



Kevin Ferrick

Sr. Manager, Engine Oil Licensing and Certification System

Global Industry Services

1220 L Street, NW
Washington, DC 20005-4070
USA

Telephone 1-202-682-8233

Fax 1-202-962-4739

Email ferrick@api.org

www.api.org/eolcs

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TO: API Engine Oil Licensing and Certification System (EOLCS) Licensees
API Lubricants Group
Other Interested Parties

SUBJECT: Addendum 4
API 1509, *Engine Oil Licensing and Certification System*
17th Edition, September 2012 (Addendum 1 October 2014)

API's Lubricants Group has approved by letter ballot the following changes to Annex G Tables G-3, G-4, and G-5 of the 17th Edition of API 1509 (see Attachment 1). A complete revision of API 1509 is currently being prepared that will incorporate recently released Addendums 2 through 4.

The changes in Table G-5 related to SAE XW-16 are effective as of October 9, 2015. The changes to the footnotes in Tables G-3, G-4, and G-5 are effective as of March 16, 2016. If you have questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Kevin Ferrick".

Table G-3—Requirements for API Service Category SL by Viscosity Grade

| Engine Test Requirements ^a —All Viscosity Grades | | |
|--|--|-------------------------|
| Sequence IIIF or IIIG | Pass | |
| Sequence IVA | Pass | |
| Sequence VE | Pass Wear Only Or a minimum 0.08% phosphorus in the form of ZDDP | |
| Sequence VG ^b | Pass | |
| Sequence VIII | Pass | |
| Viscosity Grade Performance Criteria | | |
| Bench Test and Measured Parameter ^a | SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | All Others ^c |
| | ASTM D6557 (Ball Rust Test), avg. gray value, min ^b | 100 |
| ASTM D5800 volatility loss, % max | 15 | 15 |
| ASTM D6417 volatility loss at 371°C (700°F), % max | 10 | 10 |
| ASTM D6795, % flow reduction, max | 50 | 50 |
| ASTM D6794, % flow reduction, max | | |
| With 0.6% H ₂ O | 50 | 50 |
| With 1.0 % H ₂ O | 50 | 50 |
| With 2.0% H ₂ O | 50 | 50 |
| With 3.0% H ₂ O | 50 | 50 |
| ASTM D4951 or D5185 phosphorus % mass, Max ^d | 0.10 ^e | NR |
| ASTM D892 foaming tendency (Option A) | | |
| Sequence I, max, foaming/settling ^f | 10/0 | 10/0 |
| Sequence II, max, foaming/settling ^f | 50/0 | 50/0 |
| Sequence III, max, foaming/settling ^f | 10/0 | 10/0 |
| ASTM D6082 (optional blending required), static foam max, tendency/stability ^g | 100/0 | 100/0 |
| ASTM D6922, homogeneity and miscibility | h | h |
| Sequence VIII shear stability | i | i |
| ASTM D7097, high temperature deposits (TEOST MHT), deposit wt, mg, max | 45 | 45 |
| ASTM D5133 gelation index, max ^b | 12 ^j | NR |

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aTests and limits are per ASTM D4485.

