn process in order to understand the behavior of any ISB by-products and the potential impacts from an in-situ burn. This document was designed to capture that knowledge and present it clearly and concisely so you will have the necessary information to understand issues associated with fate and effects of oil to which ISB has been applied. It is not a set of instructions for carrying out a specific ISB. Pages: 54
April 2004 | Product Number: I47351 | Price: Free*

Publ 4740
In-Situ Burning—A Decision-Maker’s Guide to In-Situ Burning
This scenario is fictitious, but the circumstances are possible. In-situ burning (ISB) is a response option that has been used less frequently than countermeasures like booms and skimmers or contaminated soil removal. Consequently, familiarity with the pros and cons of this option is limited. There are ISB “experts” in the United States and internationally, but the intentional practice of this response tool remains relatively limited for both on-water and on-land situations. This booklet is the second in a series that were developed as reference documents for oil spill response decision-makers, it provides the reader with a comprehensive, concise, yet clear summary of the operational requirements and limitations for ISB and allows decision-makers to better understand the function of in-situ burning and the tradeoffs facing decision-makers in smithey technology when responding to an oil spill on land or on water. Pages: 76

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Priority Topics for Research and Development in Oil Spill Response

TR 92-001
An Analysis of Historical Oil Spills and Current Cleanup Requirements to Aid in Selecting New Technologies for Spill Cleanup Operations

TR 92-002
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TR 92-003
Tenyo Maru Oil Spill (Remote Sensing Data Analysis)

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TR 93-002.3
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TR 94-015
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TR 94-018
Potential Use of the Microtox Assay as an Indicator of the Toxicity of Dispersed Oil

TR 94-019
Aerial Dispersant Application: Field Testing Research Program (Alpine, Texas)

TR 95-001
Phase 2: At Sea Towing Tests of Fire Resistant Oil Containment Booms

TR 95-002
Isolation and Identification of Compounds and Mixtures Which Promote and Stabilize Water-in-Oil Emulsions

TR 95-003
Phase 3: Oil Containment Boom at Sea Performance Tests

TR 95-004
Utility of Current Shoreline Cleaning Agent Tests in Field Testing
Health and Environmental Issues

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TR 95-005
An Analysis of Historical Opportunities for Dispersant and In-Situ Burning Use in the Coastal Waters of the United States Except Alaska

TR 95-007
Field Evaluation of Bioremediation in Fine Sediments

TR 95-010
Laboratory Studies of the Properties of In-Situ Burn Residues

TR 95-011
Formulation of New Fireproof Boom Designs

TR 95-012
Dispersed Oil and Dispersant Fate and Effects Research: California Program Results for 1994–1995

TR 95-014
The Effects of Oil and Chemically Dispersed Oil in Tropical Ecosystems: 10 Years of Monitoring Experimental Sites

TR 95-015
Reduction in the Toxicity of Crude Oil During Weathering on the Shore

TR 95-017
Mesoscale In-Situ Burn Aeration Test

TR 95-018
Proceedings of the Third Meeting of the Chemical Response to Oil Spills: Ecological Effects Research Forum

TR 95-019
A Mental Models Approach to Preparing Summary Reports on Ecological Issues Related to Dispersant Use

TR 95-020.1
Development of Protocols for Testing Cleaning Effectiveness and Toxicity of Shoreline Cleaning Agents (SCAs) in the Field

TR 95-020.2
Test Cleaning Effectiveness and Toxicity of Shoreline Cleaning Agents (SCAs): Data Report

TR 95-021
New Brunswick Bird Deterrent Study

TR 95-022
Proceedings of the Workshop on Technical Issues Related to Mesocosm Research in the Coastal Oil Spill Simulation System Facility

TR 95-024
Oil Weathering Study of the Morris J. Berman No. 6 Cargo Oil

TR 95-025
Oil Weathering Study of Arabian Light Crude Oil

TR 95-026
Oil Weathering Study of Maya Crude Oil

TR 95-027
Weathering Characterization of Heavy Fuels

TR 95-029
Dispersant Effectiveness: Phase 3

TR 95-030
Standard Method for Viscosity Measurement of Water-in-Oil Emulsions

TR 95-031
Toxicity Assessment of Oiled and Treated Sediments from and Experimental Bioremediation Site in Delaware Bay, USA

TR 95-033
Large Scale Testing of the Effect of Demulsifier Addition to Improve Oil Recovery Efficiency

TR 95-034
Evaluation of Oil Spill Cleanup Techniques in Coastal Environments

TR 95-038
Key Factors that Control the Efficiency of Oil Spill Mechanical Recovery Methods

BIENNIAL OIL SPILL CONFERENCE PROCEEDINGS

These conferences are sponsored by API, the U.S. Environmental Protection Agency, the U.S. Coast Guard, the International Petroleum Industry Environmental Conservation Association, and the International Maritime Organization. They address oil-spill prevention, behavior, effects, control, and cleanup.

Publ 4575
Proceedings of the 1991 Oil Spill Conference Infobase

The Proceedings of the 1991 Oil Spill Conference are available on 3.5-in. or 5.25 in. computer diskette. More than 700 pages of proceedings, including hundreds of illustrations, can be loaded onto IBM or IBM-compatible personal computers. The minimum requirements of 512 KB RAM, hard disk drive, VGA monitor, and DOS 3.0 or higher, are listed in the reference manual that gives complete instructions for operating the infobase. A tutorial and glossary are included.

January 1993 | Product Number: I45751 | Price: $71.00

Publ 4675
Fate and Environmental Effects of Oil Spills in Freshwater Environments

Provides basic information necessary for the formulation of spill response strategies that are tailored to the specific chemical, physical, and ecological constraints of a given spill situation. It summarizes environmental effects from inland oil spills into fresh surface waters. It provides technical information for persons responsible for inland spill response and cleanup, for researchers, and for others dealing with protection of the environment from possible oil spill hazards. This research identifies, describes, and compares the behavior, fate, and ecological implications of crude oil and petroleum products in inland waters. Pages: 160

December 1999 | Product Number: I46750 | Price: $154.00

Publ 4678
Compilation and Review of Data on the Environmental Effects of In-Situ Burning of Inland and Upland Oil Spills

Burning of spilled oil provides a relatively easy, low-cost cleanup method by reducing removal, transportation, and disposal costs as well as reducing the time required for cleanup. This study was commissioned by API to identify those environmental conditions under which burning should be considered as a response option for oil spilled in inland and upland habitats. This report presents a summary of the case histories and lessons learned from previous uses of burning in inland environments, with and without oil. While some information on human health and safety is included, the focus of this report is on the environmental fate and effects of in-situ burning. Pages: 198

March 1999 | Product Number: I46840 | Price: $128.00
Health and Environmental Issues

To purchase individual API standards, visit apiwebstore.org

Overview of Exploration and Production Waste Volumes and Waste Management Practices in the United States

Defines the history, development, and current trends of waste volume and waste management practices in the United States. The report includes a discussion of the methodologies used to determine waste volumes, an analysis of waste management practices, and a summary of the findings. The report also includes a chapter on the economic impact of waste management, and a chapter on the environmental impact of waste management.

May 2000

Characterization of Exploration and Production Associated Wastes

Provides a comprehensive characterization of exploration and production associated wastes, including a detailed description of the types of wastes generated, the methods used to characterize the wastes, and the results of the characterization. The report also includes a discussion of the environmental impact of the wastes, and a summary of the findings.

November 1996

Overview of Soil Permeability Test Methods

Provides a comprehensive overview of soil permeability test methods, including a discussion of the types of tests, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of soil permeability testing, and a summary of the findings.

April 1999

Evaluation of the Treatment Technologies for Listed Petroleum Refinery Wastes

Provides a comprehensive evaluation of the treatment technologies for listed petroleum refinery wastes, including a discussion of the types of technologies, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of the technologies, and a summary of the findings.

December 1987

Evaluation of Limiting Constituents Suggested for Land Disposal of Exploration and Production Wastes

Provides a comprehensive evaluation of the limiting constituents suggested for land disposal of exploration and production wastes, including a discussion of the types of constituents, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of the constituents, and a summary of the findings.

August 1993

Guidelines for Commercial Exploration and Production Waste Management Facilities

Provides guidelines for the design and operations of commercial E&P waste management facilities, including a discussion of the types of facilities, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of the facilities, and a summary of the findings.

March 2001


Provides a comprehensive guide to the evaluation of sediment toxicity tests for biomonitoring programs, including a discussion of the types of tests, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of the tests, and a summary of the findings.

November 1994

User’s Guide: Evaluation of Sediment Toxicity Tests for Biomonitoring Programs

Provides a comprehensive guide to the evaluation of sediment toxicity tests for biomonitoring programs, including a discussion of the types of tests, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of the tests, and a summary of the findings.

