



AMERICAN PETROLEUM INSTITUTE

API Standard 936

Refractory Installation Quality Control—Inspection and Testing Monolithic Refractory Linings and Materials

FOURTH EDITION | JUNE 2014 | 49 PAGES | \$150.00 | PRODUCT NO. C93604

This standard 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.

For ordering information:

Online: www.api.org/pubs

Phone: 1-800-854-7179
(Toll-free in the U.S. and Canada)

(+1) 303-397-7056
(Local and International)

Fax: (+1) 303-397-2740

API members receive a 30% discount where applicable.

Contents

	Page
1 Scope	1
2 Normative References	1
3 Terms and Definitions	1
4 Quality Control Elements	8
5 Responsibilities	8
5.1 Owner	8
5.2 Contractor	9
5.3 Inspector	10
5.4 Manufacturer	11
6 Inspector Qualifications	11
7 Materials	11
7.1 Physical Property Requirements	11
7.2 Storage	11
7.3 Packaging and Marking	12
7.4 Anchors	13
8 Qualification and Testing	13
8.1 Testing and Test Procedures	13
8.2 Preshipment Refractory Qualification Testing	15
8.3 Qualification of Installation Procedure and Crew/Installers	16
8.4 Production (As-installed) Refractory Sampling and Testing	19
8.5 Test Specimen Preparation	20
9 Installation/Execution	21
9.1 Surface Preparation	21
9.2 Water Quality	22
9.3 Water-contaminated Refractory	22
9.4 Preparation for Lining Installation	22
9.5 Application Temperature	23
9.6 Gunning	23
9.8 Thin-layer Abrasion (Erosion) Resistant Linings	25
9.9 Thick-layer Plastic Linings	26
9.10 Metal Fiber Reinforcement	26
9.11 Organic Fibers	27
9.12 Interruption of Application	27
9.13 Curing	27
9.14 Repairs	28
10 Dryout	29
10.1 Dryout Procedure	29
10.2 Dryout Schedule	29

Contents

Page

Annex A (informative) Glossary	32
Annex B (normative) Refractory Compliance Datasheet	43
Annex C (informative) API Certification for Refractory Personnel	46
Bibliography	48
Figure	
B.1 Sample Compliance Datasheet	45
Tables	
1 Quality Control: Key Elements	8
2 Testing Machine Sensitivity and Loading Rate	14
3 Physical Properties and Acceptable Results for Testing of As-Installed Refractories	20
4 Required Number of Test Specimens per Sample	21
5 Dryout of Conventional Castable Refractories	30
B.1 Requirements for Compliance Datasheet Property Listings	44
C.1 Minimum Inspector Competencies	46