Table G-3—Requirements for API Service Category SL by Viscosity Grade

| Engine Test Requirements ^a —All Viscosity Grades | | |
|--|--|-------------------------|
| Sequence IIIF or IIIG | Pass | |
| Sequence IVA | Pass | |
| Sequence VE | Pass Wear Only | |
| Sequence VG ^b | Or a minimum 0.08% phosphorus in the form of ZDDP | |
| Sequence VIII | Pass | |
| | Pass | |
| Viscosity Grade Performance Criteria | | |
| Bench Test and Measured Parameter ^a | SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | |
| | | All Others ^c |
| ASTM D6557 (Ball Rust Test), avg. gray value, min ^b | 100 | 100 |
| ASTM D5800 volatility loss, % max | 15 | 15 |
| ASTM D6417 volatility loss at 371°C (700°F), % max | 10 | 10 |
| ASTM D6795, % flow reduction, max | 50 | 50 |
| ASTM D6794, % flow reduction, max | | |
| With 0.6% H ₂ O | 50 | 50 |
| With 1.0 % H ₂ O | 50 | 50 |
| With 2.0% H ₂ O | 50 | 50 |
| With 3.0% H ₂ O | 50 | 50 |
| ASTM D4951 or D5185 phosphorus % mass, Max ^d | 0.10 ^e | NR |
| ASTM D892 foaming tendency (Option A) | | |
| Sequence I, max, foaming/settling ^f | 10/0 | 10/0 |
| Sequence II, max, foaming/settling ^f | 50/0 | 50/0 |
| Sequence III, max, foaming/settling ^f | 10/0 | 10/0 |
| ASTM D6082 (optional blending required), static foam max, tendency/stability ^g | 100/0 | 100/0 |
| ASTM D6922, homogeneity and miscibility | h | h |
| Sequence VIII shear stability | i | i |
| ASTM D7097, high temperature deposits (TEOST MHT), deposit wt, mg, max | 45 | 45 |
| ASTM D5133 gelation index, max ^b | 12 ^j | NR |

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aTests and limits are per ASTM D4485.

^bIf CI-4, CJ-4, **CK-4 and/or FA-4** categories precede the “S” category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^cDoes not include SAE 0W-16 and 5W-16.

^dFor all viscosity grades: If CH-4, CI-4, and CJ-4 categories precede the “S” category and there is no API Certification Mark, the limit for phosphorus does not apply. However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. **This footnote cannot be applied if CK-4 or FA-4 is also claimed.** Note that these oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers’ recommendations for gasoline-fueled engines.

^eThis is a non-critical specification as described in ASTM D3244.

^fSettling volume determined at 10 min.

^gSettling volume determined at 1 min.

^hHomogeneous with SAE Reference Oils.

ⁱTen-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥ 5.6 mm²/s.

^jFor gelation temperatures at or above the W-grade pumpability temperatures as defined in SAE J300.

Table G-4—Requirements for API Service Category SM

| Engine Test Requirements ^a | Viscosity Grade Performance Requirements | |
|--|--|-------------------------|
| | SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | All Others ^b |
| ASTM D7320 (Sequence IIIG) | Pass | Pass |
| ASTM D4684 (Sequence IIIGA) or ASTM D7528 (ROBO) | Pass | NR |
| ASTM D6891 (Sequence IVA) | Pass | Pass |
| ASTM D6593 (Sequence VG) ^c | Pass | Pass |
| ASTM D6709 (Sequence VIII) | Pass | Pass |

| Bench Test and Measured Parameter ^a | Viscosity Grade Performance Requirements | |
|--|--|-------------------------|
| | SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | All Others ^b |
| ASTM D6557 (Ball Rust Test), avg. gray value, min ^c | 100 | 100 |
| ASTM D5800, evaporation loss, 1 hour at 250°C, % max ^d | 15 | 15 |
| ASTM D6417, simulated distillation at 371°C, % max | 10 | 10 |
| ASTM D6795, EOFT, % flow reduction, max | 50 | 50 |
| ASTM D6794, EOWTT, % flow reduction, max | | |
| with 0.6% H ₂ O | 50 | 50 |
| with 1.0% H ₂ O | 50 | 50 |
| with 2.0% H ₂ O | 50 | 50 |
| with 3.0% H ₂ O | 50 | 50 |
| ASTM D4951, phosphorus % mass, max ^e | 0.08 ^f | NR |
| ASTM D4951, phosphorus % mass, min ^e | 0.06 ^f | 0.06 ^f |
| ASTM D4951, or D2622, sulfur % mass, max ^e | | |
| SAE 0W-20, 0W-30, 5W-20, and 5W-30 | 0.5 ^f | NR |
| SAE 10W-30 | 0.7 ^f | NR |
| ASTM D892 (Option A), foaming tendency | | |
| Sequence I, mL, max, tendency/stability ^g | 10/0 | 10/0 |
| Sequence II, mL, max, tendency/stability ^g | 50/0 | 50/0 |
| Sequence III, mL, max, tendency/stability ^g | 10/0 | 10/0 |
| ASTM D6082 (Option A), high-temperature foaming mL, max, tendency/stability ^h | 100/0 | 100/0 |
| ASTM D6922, homogeneity and miscibility | i | i |
| ASTM D6709, (Sequence VIII) shear stability | j | j |
| ASTM D7097, TEOST MHT, high temperature deposits, deposit wt, mg, max ^e | 35 | 45 |
| ASTM D5133, gelation index, max ^c | 12 ^k | NR |

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aTests are per ASTM requirements.