November 1994

Overview of Soil Permeability Test Methods

Provides a comprehensive overview of soil permeability test methods, including a discussion of the types of tests, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of soil permeability testing, and a summary of the findings.

April 1999

Evaluation of the Treatment Technologies for Listed Petroleum Refinery Wastes

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December 1987

Evaluation of Limiting Constituents Suggested for Land Disposal of Exploration and Production Wastes

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August 1993

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Provides guidelines for the design and operations of commercial E&P waste management facilities, including a discussion of the types of facilities, the test procedures, and the results of the tests. The report also includes a discussion of the environmental impact of the facilities, and a summary of the findings.

March 2001
Health and Environmental Issues

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Publ 4600

Provides scientifically defensible guidelines for land management of exploration and production wastes containing metals. It provides the technical support for recommended maximum concentrations of 12 metals. The guidance values for arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, sulfur, and zinc were adopted directly from sewage sludge regulations promulgated by the U.S. Environmental Protection Agency in 1993. A risk-based approach was used to develop guidance values for a number of metals. The report also provides practical information on sample collection, analysis, and calculation of waste application rates. Pages: 56

January 1995 | Product Number: I46000 | Price: $65.00

Publ 4618
Characteristics and Performance of Supercritical Fluid Extraction (SFE) in the Analysis of Petroleum Hydrocarbons in Soils and Sludges

Summarizes the results of a study to evaluate and improve SFE methods and instrumentation for analytical-scale extractions of petroleum hydrocarbons from soils and sludges. The study determines which types of samples and waste are best suited for analysis by SFE and optimal conditions for complete extraction. Pages: 24

May 1995 | Product Number: I46180 | Price: $65.00

Publ 4663
Remediation of Salt-Affected Soils at Oil and Gas Production Facilities

Water separated from oil and gas during production contains dissolved solids, including salt. If improperly handled, produced water with sufficient salt concentrations can damage plants and soils. Therefore, this manual was designed to assist the oil and gas environmental professional and field personnel to (1) assess sites with salt-affected soils; (2) evaluate remedial alternatives; and (3) conduct remedial activities if necessary. It provides forms for organizing assessment information and conducting sample collection and analysis. Remediation options are divided into three primary groupings: natural remediation, in-situ chemical amendment remediation, and mechanical remediation. A decision tree and worksheets are provided to aid in the selection of a remedial option(s). The manual also provides access to a database of sludge regulations promulgated by the U.S. Environmental Protection Agency to help you address the following assessment and response issues:

- Will a produced water release cause an unacceptable impact on soils, plants, and/or groundwater?
- In the event of such an impact, what response actions are appropriate and effective? Pages: 29

October 1997 | Product Number: I46630 | Price: $119.00

Publ 4733
Risk-Based Screening Levels for the Protection of Livestock Exposed to Petroleum Hydrocarbons

The purpose of this study was to develop toxicity values and screening guidelines for evaluating risks to livestock from exposure to petroleum hydrocarbons. This report addresses how to determine whether livestock should be included in a risk evaluation, and estimate risks of petroleum hydrocarbon exposures to livestock. Pages: 50

July 2004 | Product Number: I47330 | Price: $100.00

Publ 4758
Modeling Study of Produced Water Release Scenarios

Provides a scientific basis for operators, regulators, and landowners to determine if assessment or remediation of produced water releases will provide a meaningful environmental benefit. The two principal research objectives of this study are (1) the identification of produced water release scenarios that have a potential to cause groundwater quality impairment in homogeneous subsurface geologic profiles and (2) the prediction of chloride movement through the vadose zone for different release

scenarios. Secondary objectives of the study included evaluation of the effect of heterogeneity on the migration of chloride through the vadose zone, the impact of repeat releases, and the effect on groundwater quality of surface soil restoration by revegetation and soil leaching.

The sensitivity analysis performed in this study provides an overview of the likelihood of groundwater impairment for large release volumes (100 bbls and 10,000 bbls). Assuming homogeneous unsaturated zone soil profiles, the results of over 1000 modeled release scenarios reveal that 49% of single-event releases do not cause impairment of groundwater above drinking water standards for chloride (250 mg/L) in a monitoring well that is adjacent to the edge of the release. In 70% of these scenarios, chloride concentrations in groundwater do not exceed 1000 mg/L. Although these numbers give no information about the fate of chloride from a specific produced water release, they do indicate that a release does not necessarily cause groundwater impairment. Pages: 124

January 2005 | Product Number: I47340 | Price: $134.00

Publ 4758
Modeling Study of Produced Water Release Scenarios

This publication is a new entry in this catalog.

This publication is related to an API licensing, certification, or accreditation program.
Data Products

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Weekly Statistical Bulletin (WSB)

Where Traders Around the World Get Their Data

API’s weekly data bulletin reports total U.S. and regional data relating to refinery operations and the production of the four major petroleum products: motor gasoline; kerosene jet fuel; distillate (by sulfur content); and residual fuel oil. These products represent more than 85% of total petroleum industry. Inventories and imports data of these products as well as of crude oil and unfinished oils are also included in the weekly report. Refinery inputs and utilization data are also included in the weekly report.

Published weekly every Tuesday afternoon (or every Wednesday afternoon in the event of a Monday U.S. Federal holiday).

API’s WSB Data is timely and accurate information currently available for futures commodities trading and analysis through authorized API redistributors. Contact apidata@api.org for more information.

To obtain information on subscribing to the Weekly Statistical Bulletin, please visit https://www.api.org/products-and-services/statistics/weekly-statistical-bulletin#tab-contact

Monthly Statistical Report

Contains timely interpretation and analysis of recent developments on major products’ production, imports, refinery operations, and inventories. This report includes API’s estimates of these data for the most recent month and graphs of major series, including product deliveries, crude oil production, imports, refinery activity, and inventories for the past 24 months.

In addition, the December issue, published in mid-January, presents year-end supply/demand estimates and summarizes developments of the year.

API’s Monthly Statistical Report is published 2 to 3 weeks following the end of the month.

To obtain a copy of this report, please visit https://www.api.org/products-and-services/statistics/api-monthly-statistical-report

Imports and Exports of Crude Oil and Petroleum Products

(12 Issues)

Published monthly by the API, the imports report contains detailed company level data on the imports of crude oil and petroleum products. Details include: record on importer, port of entry, country of origin, recipient, destination, quantity and API gravity (except residual fuel oil), and sulfur content (for crude oil and residual fuel oil).

The imports report is based on reports published by the U.S. Department of Energy’s Energy Information Administration; however, it is presented in a more user friendly and easier reporting layout. The report is available by the second week of each month, containing data from 2 months earlier (e.g. August imports report is published around the second week of November).

Historical data are also available in electronic format.

As of 2020, API no longer publishes this report. Historical editions are available for years 2019 and prior.

Inventories of Natural Gas Liquids and Liquefied Refinery Gases

Presents data on the inventory levels of ethane, propane, isobutane, normal butane, and pentanes plus. These inventories, located at natural gas plants, at refineries, at bulk terminals, and in underground storage, are grouped into eight regional areas. The report is issued at the end of each month, containing data from the prior month (e.g. August report is published at the end of September).

As of 2020, API no longer publishes this report. Historical editions are available for years 2019 and prior.

Quarterly Well Completion Report (QWCR)

The QWCR provides detailed information on reported drilling activity and estimates the total number of wells and footage drilled. The estimates of quarterly completions and footage are displayed by well type, well class, and quarter for the 10 years prior. More detailed estimates of quarterly completions and footage are disaggregated by well type, depth interval, and quarter for the current year and 2 years prior. In addition, wells reported to API (not estimates) are listed on a state and regional level, disaggregated by well class, well type, and quarter, for the current year and 2 years prior.

The report is available within 2 weeks following the end of a quarter.

Single Subscriber

Product Number: T00006 | Price: $3,193.00

Sales of Natural Gas Liquids and Liquefied Refinery Gases

This report presents the results of the annual survey, published in December, jointly sponsored by the American Petroleum Institute (API), Gas Processors Association (GPA), National Propane Gas Association (NPGA), and Propane Education & Research Council (PERC). This publication reports estimated sales of propane gas broken down by end use on a state and PADD basis. The Summary section presents the sales of butane, ethane, pentanes plus, and propane broken down by product type and PADD.

As of 2017, API no longer publishes this report. Historical editions are available for years 2016 and prior.

Joint Association Survey on Drilling Costs (JAS)

The JAS is an annual survey, published in December, that contains the only long-term source of information of detailed U.S. drilling expenditures on wells, and footage. An Analysis & Trends section provides detailed information and graphs about offshore and onshore wells, shale wells, coalbed methane wells, and sidetrack wells. The data presented in the U.S. Summary Tables section are broken down by well type (oil wells, gas wells, and dry holes) and by depth interval. Additionally, the data in these tables are disaggregated by well class (exploratory wells and development wells) and well location (and offshore and onshore).