^bDoes not include SAE 0W-16 and 5W-16.

^cIf CI-4, CJ-4, **CK-4 and/or FA-4** categories precede the "S" category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^dCalculated conversions specified in ASTM D5800 are allowed.

^eFor all viscosity grades: If CH-4, CI-4 and/or CJ-4 categories precede the "S" category and there is no API Certification Mark, the "S" category limits for phosphorus, sulfur, and the TEOST MHT do not apply. **However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. This footnote cannot be applied if CK-4 or FA-4 is also claimed.** Note that these "C" category oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers' recommendations for gasoline-fueled engines.

^fThis is a non-critical specification as described in ASTM D3244.

^gAfter 10-minute settling period.

^hAfter 1-minute settling period.

ⁱShall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.

^jTen-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥ 5.6 mm²/s.

^kTo be evaluated from -5°C to temperature at which 40,000 cP is attained or -40°C , or 2 Celsius degrees below the appropriate MRV TP-1 temperature (defined by SAE J300), whichever occurs first.

**Table G-5—Requirements for API Service Category SN and
API SN with Resource Conserving**

| | API SN | API SN | API SN with Resource Conserving |
|--|---|---------------------------|---------------------------------------|
| | SAE 0W-16, SAE 5W-16, SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | Other Viscosity Grades | All Viscosity Grades ^e |
| Engine Test Requirements^a | | | |
| ASTM D7320 (Sequence IIIG) | | | |
| Kinematic viscosity increase @ 40°C, % | 150 (max) | 150 (max) | 150 (max) |
| Average weighted piston deposits, merits | 4.0 (min) | 4.0 (min) | 4.0 (min) |
| Hot stuck rings | None | None | None |
| Average cam plus lifter wear, µm | 60 (max) | 60 (max) | 60 (max) |
| ASTM D6891 (Sequence IVA) | | | |
| Average cam wear (7 position avg), µm | 90 (max) | 90 (max) | 90 (max) |
| ASTM D6593 (Sequence VG)^b | | | |
| Average engine sludge, merits | 8.0 (min) | 8.0 (min) | 8.0 (min) |
| Average rocker cover sludge, merits | 8.3 (min) | 8.3 (min) | 8.3 (min) |
| Average engine varnish, merits | 8.9 (min) | 8.9 (min) | 8.9 (min) |
| Average piston skirt varnish, merits | 7.5 (min) | 7.5 (min) | 7.5 (min) |
| Oil screen sludge, % area | 15 (max) | 15 (max) | 15 (max) |
| Oil screen debris, % area | Rate & report | Rate & Report | Rate & Report |
| Hot-stuck compression rings | None | None | None |
| Cold stuck rings | Rate & report | Rate & report | Rate & Report |
| Oil ring clogging, % area | Rate & report | Rate & report | Rate & Report |
| ASTM D7589 (Sequence VID)^c | | | |
| SAE XW-16 viscosity grade | | | |
| FEI SUM | NR | NR | 2.8% min |
| FEI 2 | | | 1.3% min after 100 hours aging |
| SAE XW-20 viscosity grade | | | |
| FEI SUM | | | 2.6% min |
| FEI 2 | | | 1.2% min after 100 hours aging |
| SAE XW-30 viscosity grade | | | |
| FEI SUM | | | 1.9% min |
| FEI 2 | | | 0.9% min after 100 hours aging |
| SAE 10W-30 and all other viscosity grades not listed above | | | |
| FEI SUM | | | 1.5% min |
| FEI 2 | | | 0.6% min after 100 hours aging |
| ASTM D6709 (Sequence VIII) | | | |
| Bearing weight loss, mg | 26 (max) | 26 (max) | 26 (max) |
| Bench Test and Measured Parameter^a | | | |
| Aged oil low-temperature viscosity | | | |
| ASTM D4684, (Sequence IIIGA), aged oil low- temperature viscosity | Pass | Pass ^d | Pass |
| Or | | | |
| ASTM D7528, (ROBO Test), aged oil low- temperature viscosity | Pass | Pass ^d | Pass |

| | | | |
|--|-------------------|-------------------|---------------------|
| ASTM D7320, (Sequence III GB) phosphorus retention, % min | NR | NR | 79 |
| ASTM D6557 (Ball Rust Test), avg. gray value, min ^b | 100 | 100 | 100 |
| ASTM D5800, evaporation loss, 1 hour at 250°C, % max ^e | 15 | 15 | 15 |
| ASTM D6417, simulated distillation at 371°C, % max | 10 | 10 | 10 |
| ASTM D6795, EOFT, % flow reduction, max | 50 | 50 | 50 |
| ASTM D6794, EOWTT, % flow reduction, max | | | |
| with 0.6% H ₂ O | 50 | 50 | 50 |
| with 1.0% H ₂ O | 50 | 50 | 50 |
| with 2.0% H ₂ O | 50 | 50 | 50 |
| with 3.0% H ₂ O | 50 | 50 | 50 |
| ASTM D4951, phosphorus % mass, max ^f | 0.08 ^g | NR | 0.08 ^g |
| ASTM D4951, phosphorus % mass, min ^f | 0.06 ^g | 0.06 ^g | 0.06 ^g |
| ASTM D4951, or D2622, sulfur % mass, max ^f | | | |
| SAE 0W-16, 5W-16, 0W-20, 0W-30, 5W-20, and 5W-30 | 0.5 ^g | NR | 0.5 ^g |
| SAE 10W-30 | 0.6 ^g | NR | 0.6 ^g |
| All other viscosity grades | NR | NR | 0.6 ^g |
| ASTM D892 (Option A), foaming tendency | | | |
| Sequence I, mL, max, tendency/stability | 10/0 ^h | 10/0 ⁱ | 10/0 ^h |
| Sequence II, mL, max, tendency/stability | 50/0 ^h | 50/0 ⁱ | 50/0 ^h |
| Sequence III, mL, max, tendency/stability | 10/0 ^h | 10/0 ⁱ | 10/0 ^h |
| ASTM D6082 (Option A), high-temperature foaming mL, max, tendency/stability ^h | 100/0 | 100/0 | 100/0 |
| ASTM D6922, homogeneity and miscibility | j | j | j |
| ASTM D6709, (Sequence VIII) shear stability | k | k | k |
| ASTM D7097, TEOST MHT, high-temperature deposits, deposit wt, mg, max ^f | 35 | 45 | 35 |
| ASTM D5133, gelation index, max ^b | 12 ^l | NR | 12 ^l |
| ASTM D6335, TEOST 33C, high-temperature deposits, total deposit weight, mg, max | | | |
| SAE XW-16 | NR | NR | NR |
| SAE XW-20 | NR | NR | NR |
| All other viscosity grades | NR | NR | 30 |
| ASTM D7563, emulsion retention | NR | NR | no water separation |
| ASTM D7216 Annex A2, elastomer compatibility | Table G-6 | Table G-6 | Table G-6 |

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aResource Conserving does not apply to SAE 0W-16 and 5W-16.

^aTests are per ASTM requirements.

^bIf CI-4, CJ-4, CK-4 and/or FA-4 categories precede the "S" category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^cViscosity grades are limited to 0W, 5W and 10W multigrade oils.

^dNot required for monograde and 15W, 20W, and 25W multigrade oils.

^eCalculated conversions specified in ASTM D5800 are allowed.

^fFor all viscosity grades: If CH-4, CI-4 and/or CJ-4 categories precede the "S" category and there is no API Certification Mark, the "S" category limits for phosphorus, sulfur, and the TEOST MHT do not apply. However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. This footnote cannot be applied if CK-4 or FA-4 is also claimed. Note that these "C" category oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers' recommendations for gasoline-fueled engines.

^gThis is a non-critical specification as described in ASTM D3244.

^hAfter 1-minute settling period.