Single Subscriber

(2019 Data) Product Number: T00007 | Price: Call for quote

Basic Petroleum Data Book (2 Issues)

It provides valuable domestic and world statistical background information, beginning in most instances with 1947. Included are data on energy, reserves, exploration and drilling, production, finance, prices, demand, refining, imports, exports, offshore transportation, natural gas, Organization of Petroleum Exporting Countries, and environment.

The printed Data Book is updated and published twice a year, in June and December. Each report is issued in a self-contained, bound volume and is no longer needed once the next issue is published.

Both the electronic and printed versions also include a glossary of definitions and a source list (names, telephone numbers) for references in the Data Book.

Single Subscriber

Electronic Product Number: T00008 | Price: $5,047.00

Hard Copy (2 Issues Only) Product Number: 05400 | Price: $1,751.00
DISCUSSION PAPERS

**DP 074**
Current Status of Watershed Management in the United States

To understand the current status of watershed programs, this paper reviews watershed approaches of individual watershed programs and institutions. Each case study also discusses, in a general manner, the impact on petroleum industry activity within the watershed. Background information is also provided on the Clean Water Act, the nonpoint source pollution problem in the United States, and the current emphasis on watershed management approaches.

November 1993

**DP 077**
Alternative Wetland Mitigation Programs

The Corps of Engineers and EPA have issued memoranda of agreement and guidance that restrict the petroleum industry’s ability to explore for and produce oil and natural gas in wetlands. In particular, federal agency rules require wetland mitigation banks—that could be used to compensate for possible wetland losses—to be fully functional before industry can use them. However, state and local governments often allow for concurrent and in lieu fee banking arrangements; these allow for payments to a group or agency that will undertake wetland restoration or preservation in lieu of managing such activities directly. This study examines those programs, their relationship to the federal permitting process, how they assure mitigation is successful, and how they achieve no overall net loss of wetlands.

February 1995

**DP 081**
Are We Running Out of Oil?

Since the dawn of the petroleum industry in the mid-19th century, there have been recurrent waves of concern that exhaustion of the world’s petroleum resource base was imminent. This study examines carefully both the historical record and the most prominent recent geological assessments. The analysis shows that the obvious concern—that of imminent exhaustion of world oil resources—is actually the most easily dismissed. Nature continues to be quite generous in providing oil resources for development. However, there is a danger that attempts by government to address the non-problem of resource exhaustion will distract from or even aggravate the challenge of removing institutional barriers to supply development.

December 1995

**DP 084R**
Analysis of the Costs and Benefits of Regulations: Review of Historical Experience

Recent legislative proposals to reform the regulatory process have included the use of benefit cost analysis to decide whether or not a regulation should be implemented. The purpose of this paper is to assess the current practices of benefit cost analysis, primarily through examination of the series of regulatory impact analyses mandated by presidential executive orders. While the record is mixed, it shows that in many, but perhaps not all, cases it is possible to develop a reasonable estimate of the benefits and costs of proposed regulations and to decide among regulatory alternatives on the basis of these analyses.

December 1996

**DP 086**
Opposition to OCS Development, Historical Context and Economic Considerations

This paper reviews the history of offshore leasing, focusing on the long conflict between the federal government and the states over control of the leasing process. The paper then examines economic aspects of leasing and relates these to the controversy surrounding leasing. The conclusions of the analysis suggest that consideration should be given to sharing a portion of federal offshore revenues with affected coastal communities. This sharing has the potential to reduce opposition to offshore leasing and allow the nation to realize more of the net benefits from tapping offshore oil and natural gas resources.

November 1996

**DP 088**
Restoring Natural Resources: Legal Background and Economic Analysis

This paper reviews the legislative and legal history behind the resource damage restoration regulations under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Oil Pollution Act (OPA). The damage restoration debate is whether the objective is to restore a natural resource’s lost services or whether to restore the exact chemical, biological, and physical characteristics. This paper reviews the debate over these approaches to restoration and the economic implications of adopting one approach over another. This paper supports a services approach and suggests modifications to the current interpretation of restoration requirements.

October 1997

RESEARCH STUDIES

**RS 032**
An Empirical Analysis of the Determinants of Petroleum Drilling

December 1983

**RS 051**
The Use of Economic Incentive Mechanisms in Environmental Management

June 1990

**RS 053**
Reducing Emissions from Older Vehicles

August 1990

**RS 056**
Economics of Alternative Fuel Use: Compressed Natural Gas as a Vehicle Fuel

December 1990

**RS 064**
U.S. Petroleum Supply: History, Prospects, and Policy Implications

September 1992
RS 067
The Cost Effectiveness of Vehicle Inspection and Maintenance Programs

Several states began automobile inspection and maintenance (I/M) programs during the 1970s as part of their effort to reduce carbon monoxide and ozone precursor emissions. The Clean Air Act Amendments of 1990 further increased the scope of I/M programs. This paper offers an evaluation of inspection and maintenance from the perspective of cost-effectiveness: program costs divided by program effectiveness. Effectiveness is measured in tons of pollutants removed: volatile organic compounds, carbon monoxide, and nitrogen oxides. Where possible, individual program components are evaluated with respect to cost-effectiveness that should be included in assessments of I/M: a formal decision tree model of the I/M process; cost-effectiveness estimates of current and enhanced I/M programs; and alternatives for making I/M more cost-effective.

December 1993

RS 074
Air Emissions Banking and Trading: Analysis and Implications for Wetland Mitigation Banking

Examines the history of the air emissions banking and trading policy initiated by EPA in the early 1970s and identifies the factors that hindered its success. The lessons learned from the air emissions program are applied to wetland mitigation banking. It is hoped that wetlands banking and trading mechanisms will increase the ability to proceed with economic activity and still preserve wetlands. Potential solutions for avoiding the problems encountered in the air emissions trading program are also discussed.

February 1994

RS 075
Improving Cost-Effectiveness Estimation: A Reassessment of Control Options to Reduce Ozone Precursor Emissions

Regulators and industry use cost-effectiveness techniques as a decision tool to rank the desirability of emission control strategies. This paper examines the conceptual basis for cost-effectiveness estimates for the control of stationary mobile source emissions focusing on volatile organic compounds that are precursors of ozone. The paper also provides an independent set of cost-effectiveness estimates for enhanced inspection/maintenance programs, vehicle scrappage, the low emission vehicle standard, and reformulated gasoline.

August 1994

RS 076
Paying for Automobile Insurance at the Pump: A Critical Review

Proponents of pay-at-the-pump (PAP) auto insurance advocate replacing the current system of driver-purchased motor vehicle insurance with a new one where a major portion of the cost of insurance would be paid for by new taxes at the gasoline pump. Some groups and states have given some consideration to a form of PAP insurance. This paper examines efficiency and equity effects of such proposals. It finds the PAP proposals (a) are based on false assumptions of accident causes; (b) are not needed to solve the uninsured motorist problem; (c) incorrectly link promises of large savings to paying for insurance at the pump; and (d) are both inequitable and inefficient.

December 1994

RS 082
Superfund Liability and Taxes: Petroleum Industry Shares in Their Historical Context

Summarizes historic and current information about petroleum industry Superfund cleanup liability and taxes. It estimates the amount of Superfund taxes paid from 1982 through the early 1990s and then calculates the petroleum industry's share of Superfund taxes. This paper documents the large disparity that exists between the share of Superfund taxes paid by the petroleum industry and the share of contamination that can be attributed to the petroleum industry; the results show that the petroleum industry's share of general Superfund taxes far exceeds its share of cleanup costs.

July 1996

RS 094
How Unilateral Economic Sanctions Affect the U.S. Economy: An Inter-Industry Analysis

The National Association of Manufacturers (1997) estimates that a total of 61 U.S. laws and executive actions targeting 35 countries and billions of dollars of goods and services have been unilaterally enacted over the 1993–1996 period. Hubaue et al. (1997) have estimated that U.S. unilateral sanctions in force in 1995 reduced exports by $15 billion to $19 billion in that year, putting at risk 200,000 to 250,000 high-wage export supported jobs. This report provides sector and industry specific breakdowns of such aggregate impacts. Also, the initial impact in a given industry is traced to supporting industries, e.g., to input suppliers, and transport and marketing industries. Thus, while the direct burden of sanctions may fall on a narrow set of industries, the analysis reveals the extent to which the impacts spill over into other sectors of the economy, an area to date that has not received adequate attention. It follows that foregone exports are too narrow a measure of the costs of unilateral economic sanctions. The report also notes that capital goods, energy, chemicals, and agricultural products have been disproportionately impacted by U.S. unilateral sanctions.