ⁱAfter 10-minute settling period.

^jShall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.

^kTen-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥ 5.6 mm²/s.

^lTo be evaluated from -5°C to temperature at which 40,000 cP is attained or -40°C, or 2 Celsius degrees below the appropriate MRV TP-1 temperature (defined by SAE J300), whichever occurs first.

^bIf CI-4, CJ-4, **CK-4 and/or FA-4** categories precede the “S” category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^cDoes not include SAE 0W-16 and 5W-16.

^dFor all viscosity grades: If CH-4, CI-4, and CJ-4 categories precede the “S” category and there is no API Certification Mark, the limit for phosphorus does not apply. However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. **This footnote cannot be applied if CK-4 or FA-4 is also claimed.** Note that these oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers’ recommendations for gasoline-fueled engines.

^eThis is a non-critical specification as described in ASTM D3244.

^fSettling volume determined at 10 min.

^gSettling volume determined at 1 min.

^hHomogeneous with SAE Reference Oils.

ⁱTen-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥ 5.6 mm²/s.

^jFor gelation temperatures at or above the W-grade pumpability temperatures as defined in SAE J300.

Table G-4—Requirements for API Service Category SM

| Engine Test Requirements ^a | Viscosity Grade Performance Requirements | |
|--|--|-------------------------|
| | SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | All Others ^b |
| ASTM D7320 (Sequence IIIG) | Pass | Pass |
| ASTM D4684 (Sequence IIIGA) or ASTM D7528 (ROBO) | Pass | NR |
| ASTM D6891 (Sequence IVA) | Pass | Pass |
| ASTM D6593 (Sequence VG) ^c | Pass | Pass |
| ASTM D6709 (Sequence VIII) | Pass | Pass |
| Bench Test and Measured Parameter ^a | Viscosity Grade Performance Requirements | |
| | SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | All Others ^b |
| ASTM D6557 (Ball Rust Test), avg. gray value, min ^c | 100 | 100 |
| ASTM D5800, evaporation loss, 1 hour at 250°C, % max ^d | 15 | 15 |
| ASTM D6417, simulated distillation at 371°C, % max | 10 | 10 |
| ASTM D6795, EOFT, % flow reduction, max | 50 | 50 |
| ASTM D6794, EOWTT, % flow reduction, max | | |
| with 0.6% H ₂ O | 50 | 50 |
| with 1.0% H ₂ O | 50 | 50 |
| with 2.0% H ₂ O | 50 | 50 |
| with 3.0% H ₂ O | 50 | 50 |
| ASTM D4951, phosphorus % mass, max ^e | 0.08 ^f | NR |
| ASTM D4951, phosphorus % mass, min ^e | 0.06 ^f | 0.06 ^f |
| ASTM D4951, or D2622, sulfur % mass, max ^e | | |
| SAE 0W-20, 0W-30, 5W-20, and 5W-30 | 0.5 ^f | NR |
| SAE 10W-30 | 0.7 ^f | NR |
| ASTM D892 (Option A), foaming tendency | | |
| Sequence I, mL, max, tendency/stability ^g | 10/0 | 10/0 |
| Sequence II, mL, max, tendency/stability ^g | 50/0 | 50/0 |
| Sequence III, mL, max, tendency/stability ^g | 10/0 | 10/0 |
| ASTM D6082 (Option A), high-temperature foaming mL, max, tendency/stability ^h | 100/0 | 100/0 |
| ASTM D6922, homogeneity and miscibility | i | i |
| ASTM D6709, (Sequence VIII) shear stability | j | j |
| ASTM D7097, TEOST MHT, high temperature deposits, deposit wt, mg, max ^e | 35 | 45 |
| ASTM D5133, gelation index, max ^c | 12 ^k | NR |

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aTests are per ASTM requirements.

^bDoes not include SAE 0W-16 and 5W-16.

^cIf CI-4, CJ-4, **CK-4 and/or FA-4** categories precede the "S" category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^dCalculated conversions specified in ASTM D5800 are allowed.