November 1998

OTHER PUBLICATIONS

The Economics of Energy Security
Prepared by Douglas R. Bohi and Michael A. Toman Thisan. This book examines energy security as a basis for designing energy policy. Energy security refers to the loss of economic welfare that may occur as a result of change in price or availability of energy. (ISBN 0-7923-9664-2)

January 1996

To order, please visit https://www.springer.com/us/book/9780792396857

PAPERS ON SPECIFIC ISSUES

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## Translated Publications

| **Spec Q1** | **Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry—Chinese**  
(includes Errata 1 dated October 2023)  
Chinese translation of Spec Q1.  
10th Edition | September 2023  
Product Number: G0Q110CH | Price: $131.00 |
| **Spec 2B** | **Specification for the Fabrication of Structural Steel Pipe—Chinese**  
Chinese translation of Spec 2B.  
Product Number: G02B06C | Price: $90.00 |
| **Spec 2F** | **Specification for Mooring Chain—Chinese**  
Chinese translation of Spec 2F.  
Product Number: G02F06C | Price: $97.00 |
| **RP 5A5/ISO 15463:2003** | **Field Inspection of New Casing, Tubing, and Plain-End Drill Pipe—Chinese**  
(includes Errata 1 dated December 2009)  
7th Edition | June 2005 | Reaffirmed: January 2021  
Product Number: GX5A507C | Price: $171.00 |
| **Spec 5L** | **Line Pipe—Chinese**  
Chinese translation of Spec 5L.  
46th Edition | April 2018 | Product Number: G05L46C | Price: $209.00 |
| **Spec 5LC** | **Specification on Coiled Line Pipe—Chinese**  
(includes Errata 1 dated July 2007)  
Chinese translation of Spec 5LC.  
2nd Edition | October 2006 | Reaffirmed: July 2020  
Product Number: G5LC02C | Price: $112.00 |
| **RP 5LT** | **Recommended Practice for Truck Transportation of Line Pipe—Chinese**  
Chinese translation of RP 5LT.  
Product Number: G5LT01C | Price: $65.00 |
| **Spec 5ST** | **Specification for Coiled Tubing—U.S. Customary and SI Units—Chinese**  
Chinese translation of Spec 5ST.  
1st Edition | April 2010 | Reaffirmed: July 2020  
Product Number: G5ST01C | Price: $145.00 |
| **Spec 6A** | **Specification for Wellhead and Tree Equipment—Chinese**  
(includes Errata 1 dated April 2019, Errata 2 dated June 2020,  
Addendum 1 dated July 2020, Errata 3 dated September 2020,  
Addendum 2 dated June 2021, Errata 4 dated September 2021, and  
Addendum 3 dated August 2022)  
Chinese translation of Spec 6A.  
21st Edition | November 2018  
Product Number: GX06A21C | Price: $310.00 |
| **Spec 7F** | **Oil Field Chain and Sprockets—Chinese**  
(includes Errata 1 dated May 2013)  
Chinese translation of Spec 7F.  
8th Edition | November 2010 | Reaffirmed: July 2022  
Product Number: G7F008C | Price: $125.00 |
| **Spec 7NRV** | **Specification for Drill String Non-Return Valves—Chinese**  
(includes Addendum 1 dated December 2019)  
Chinese translation of Spec 7NRV.  
1st Edition | July 2006 | Reaffirmed: July 2020  
Product Number: G7NRV01C | Price: $76.00 |
| **Spec 8C** | **Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)—Chinese**  
(includes Errata 1 dated May 2014 and Errata 2 dated November 2020)  
Chinese translation of Spec 8C.  
5th Edition | April 2012 | Reaffirmed: August 2019  
Product Number: G8C05C | Price: $152.00 |
| **RP 11BR** | **Recommended Practice for the Care and Handling of Sucker Rods—Chinese**  
Chinese translation of RP 11BR.  
9th Edition | August 2008 | Reaffirmed: July 2020  
Product Number: G11BR09C | Price: $114.00 |

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## Translated Publications

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<table>
<thead>
<tr>
<th>Publication</th>
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[168] This publication is a new entry in this catalog.
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Measurement of Liquid Hydrocarbons by Ultrasonic Flow Meters—Russian
(ANSI/API MPMS Ch. 5.8-2011)
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Russian translation of Spec 6A.
21st Edition | November 2018
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Std 6ACRA
Age-Hardened Nickel-Based Alloys for Oil and Gas Drilling and Production Equipment—Russian
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1st Edition | August 2015 | Product Number: G6ACRA1R | $98.00

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Russian translation of Spec 6DR.
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Russian translation of Spec 6DSS.
3rd Edition | August 2017 | Product Number: G6DSS3R | Price: $179.00

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Russian translation of Spec 7-2.

Spec 7K
Drilling and Well Servicing Equipment—Russian
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Russian translation of Ch. 8.3.
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(includes Errata 1 dated May 2014 and Errata 2 dated November 2020)
Russian translation of Spec 8C.
5th Edition | April 2013 | Reaffirmed: August 2019
Product Number: G08C05R | Price: $152.00

Spec 10A
Cements and Materials for Well Cementing—Russian
(includes Addendum 1 dated November 2019 and Addendum 2 dated August 2022)
Russian translation of Spec 10A.

RP 10B-2
Recommended Practice for Testing Well Cements—Russian
(includes Errata 1 dated June 2006 and Errata 2 dated January 2007) (supersedes RP 10B)
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Cement Sheath Evaluation—Russian
Russian translation of TR 10TR1.
2nd Edition | September 2008
Product Number: G10TR12R | Price: $157.00

TR 10TR2
Shrinkage and Expansion in Oilwell Cements—Russian
Russian translation of TR 10TR2.
Product Number: G10TR2R | Price: $133.00

TR 10TR3
Technical Report on Temperatures for API Cement Operating Thickening Time Tests—Russian
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1st Edition | May 1999 | Reaffirmed: May 2005
Product Number: G10TR3R | Price: $171.00

TR 10TR4
Selection of Centralizers for Primary Cementing Operations—Russian
Russian translation of TR 10TR4.
1st Edition | May 2008 | Product Number: G10TR4R | Price: $67.00

TR 10TR5
Methods for Testing of Solid and Rigid Centralizers—Russian
Russian translation of TR 10TR5.
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Specification for Subsurface Sucker Rod Pump Assemblies, Components, and Fittings—Russian
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Recommended Practice for Electric Submersible Pump Testing—Russian
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Recommended Practice for Electrical Submersible Pump Installations—Russian
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Compressibility Factors for Hydrocarbons: 350–637 Kilograms per Cubic Meter Density (15 °C) and –46 °C to 60 °C Metering Temperature—Russian
Russian translation of Ch. 11.2.2M.
1st Edition | October 1986 | Reaffirmed: September 2017
Product Number: H27309R | Price: $185.00

Chapter 11.2.4
Temperature Correction for the Volume of NGL and LPG Tables 23E, 24E, 53E, 54E, 59E, 60E—Russian
(GPA 8217)
Russian translation of Ch. 11.2.4.

Spec 12J
Specification for Oil and Gas Separators—Russian
Russian translation of Spec 12J.
8th Edition | October 2008 | Reaffirmed: June 2023
Product Number: G12J08R | Price: $105.00

RP 13M/ISO 13503-1:2003
Recommended Practice for the Measurement of Viscous Properties of Completion Fluids—Russian
(RP 13M replaces RP 39)
1st Edition | July 2004 | Product Number: GX13M01R | Price: $107.00

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High-Pressure Fiberglass Line Pipe—Russian
(includes Errata 1 dated August 2016 and Errata 2 dated January 2021)
Russian translation of Spec 15HR.
Product Number: G15HR4R | Price: $119.00

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Specification for Marine Drilling Riser Equipment—Russian
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2nd Edition | November 2017 | Product Number: G16F02R | Price: $150.00

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Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems—Russian
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Russian translation of RP 16Q.
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Specification for Subsea Umbilicals—Russian
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Rotary-Type Positive Displacement Compressors for Petroleum, Petrochemical and Natural Gas Industries—Russian
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5th Edition | December 2010
Product Number: CX61905R | Price: $234.00

Std 660
Shell-and-Tube Heat Exchangers—Russian
(includes Addendum 1 dated August 2020)
Russian translation of Std 660.
9th Edition | March 2015 | Product Number: C66009R | Price: $201.00

Std 661
Petroleum, Petrochemical, and Natural Gas Industries—Air-Cooled Heat Exchangers for General Refinery Service—Russian
(ANSI/API Std 661)
Russian translation of Std 661.
7th Edition | July 2013 | Reaffirmed: November 2018
Product Number: C66107R | Price: $217.00

Std 670
Machinery Protection Systems—Russian
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Product Number: C67005R | Price: $212.00

Std 673
Centrifugal Fans for Petroleum, Chemical, and Gas Industry Services—Russian
Russian translation of Std 673.
3rd Edition | December 2014
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Positive Displacement Pumps—Reciprocating—Russian
(includes Errata 1 dated May 2014 and Errata 2 dated April 2015)
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Product Number: C67403R | Price: $202.00

Std 675
Positive Displacement Pumps—Controlled Volume for Petroleum, Chemical, and Gas Industry Services—Russian
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Russian translation of Std 675.
3rd Edition | November 2012 | Reaffirmed: July 2021
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Std 682
Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps—Russian
Russian translation of Std 682.
Product Number: C68204R | Price: $277.00

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Welding of Pipelines and Related Facilities—Russian
(includes Errata 1 dated September 2023)
Russian translation of Std 1104.
22nd Edition | July 2021 | Product Number: D110422R | Price: $410.00

SPANISH *

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Spanish translation of Ch. 3.1A.
3rd Edition | August 2013 | Reaffirmed: December 2018
Product Number: H301A03S | Price: $109.00

Chapter 3.1B
Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.1B.
4th Edition | October 2021 | Product Number: H301B4 | Price: $175.00

Chapter 3.2
Standard Practice for Gauging Petroleum and Petroleum Products in Tank Cars—Spanish
Spanish translation of Ch. 3.2.
1st Edition | August 1995 | Reaffirmed: May 2013
Product Number: H03021S | Price: $105.00

Chapter 3.3
Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Pressurized Storage Tanks by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.3.
1st Edition | June 1996 | Reaffirmed: December 2022
Product Number: H030316 | Price: $90.00

Chapter 3.4
Standard Practice for Level Measurement of Liquid Hydrocarbons on Marine Vessels by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.4.
1st Edition | April 1995 | Reaffirmed: August 2021
Product Number: H03041SP | Price: $90.00

Chapter 3.5
Standard Practice for Level Measurement of Light Hydrocarbon Liquids Onboard Marine Vessels by Automatic Tank Gauging—Spanish
Spanish translation of Ch. 3.5
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Methods of Calibration for Displacement and Volumetric Tank Provers, Part 2—Determination of the Volume of Displacement and Tank Provers by the Waterdraw Method of Calibration—Spanish

Spanish translation of Ch. 4.9.2.

Product Number: H4.9.201S  |  Price: $197.00

**Chapter 4.9.3**

Methods of Calibration for Displacement and Volumetric Tank Provers, Part 3—Determination of the Volume of Displacement Provers by the Master Meter Method of Calibration—Spanish

Spanish translation of Ch. 4.9.3.

1st Edition  |  April 2010  |  Reaffirmed: March 2015
Product Number: H409031  |  Price: $80.00

**Chapter 5.1**

General Considerations for Measurement by Meters—Spanish

(includes Errata 1 dated June 2008 and Errata 2 dated June 2011)

Spanish translation of Ch. 5.1.

Product Number: H05014SP  |  Price: $102.00

**Chapter 5.2**

Measurement of Liquid Hydrocarbons by Displacement Meters—Spanish

Spanish translation of Ch. 5.2.

Product Number: H50203SP  |  Price: $95.00

**Chapter 5.3**

Measurement of Liquid Hydrocarbons by Turbine Meters—Spanish

(includes Addendum 1 dated July 2009)

Spanish translation of Ch. 5.3, including Addendum 1 dated July 2009.

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**Chapter 5.4**

Accessory Equipment for Liquid Meters—Spanish

(includes Errata 1 dated May 2015)

Spanish translation of Ch. 5.4.

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**Chapter 5.5**

Fidelity and Security of Flow Measurement Pulsed-Data Transmission Systems—Spanish

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**Chapter 5.8**

Measurement of Liquid Hydrocarbons by Ultrasonic Flow Meters—Spanish

(ANSI/API MPMS Ch. 5.8-2011)

Spanish translation of Ch. 5.8.

2nd Edition  |  November 2011  |  Reaffirmed: May 2017
Product Number: H050802SP  |  Price: $94.00

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Loading Rack Metering Systems—Spanish

Spanish translation of Ch. 6.2.

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**Chapter 7.3**

Fixed Automatic Tank Temperature Systems—Spanish

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**Chapter 8.6/ISO 8943**

Refrigerated Light Hydrocarbon Fluids—Sampling of Liquified Natural Gas—Continuous and Intermittent Methods—Spanish

(ANSI/API MPMS Ch. 8.6-2020)

Spanish translation of Ch. 8.6.


**Chapter 10.9**

Standard Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration—Spanish

Spanish translation of Ch. 10.9.

3rd Edition  |  May 2013  |  Reaffirmed: June 2018
Product Number: H100903SP  |  Price: $45.00

**Chapter 11.3.3**

Miscellaneous Hydrocarbon Product Properties—Denatured Ethanol Density and Volume Correction Factors—Spanish

Spanish translation of Ch. 11.3.3.


**Chapter 11.4.1**


Spanish translation of Ch. 11.4.1.

2nd Edition  |  July 2018  |  Reaffirmed: August 2023
Product Number: H11412S  |  Price: $81.00

**Chapter 12.1.1**

Calculation of Static Petroleum Quantities, Part 1—Upright Cylindrical Tanks and Marine Vessels—Spanish

Spanish translation of Ch. 12.1.1.


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Chapter 13.3
Measurement Uncertainty—Spanish
Spanish translation of Ch. 13.3.
2nd Edition | December 2017 | Reaffirmed: December 2022
Product Number: H130302S | Price: $122.00

Chapter 17.1
Guidelines for Marine Cargo Inspection—Spanish
Spanish translation of Ch. 17.1.
7th Edition | February 2022 | Product Number: H170107S | Price: $180.00

Chapter 17.3
Guidelines for Identification of the Source of Free Waters Associated with Marine Petroleum Cargo Movements—Spanish
Spanish translation of Ch. 17.3.
2nd Edition | December 2016 | Reaffirmed: July 2021
Product Number: H170302S | Price: $131.00

Chapter 17.4
Method for Quantification of Small Volumes on Marine Vessels (OBQ/ROB)—Spanish
Spanish translation of Ch. 17.4.
2nd Edition | September 2016
Product Number: H170402S | Price: $119.00

Chapter 17.8
Guidelines for Pre-Loading Inspection of Marine Vessel Cargo Tanks and Their Cargo-Handling Systems—Spanish
Spanish translation of Ch. 17.8.
2nd Edition | August 2016 | Reaffirmed: January 2022
Product Number: H170802S | Price: $117.00

Chapter 17.11
Measurement and Sampling of Cargoes On Board Tank Vessels Using Closed and Restricted Equipment—Spanish
(includes Errata 1 dated March 2017)
Spanish translation of Ch. 17.11.
2nd Edition | August 2016 | Product Number: H170112S | Price: $117.00

Chapter 17.12
Procedures for Bulk Liquid Chemical Cargo Inspections—Spanish
Spanish translation of Ch. 17.12.
2nd Edition | August 2015 | Product Number: H170122S | Price: $177.00

Chapter 18.2
Custody Transfer of Crude Oil from Lease Tanks Using Alternative Measurement Methods—Spanish
Spanish translation of Ch. 18.2.

Chapter 20.2
Production Allocation Measurement Using Single-Phase Devices—Spanish
Spanish translation of Ch. 20.2.
1st Edition | November 2016 | Product Number H200201S | Price: $135.00

RP 576
Inspection of Pressure-Relieving Devices—Spanish
Spanish translation of RP 576.
4th Edition | April 2017 | Product Number: C57604S | Price: $227.00

API 1509
Engine Oil Licensing and Certification System—Spanish
Spanish translation of API 1509.

RP 1646
Safe Work Practices for Contractors Working at Retail Petroleum/Convenience Facilities—Spanish
Spanish translation of RP 1646.
2nd Edition | May 2017 | Reaffirmed: September 2022
Product Number: A164602S | Price: $159.00

UKRAINIAN *

Spec Q1
Quality Management System Requirements for Organizations Providing Products for the Petroleum and Natural Gas Industry—Ukrainian
(includes Errata 1 dated October 2023)
Ukrainian translation of Spec Q1.
10th Edition | September 2023
Product Number: G0Q109U | Price: $131.00

RP 5A3
Thread Compounds for Casing, Tubing, Line Pipe, and Drill Stem Elements—Ukrainian
Ukrainian translation of RP 5A3.