^eFor all viscosity grades: If CH-4, CI-4 and/or CJ-4 categories precede the "S" category and there is no API Certification Mark, the "S" category limits for phosphorus, sulfur, and the TEOST MHT do not apply. **However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. This footnote cannot be applied if CK-4 or FA-4 is also claimed.** Note that these "C" category oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers' recommendations for gasoline-fueled engines.

^fThis is a non-critical specification as described in ASTM D3244.

^gAfter 10-minute settling period.

^hAfter 1-minute settling period.

ⁱShall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.

^jTen-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥ 5.6 mm²/s.

^kTo be evaluated from -5°C to temperature at which 40,000 cP is attained or -40°C , or 2 Celsius degrees below the appropriate MRV TP-1 temperature (defined by SAE J300), whichever occurs first.

**Table G-5—Requirements for API Service Category SN and
API SN with Resource Conserving**

| | API SN | API SN | API SN with Resource Conserving |
|--|---|---------------------------|---------------------------------------|
| | SAE 0W-16, SAE 5W-16, SAE 0W-20, SAE 5W-20, SAE 0W-30, SAE 5W-30, SAE 10W-30 | Other Viscosity Grades | All Viscosity Grades ^e |
| Engine Test Requirements^a | | | |
| ASTM D7320 (Sequence IIIG) | | | |
| Kinematic viscosity increase @ 40°C, % | 150 (max) | 150 (max) | 150 (max) |
| Average weighted piston deposits, merits | 4.0 (min) | 4.0 (min) | 4.0 (min) |
| Hot stuck rings | None | None | None |
| Average cam plus lifter wear, µm | 60 (max) | 60 (max) | 60 (max) |
| ASTM D6891 (Sequence IVA) | | | |
| Average cam wear (7 position avg), µm | 90 (max) | 90 (max) | 90 (max) |
| ASTM D6593 (Sequence VG)^b | | | |
| Average engine sludge, merits | 8.0 (min) | 8.0 (min) | 8.0 (min) |
| Average rocker cover sludge, merits | 8.3 (min) | 8.3 (min) | 8.3 (min) |
| Average engine varnish, merits | 8.9 (min) | 8.9 (min) | 8.9 (min) |
| Average piston skirt varnish, merits | 7.5 (min) | 7.5 (min) | 7.5 (min) |
| Oil screen sludge, % area | 15 (max) | 15 (max) | 15 (max) |
| Oil screen debris, % area | Rate & report | Rate & Report | Rate & Report |
| Hot-stuck compression rings | None | None | None |
| Cold stuck rings | Rate & report | Rate & report | Rate & Report |
| Oil ring clogging, % area | Rate & report | Rate & report | Rate & Report |
| ASTM D7589 (Sequence VID)^c | | | |
| SAE XW-16 viscosity grade | | | |
| FEI SUM | NR | NR | 2.8% min |
| FEI 2 | | | 1.3% min after 100 hours aging |
| SAE XW-20 viscosity grade | | | |
| FEI SUM | | | 2.6% min |
| FEI 2 | | | 1.2% min after 100 hours aging |
| SAE XW-30 viscosity grade | | | |
| FEI SUM | | | 1.9% min |
| FEI 2 | | | 0.9% min after 100 hours aging |
| SAE 10W-30 and all other viscosity grades not listed above | | | |
| FEI SUM | | | 1.5% min |
| FEI 2 | | | 0.6% min after 100 hours aging |
| ASTM D6709 (Sequence VIII) | | | |
| Bearing weight loss, mg | 26 (max) | 26 (max) | 26 (max) |
| Bench Test and Measured Parameter^a | | | |
| Aged oil low-temperature viscosity | | | |
| ASTM D4684, (Sequence IIIGA), aged oil low- temperature viscosity | Pass | Pass ^d | Pass |
| Or | | | |
| ASTM D7528, (ROBO Test), aged oil low- temperature viscosity | Pass | Pass ^d | Pass |