RP 5A5/ISO 15463:2003
Field Inspection of New Casing, Tubing, and Plain-End Drill Pipe—Ukrainian
(includes Errata 1 dated December 2009)
7th Edition | June 2005 | Reaffirmed: January 2021
Product Number: G5A507U | Price: $171.00

Spec 5B
Threading, Gauging, and Inspection of Casing, Tubing, and Line Pipe Threads—Ukrainian
(includes Errata 1 dated June 2018, Errata 2 dated December 2018, Addendum 1 dated December 2018, and Addendum 2 dated December 2019)
Ukrainian translation of Spec 5B.
16th Edition | December 2017 | Product Number: GSB016U | Price: $163.00

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## Translated Publications

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<td>Product Number: G05T11U</td>
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**MPMS CHAPTER 11.1—1980**

Chapter 11.1—1980 has not been withdrawn, but superseded. The 1980 standards should not be utilized on new applications. Chapter 11.1—2004 (page 63 of this Catalog) is to be utilized on all new applications.

Chapter 11.1

Volume Correction Factors—Volume I

Table 5A—Generalized Crude Oils and JP-4, Correction of Observed API Gravity to API Gravity at 60°F.
Table 6A—Generalized Crude Oils and JP-4, Correction of Volume to 60°F Against API Gravity at 60°F.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume II

Table 5B—Generalized Products, Correction of Observed API Gravity to API Gravity at 60°F.
Table 6B—Generalized Products, Correction of Volume to 60°F Against API Gravity at 60°F.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume III

Table 6C—Volume Correction Factors for Individual and Special Applications, Volume Correction for MTBE to 60°F and Volume IX, Table 54C—Volume Correction for Individual and Special Applications, Volume Correction for MTBE to 15°C.

August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume IV

Table 23A—Generalized Crude Oils, Correction of Observed Relative Density to Relative Density at 60/60°F.
Table 24A—Generalized Crude Oils, Correction of Volume to 60°F Against Relative Density 60/60°F.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume V

Table 23B—Generalized Products, Correction of Observed Relative Density to Relative Density at 60/60°F.
Table 24B—Generalized Products, Correction of Volume to 60°F Against Relative Density 60/60°F.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume VI

Table 24C—Volume Correction Factors for Individual and Special Applications, Volume Correction to 60°F Against Thermal Expansion Coefficients at 60°F.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume VII

Table 53A—Generalized Crude Oils, Correction of Observed Density to Density at 15°C.
Table 54A—Generalized Crude Oils, Correction of Volume to 15°C Against Density at 15°C.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume VIII

Table 53B—Generalized Products, Correction of Observed Density to Density at 15°C.
Table 54B—Generalized Products, Correction of Volume to 15°C Against Density at 15°C.
August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume IX

Table 54C—Volume Correction Factors for Individual and Special Applications, Volume Correction to 15°C Against Thermal Expansion Coefficients at 15°C.

August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume X

Background, Development, and Computer Documentation, including computer subroutines in Fortran IV for all volumes of Chapter 11.1, except Volumes XI/XII, XIII, and XIV. Implementation procedures, including rounding and truncating procedures, are also included. These subroutines are not available through API in magnetic or electronic form. Pages: 403

August 1980 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.1

Volume Correction Factors—Volume XI/XII

Superseded by Chapter 11.5, Parts 1 to 3, 2009 (see page 60 of this Catalog)

Two combined volumes, containing Petroleum Measurement Subsidiary Tables 1-4, 8-14, 21, 22, 26-31, 33, 34, 51, 52, and 56-58, which provide conversions between volume measures and density measures.

January 1980 | Reaffirmed, December 1999

Order from ASTM | 100 Barr Harbor Drive | West Conshohocken, PA 19428
Tel: (610) 832-9500

Chapter 11.1

Volume Correction Factors—Volume XIII

Table 55A—Generalized Lubricating Oils, Correction of Observed API Gravity to API Gravity at 60°F.
Table 56A—Generalized Lubricating Oils, Correction of Volume to 60°F Against API Gravity at 60°F.
January 1982 | Reaffirmed, March 1997 | Price: $140.00
Historical Publications

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Chapter 11.1
Volume Correction Factors—Volume XIV
Table 53D—Generalized Lubricating Oils, Correction of Observed Density to Density at 15°C.
Table 54D—Generalized Lubricating Oils, Correction of Volume to 15°C Against Density at 15°C.
January 1982 | Reaffirmed, March 1997 | Price: $140.00

Chapter 11.2.1
Compressibility Factors for Hydrocarbons: 0–90° API Gravity Range
Provides tables to correct hydrocarbon volumes metered under pressure to corresponding volumes at the equilibrium pressure for the metered temperature. It contains compressibility factors related to meter temperature and API gravity (60°F) of metered material. Pages: 149

Chapter 11.2.1M
Compressibility Factors for Hydrocarbons: 638–1074 Kilograms per Cubic Meter Range
Provides tables in metric (SI) units to correct hydrocarbon volumes metered under pressure to corresponding volumes at the equilibrium pressure for the metered temperature. It contains compressibility factors related to meter temperature and density (15 °C) of metered material. Pages: 187

Chapter 11.2
CD-ROM and Documentation of Chapters 11.2.1, 11.2.1M, 11.2.3, and 11.2.3M
Includes tables found in Chapters 11.2.1, 11.2.1M, 11.2.3, and 11.2.3M, along with a computer documentation manual containing text information from those chapters. The tables, presented in both standard and metric (SI) units, cover compressibility factors for hydrocarbons and water calibration of volumetric provers. The tape is 9-track, 1600 bpi, unlabeled, 4-file type, and is available in either ASCII or EBCDIC format. Format desired must be specified when ordering. Now available on disk. Please specify when ordering.
1st Edition | 1984

Chapter 11.2
Computer Tape Information and Documentation for Chapters 11.2.1, 11.2.1M, 11.2.3 and 11.2.3M
Provides only the text information from Chapters 11.2.1, 11.2.1M, 11.2.3 and 11.2.3M, and information pertaining to the use of the magnetic tape described above. The manual is included with orders for the magnetic tape.
Pages: 11
1st Edition | 1984

WITHDRAWN IN 2023

Chapter 6.1
Lease Automatic Custody Transfer (LACT) Systems
2nd Edition | May 1991

Chapter 6.7
Metering Viscous Hydrocarbons
2nd Edition | May 1991

RP 7G
Recommended Practice for Drill Stem Design and Operating Limits

Spec 12K
Specification for Indirect Type Oilfield Heaters
8th Edition | October 2008

Spec 12L
Specification for Vertical and Horizontal Emulsion Treaters
5th Edition | October 2008

Chapter 12.2.4
Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Correction Factors, Part 4—Calculation of Base Prover Volumes by Waterdraw Method
1st Edition | December 1997

RP 15CLT
Recommended Practice for Composite Lined Steel Tubular Goods
1st Edition | September 2007

Chapter 16.2
Mass Measurement of Liquid Hydrocarbons in Vertical Cylindrical Storage Tanks by Hydrostatic Tank Gauging
1st Edition | November 1995

RP 49
Recommended Practice for Drilling and Well Servicing Operations Involving Hydrogen Sulfide
3rd Edition | May 2001

RP 50
Natural Gas Processing Plant Practices for Protection of the Environment
2nd Edition | December 1995

RP 51R
Environmental Protection for Onshore Oil and Gas Production Operations and Leases
1st Edition | July 2009

RP 52
Land Drilling Practices for Protection of the Environment
2nd Edition | July 1995

RP 55
Recommended Practice for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide
2nd Edition | February 1995

RP 68
Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide

WITHDRAWN PUBLICATIONS

The documents listed in this section have been withdrawn and are no longer being maintained by the responsible standards committee. Copies of these documents are available for purchase at www.api.org/publications.

Exploration and Production

Glossary of Oil Field Production Terminology, 1st ed. 1988
Needs Assessment Survey Report, Product/Service Certification in the Exploration & Production Sector of the Worldwide Oil and Gas Industry
Offshore Operating Agreement, 2nd ed. 1996
Report of Eastern/Western Hemisphere Production of Casing, Tubing, and Drill Pipe, 1997-2004
Report of Eastern/Western Hemisphere Production of Line Pipe, 1997-2004
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<tr>
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<td>15A4</td>
<td>Care and Use of Reinforced Thermosetting Resin casing and Tubing</td>
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<td>Measuring Field Production and Storage Tanks</td>
<td>1st ed. 1929–7th ed. 1948</td>
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<td>Form of Agreement and Specifications for Pipe Line Crossings under Railroad Tracks</td>
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<td>Code of Metallurgical Terms for Ferrous Alloys</td>
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<td>Corrosion Fatigue Testing of Sucker Rod Materials</td>
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<td>Testing Cements Used in Wells</td>
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<td>1st ed. 1960, 2nd ed. 1998</td>
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Historical Publications

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D8  A Tabular Method for Determining the Change of the Overall Angle and Dog Leg Severity (for Hole Inclinations up to 70 degrees), 1st ed. 1964
D10 Selecting Rotary Drilling Equipment, 1st ed. 1965, 2nd ed. 1973
D11  Glossary of Drilling-Fluid and Associated Terms, 1st ed. 1965, 2nd ed. 1979
D12  Well Data Glossary, 1st ed. 1966
D12A The API Well Number and Standard State and County Codes, 1st ed. 1968
D13  Installation and Use of Blowout-Preventer Stacks and Accessory Equipment, 1st ed. 1966
D15  Recommendations for Proper Usage and Handling of Inhibited Oilfield Acids, 1st ed. 1973
D18  Environmental Protection Laws and Regulations Related to Exploration, Drilling, Production, and Gas Processing Plant Operations, 1st ed. 1975
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S2  Publications of the API Division of Production, 26th ed. 1948–62nd ed. 1985
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T4  Supervisory Development Services Available from Public and Private Agencies and Institutions, 1st ed. 1953
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V2  Organization and Teaching of Courses on Specialized Vocational Training in the Production of Oil and Gas, 1st ed. 1949
V3  Information Bulletin Special Training Available for Leaders on Conduct of Foremanship Training Conferences, 1st ed. 1951

Refining

Biological Treatment of Petroleum Refinery Wastes, 1st ed. 1963
Section II Waste Gases and Vapors 1st ed. 1931–5th ed. 1957
Section IV Sampling and Analysis of Waste Water, 1st ed. 1953
Section V, Sampling and Analysis of Waste Gas and Particulate Matter, 1st ed. 1954
Section VI, Disposal of Refinery Wastes, 1st ed. 1963

Inspection of Refinery Equipment, 1985
Chapter 1, Guide for Inspection of Refinery Equipment, 1976
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Chapter 5, Preparation of Equipment for Safe Entry and Work, 1978
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Chapter 11, Pipe, Valves, and Fittings, 1974
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Chapter 15, Instruments and Control Equipment, 1981
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Chapter 17, Auxiliary and Miscellaneous Equipment, 1978
Chapter 18, Protection of Idle Equipment, 1982
Chapter 20, Inspection for Fire Protection, 1961

Manual for the Prevention of Water Pollution During Marine Oil Terminal Transfer Operations, 1st ed. 1964
Manual on Disposal of Refinery Wastes, 1st 1969
Chapter 1, Introduction, 1969
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Chapter 10, Stripping, Extraction, Adsorption, and Ion Exchange
Chapter 11, Oxidation, 1969
Chapter 12, Oxygenation, 1969
Chapter 13, Biological Treatment, 1975
Chapter 14, Disposal by Sale, at Sea, in Wells, and Incineration, 1969
Chapter 15, Common Refinery Wastes and Process Summaries, 1969
Chapter 16, Petrochemical Waste Treatment, 1969
Chapter 17, Monitoring, 1969
Chapter 18, Diffusion of Effluent into Receiving Waters, 1969
Chapter 19, Stream Survey Methods, 1969
Chapter 20, Solubility and Toxicity Data, 1969
Chapter 21, Handling Stormwater Runoff, 1980

“Responding to a Pipeline Emergency” Videotape

500  Classification of Areas for Electrical Installations in Petroleum Refineries, 1st ed. 1955–4th ed. 1987
500C  Recommended Practice for Classification of Areas for Electrical Installations at Petroleum and Gas Pipeline Transportation Facilities, 1st ed. 1986 to 1984
525  Testing Procedure for Pressure–Relieving Devices Discharging Against Variable Back Pressure, 1st ed. 1960
528  API Standard for Safety Relief Valve Nameplate Nomenclature, 1st ed. 1964
532  Measurement of the Thermal Efficiency of Fired Process Heaters, 1st ed. 1982
533  Air Preheat Systems for Fired Process Heaters, 1st ed. 1986
542  Grouped Motor Controller Specification–Low Voltage (600 Volts), 1st ed. 1977
543  Medium Voltage Motor Controllers, 1st ed. 1976
544  Metal-Clad Switchgear Specification–5kV to 15 kV, 1st ed. 1980
545  Recommended Practice for Lightning Protection of Aboveground Storage Tanks for Flammable or Combustible Liquids, 1st ed. 2009
545-A  Verification of Lightning Protection Requirements for Above Ground Hydrocarbon Storage Tanks, 1st ed. 2009
Historical Publications

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550 Part II—Process Stream Analyzers
Section 1, Analyzers, 4th ed. 1985
Section 2, Process Chromatographs, 4th ed. 1981
Section 4, Moisture Analyzers, 4th ed. 1983
Section 6, Analyzers for the Measurement of Sulfur and its Components, 4th ed. 1984
Section 7, Electrochemical Liquid Analyzers, 4th ed. 1984
Section 9, Water Quality Analyzers, 4th ed. 1984
Section 10, Area Safety Monitors, 4th ed. 1983
559 Fire Test for Evaluation of Valve Stem Packing, 2nd ed. 1998
590 Steel Line Blankets, 1st ed. 1985
595 Cast-Iron Gate Valves, Flanges Ends, 2nd ed. 1979
600A API Standard on Flanged Steel Outside–Screw–and Yoke Wedge Gate Valves, 1st ed. 1942
600B API Standard on Flanged Steel Plug Valves, 1st ed. 1942
Replaced by ASME B16.20
630 Tube Dimensions for Fired Heaters, 1st ed. 1959, 2nd ed. 1961
665 API Fired Heater Data Sheet, 1st ed. 1966
680 Packaged Reciprocating Plant and Instrument Air Compressors for General Refinery Services, 1st ed. 1987
689 Collection and Exchange of Reliability and Maintenance Data for Equipment, 1st ed. 2007
753 How to Install and Validate Employee Selection Techniques, 1st ed. 1971
754 Validity Study Results for Jobs Relevant to the Petroleum Refining Industry, 1st ed. 1972
756 Recommended Guidelines for Documentation of Training, 1st ed. 1977
757 Training and Materials Catalog, 1st ed. 1979
758 Safety Digest of Lessons Learned
Section 1, General Safety Precautions in Refining 1986
Section 2, Safety in Unit Operations, 1979
Section 3, Safe Operations of Auxiliaries, 1980
Section 4, Safety in Maintenance, 1981
Section 5, Safe Operation of Utilities, 1981
Section 6, Safe Operation of Storage Facilities, 1982
Section 7, Safe Handling of Petroleum Products, 1983
Section 8, Environmental Controls, 1983
Section 9, Precautions Against Severe Weather Conditions, 1983
850 API Standards 620, 650, and 653 Interpretations—Tank Construction and In-Service Inspection, 1st ed. 1997
920 Prevention of Brittle Fracture of Pressure Vessels, 1st ed. 1990
928 Hydrocarbon Emissions from Refineries, 1st ed. 1973
940 Steel Deterioration in Hydrogen, 1st ed. 1967
943 High-Temperature Crude Oil Corrosivity Studies, 1st ed. 1974
947 Granular Media Filtration of Petroleum Refinery Effluent Waters, 1st ed. 1975
948 A Study of Variables that Affect the Corrosion of Water Strippers, 1st ed. 1976
949 Water Reuse Studies, 1st ed. 1977
Historical Publications

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952 Gaussian Dispersion Models Applicable to Refinery Emission, 1st ed. 1972
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960 Evaluation of the Principles of Magnetic Water Treatment, 1st ed. 1985
1200E Electronic Curriculums Manager for Federally Mandated Training and Information 1st ed. 1996, 2nd ed. 1999
1210 Trainer Competencies, 1st ed. 1994
1220 Guidelines for Evaluating Vendors and Training Programs. 1st ed. 1998

Security

API Standard for Third Party Network Connectivity, 1st ed. 2007

Transportation

Proceedings of the 1992 API Tanker Conference
Training and Qualification of Liquid Pipeline Maintenance Personnel 1st ed. 1992
998 Technical Data Book-Petroleum Refining, Metric ed.
1001 API Specifications for Tank Vehicles, 1st ed. 1937, 2nd ed. 1946
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1006 The Loading and Unloading of Unleaded Gasoline by Tank Motor Vehicles, 1st ed. 1974
1101 Measurement of Petroleum Liquid Hydrocarbons by Positive Displacement Meter, 1st ed. 1960
1105 Bulletin on Construction Practices for Oil and Products Pipe Lines, 1st ed. 1955
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1113 Developing a Pipeline Supervisory Control Center, 1st ed. 2007
1118 Training and Qualification of Liquid Pipeline Controllers, 1st ed. 1991
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1129 Assurance of Hazardous Liquid Pipeline System Integrity, 1st ed. 1996
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1157 Hydrostatic Test Water Treatment and Disposal Options for Liquid Pipeline Systems, 1st ed. 1998
1164 SCADA Security, 1st ed. 2004
1201 Code for Tank Car Quantities or Code for Calibrating Tank Car Tanks and for Measuring, Sampling and Calculating Tank Car Quantities (Non-Pressure Type), 1st ed. 1948, 2nd ed. 1957
1202 Code for Pressure Tank Car Quantities or Code for Calibrating Tank Car Tanks and for Measuring, Sampling and Calculating Tank Car Quantities (Pressure Type), 1st ed. 1951, 2nd ed. 1960
2611 Terminal Piping Inspection—Inspection of In-Service Terminal Piping Systems, 1st ed. 2011