| | | | |
|--|-------------------|-------------------|---------------------|
| ASTM D7320, (Sequence III GB) phosphorus retention, % min | NR | NR | 79 |
| ASTM D6557 (Ball Rust Test), avg. gray value, min ^b | 100 | 100 | 100 |
| ASTM D5800, evaporation loss, 1 hour at 250°C, % max ^e | 15 | 15 | 15 |
| ASTM D6417, simulated distillation at 371°C, % max | 10 | 10 | 10 |
| ASTM D6795, EOFT, % flow reduction, max | 50 | 50 | 50 |
| ASTM D6794, EOWTT, % flow reduction, max | | | |
| with 0.6% H ₂ O | 50 | 50 | 50 |
| with 1.0% H ₂ O | 50 | 50 | 50 |
| with 2.0% H ₂ O | 50 | 50 | 50 |
| with 3.0% H ₂ O | 50 | 50 | 50 |
| ASTM D4951, phosphorus % mass, max ^f | 0.08 ^g | NR | 0.08 ^g |
| ASTM D4951, phosphorus % mass, min ^f | 0.06 ^g | 0.06 ^g | 0.06 ^g |
| ASTM D4951, or D2622, sulfur % mass, max ^f | | | |
| SAE 0W-16, 5W-16, 0W-20, 0W-30, 5W-20, and 5W-30 | 0.5 ^g | NR | 0.5 ^g |
| SAE 10W-30 | 0.6 ^g | NR | 0.6 ^g |
| All other viscosity grades | NR | NR | 0.6 ^g |
| ASTM D892 (Option A), foaming tendency | | | |
| Sequence I, mL, max, tendency/stability | 10/0 ^h | 10/0 ⁱ | 10/0 ^h |
| Sequence II, mL, max, tendency/stability | 50/0 ^h | 50/0 ⁱ | 50/0 ^h |
| Sequence III, mL, max, tendency/stability | 10/0 ^h | 10/0 ⁱ | 10/0 ^h |
| ASTM D6082 (Option A), high-temperature foaming mL, max, tendency/stability ^h | 100/0 | 100/0 | 100/0 |
| ASTM D6922, homogeneity and miscibility | j | j | j |
| ASTM D6709, (Sequence VIII) shear stability | k | k | k |
| ASTM D7097, TEOST MHT, high-temperature deposits, deposit wt, mg, max ^f | 35 | 45 | 35 |
| ASTM D5133, gelation index, max ^b | 12 ^l | NR | 12 ^l |
| ASTM D6335, TEOST 33C, high-temperature deposits, total deposit weight, mg, max | | | |
| SAE XW-16 | NR | NR | NR |
| SAE 0W-20 | NR | NR | NR |
| All other viscosity grades | NR | NR | 30 |
| ASTM D7563, emulsion retention | NR | NR | no water separation |
| ASTM D7216 Annex A2, elastomer compatibility | Table G-6 | Table G-6 | Table G-6 |

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.

^aResource Conserving does not apply to SAE 0W-16 and 5W-16.

^aTests are per ASTM requirements.

^bIf CI-4, CJ-4, CK-4 and/or FA-4 categories precede the "S" category and there is no API Certification Mark, the Sequence VG (ASTM D6593), Ball Rust (ASTM D6557), and Gelation Index (ASTM D5133) tests are not required.

^cViscosity grades are limited to 0W, 5W and 10W multigrade oils.

^dNot required for monograde and 15W, 20W, and 25W multigrade oils.

^eCalculated conversions specified in ASTM D5800 are allowed.

^fFor all viscosity grades: If CH-4, CI-4 and/or CJ-4 categories precede the "S" category and there is no API Certification Mark, the "S" category limits for phosphorus, sulfur, and the TEOST MHT do not apply. However, the CJ-4 limits for phosphorus and sulfur do apply for CJ-4 oils. This footnote cannot be applied if CK-4 or FA-4 is also claimed. Note that these "C" category oils have been formulated primarily for diesel engines and may not provide all of the performance requirements consistent with vehicle manufacturers' recommendations for gasoline-fueled engines.

^gThis is a non-critical specification as described in ASTM D3244.

^hAfter 1-minute settling period.

ⁱAfter 10-minute settling period.

^jShall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.

^kTen-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥ 5.6 mm²/s.

^lTo be evaluated from -5°C to temperature at which 40,000 cP is attained or -40°C, or 2 Celsius degrees below the appropriate MRV TP-1 temperature (defined by SAE J300), whichever occurs first.