Marine

Quantified Hazards Evaluation of Marine Vapor Recovery Systems, 1989
1124 Ship, Barge and Terminal Hydrocarbon Vapor Collection Manifolds, 1st ed. 1991
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Marketing

API Engine Service Classification System: 1989 Licensees, 1st ed. 1990
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1500 Storage and Handling of Aviation Fuels at Airports, 1st ed. 1976
1504 A System of Accounting for Distributors and Jobbers of Petroleum Products, 1st ed. 1953, 2nd ed. 1959
1505 Airport Fueling Systems, 1st ed. 1954, 2nd ed. 1961
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1509 Engine Oil Licensing and Certification System, 14th ed. 1996
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1513 Management Institutes Pay off!, 1st ed. 1955
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### Historical Publications

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<td>1586 Student Employment Program for Service Stations</td>
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<tr>
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<tr>
<td>1617 Guide for Selection of Petroleum Tank Trucks</td>
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<td>1620 Barge Terminal Design and Operating Practices to Protect</td>
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<tr>
<td>1623 Analysis of Temperature Effects on Gasoline Marketing</td>
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Ch. 10  Sediment and Water, Section 4, Standard Methods of Test for Water and Sediment in Crude Oils, 1970


Ch. 10  Sediment and Water, Section 6, Determination of Water and Sediment in Fuel Oils by the Centrifuge Method (Laboratory Procedures), 1st ed. 1983-3rd ed. 2002


Ch. 10  Sediment and Water, Section 8, Standard Test Method for Sediment in Crude Oil by Membrane Filtration, 1st ed. 1991

Ch. 10  Sediment and Water, Section 9, Standard Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration, 1st ed. 1993

Ch. 11  Physical Properties Data, Section 2, Part 2, Compressibility Factors for Hydrocarbons: 0.500–0.611 Relative Density Range and 20–128 °F, 1st ed. 1984

Ch. 11  Physical Properties Data, Section, Section 2, Part 3, Water Calibration of Volumetric Provers, 1st ed. 1984

Ch. 12  Calculation of Petroleum Quantities, Section 1, Calculation of Static Petroleum Quantities, Part 1, Upright Cylindrical Tanks and Marine Vessels, 1st ed. 1996, 2nd ed. 2001

Ch. 12  Calculation of Petroleum Quantities, Section 2, Calculation of Liquid Petroleum Quantities Measured by Turbine or Displacement Meters, 1st ed. 1981

Ch. 12  Calculation of Petroleum Quantities, Section 2, Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Corrections Factors, Part 2, Measurement Tickets, 2nd ed. 1995


Ch. 13  Statistical Aspects of Measuring and Sampling, Section 1, Statistical Concepts and Procedures in Measurement, 1st ed. 1985


Ch. 14  Natural Gas Fluids Measurement, Section 2, Compressibility Factors of Natural Gas and Other Related Hydrocarbon Gases, 2nd ed. 1994

Ch. 14  Natural Gas Fluids Measurement, Section 3, Office Metering of Natural Gas and Other Related Hydrocarbon fluids (formerly API 2530), 2nd ed. 1985, 3rd ed. 1990

Ch. 14  Natural Gas Fluids Measurement, Section 5, Calculation of Gross Heating Value, Specific Gravity, and Compressibility of Natural Gas Mixtures from Compositional Analysis, 2nd ed. 1981

Ch. 14  Natural Gas Fluids Measurement, Section 6, Installing and Proving Density Meters, 1st ed. 1979, 2nd ed. 1991


Ch. 15  Metrication, Section 2, Conversion of Operational and Process Measurement Units to the Metric (SI) System, 1st ed. 1974

Ch. 15  Metrication, Section 2A, Use of Metric Units on Petroleum Packages During Conversion, 1st ed. 1976

Ch. 16  Measurement of Hydrocarbon Fluids By Weight or Mass, Section 2, Mass Measurement of Liquid Hydrocarbons in Vertical Cylindrical Storage Tanks By Hydrostatic Tank Gauging, 1st ed. 1994

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Ch. 17  Marine Measurement, Section 5, Guidelines for Cargo Analysis and Reconciliation, 2nd ed. 2003

Ch. 17  Marine Measurement, Section 7, Recommended Practices for Developing Barge Control Factors (Volume Ratio), 1st ed. 1995

Ch. 17  Marine Measurement, Section 9, Vessel Experience Factor (VEF), 1st ed. 2005

Ch. 19  Evaporative Loss Measurement, Section 1, Evaporative Loss from Fixed Roof Tanks, 2nd ed. 1991, 3rd ed. 2002

Ch. 19  Evaporative Loss Measurement, Section 1A, Evaporation Loss from Low-Pressure Tanks (previously Bulletin 2516) 1st ed. 1962

Ch. 19  Evaporative Loss Measurement, Section 2, Evaporative Loss from Floating Roof Tanks, 1st ed. 1997, 2nd ed. 2003


Ch. 19  Evaporative Loss Measurement, Section 3, Part G, Certified Loss Factor Testing Laboratory Registration, 1st ed. 1997

Ch. 19  Evaporative Loss Measurement, Section 4, Recommended Practice for Speciation of Evaporative Losses, 1st ed. 1997, 2nd ed. 2005

Health, Environment, and Safety

A Critical Review of Recent Literature on Toxicity of Cyanides to Fish, Peter Doudoroff, 1980

API Guiding Environmental Principles and Management Practices, Synopsis of API Recommended Practice 9000, December 1993

Collecting and Recycling Used Motor Oil, June 1995


Petroleum Industry Environmental Performance, Sixth Annual Report

Petroleum Industry Environmental Performance, Fifth Annual Report

Petroleum Industry Environmental Performance, Fourth Annual Report

Petroleum Industry Environmental Performance, Third Annual Report

Petroleum Industry Environmental Performance, Second Annual Report

Promoting Partnerships, Cooperation Between the Petroleum Industry and Environmental, Educational and Community Groups, September 1996

313 Petroleum Emission Factor Information Retrieval System, 1993


335 Refinery MACT Workshop, 1996

338 Summary of Question and Answer Sessions for the American Petroleum Institute’s Gasoline Distribution MACT Workshop, 1997


4296 Analysis of Refinery Wastewaters for the EPA Priority Pollutants, 1978

4297 Fate and Effects of Polynuclear Aromatic Hydrocarbons (PNAs) in the Aquatic Environment, 1978

4311 Nox Emissions from Petroleum Industry Operations, 1979

4317 Underground Movement of Gasoline on Groundwater and Enhanced Recovery by Surfactants, 1979

4322 Fugitive Hydrocarbon Emissions from Petroleum Production Operations, 2 volumes, 1980

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4483 Species Tolerance for NPDES Bioassays: Volume I, Freshwater Organisms, 1989
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<td>Protecting Agricultural Crops from Ozone Exposures—Key Issues and Future Research Directions</td>
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<td>Identifying and Measuring Nonuse Values for Natural and Environmental Resources: A Critical Review</td>
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<td>Environmental Performance Indicators: Methods for Measuring Pollution Prevention</td>
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<td>Comparison of Screening Values from Selected Hydrocarbon Screening Instruments</td>
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<td>Generation and Management of Residual Materials</td>
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<tr>
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<td>A Guide to Leak Detection for Aboveground Storage Tanks</td>
<td></td>
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<td>J33400</td>
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<td>Liquid Release Prevention and Detection Measures for Aboveground Storage Facilities</td>
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<td>A Survey of Diked-Area Liner Use at Aboveground Storage Tank Facilities</td>
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<td>J34100</td>
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<td>342</td>
<td>Toxicity Bioassays on Dispersed Oil in the North Sea: June 1996 Field Trials</td>
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<td>343</td>
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<td>Publ</td>
<td>346</td>
<td>Results of Range-Finding Testing of Leak Detection and Leak Location Technologies for Underground Pipelines</td>
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<td>DR</td>
<td>351</td>
<td>Proceedings: Workshop to Identify Promising Technologies for the Treatment of Produced Water Toxity</td>
<td></td>
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<td>I00351</td>
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<td>Publ</td>
<td>351</td>
<td>Overview of Soil Permeability Test Methods</td>
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<td>Publ</td>
<td>352</td>
<td>Management of Residual Materials: 1997 Petroleum Refining Performance</td>
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<td>4666</td>
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<td>I46700</td>
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<td>4671</td>
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