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

SUBJECT: Addendum 5
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-2, 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 5.

These changes are effective as of February 10, 2016. If you have questions, please do not hesitate to contact me.

Sincerely,

Kevin Ferrick

Table G-2—Requirements for API Service Category SJ by Viscosity Grade

Engine Test Requirements[a]—All Viscosity Grades	
Sequence IID or ASTM D6557[b]	Pass
Sequence IIIE or IIIF or IIIG	Pass
Sequence VE or IVA plus VG[b]	Pass
L-38 or Sequence VIII	Pass

Bench Test and Measured Parameter[a]	Viscosity Grade Performance Criteria	
	SAE 0W-20, SAE 5W-20, SAE 5W-30, SAE 10W-30	All Others[c]
ASTM D5800 volatility loss, % max[d]	22	20[e]
ASTM D6417 volatility loss at 371°C (700°F), % max[d]	17	15[e]
ASTM D5480 volatility loss at 371°C (700°F), % max[d]	17	15[e]
ASTM D6795, % flow reduction, max	50	50
ASTM D6794, % flow reduction, max	Report	Report
With 0.6% H_2O	Report	Report
With 1.0 % H_2O	Report	Report
With 2.0% H_2O	Report	Report
With 3.0% H_2O	Report	Report
ASTM D4951 or D5185 phosphorus % mass, max	0.10[f]	NR
ASTM D92 flash point, °C min[g]	200	NR
ASTM D93 flash point, °C min[g]	185	NR
ASTM D892 foaming tendency (Option A)		
Sequence I, max, foaming/settling[h]	10/0	10/0
Sequence II, max, foaming/settling[h]	50/0	50/0
Sequence III, max, foaming/settling[h]	10/0	10/0
ASTM D6082 (optional blending required), static foam max, tendency/stability	200/50[i]	200/50[i]
ASTM D6922, homogeneity and miscibility	[j]	[j]
L-38 or Sequence VIII shear stability	[k]	[k]
ASTM D6335 high temperature deposits (TEOST), deposit wt, mg, max	60	60
ASTM D5133 gelation index, max[b]	12	NR
ASTM D4683, D4741, or D5481, High Temp/High Shear Viscosity @ 150°C, mPa·s, min	NR	2.6

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.
[a]Tests and limits are per ASTM D4485.
[b]If CI-4 and/or CJ-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.
[c]Does not include SAE 0W-16 and 5W-16.

[d]Volatility requirement shall be met in either Test Method D5800, Test Method D 5480, or Test Method D6417. A passing result in only one of these procedures is required.
[e]Passing volatility loss performance only required for SAE 15W-40 oils.
[f]This is a non-critical specification as described in ASTM D3244.
[g]Either Test Method D92 or Test Method D93 flash point requirement shall be met.
[h]Settling volume determined at 10 min.
[i]Settling volume determined at 1 min.
[j]Homogeneous with SAE Reference Oils.
[k]Ten-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥5.6 mm^2/s.

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

Bench Test and Measured Parameter[a]	Viscosity Grade Performance Criteria	
	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_2O	50	50
With 1.0 % H_2O	50	50
With 2.0% H_2O	50	50
With 3.0% H_2O	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
ASTM D4683, D4741, or D5481, High Temp./High Shear Viscosity @ 150°C, mPa·s, min	NR	2.6

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

[a]Tests and limits are per ASTM D4485.
[b]If 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.
[c]Does not include SAE 0W-16 and 5W-16.
[d]For 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.
[e]This is a non-critical specification as described in ASTM D3244.
[f]Settling volume determined at 10 min.
[g]Settling volume determined at 1 min.
[h]Homogeneous with SAE Reference Oils.
[i]Ten-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥5.6 mm^2/s.
[j]For 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_2O	50	50
with 1.0% H_2O	50	50
with 2.0% H_2O	50	50
with 3.0% H_2O	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

ASTM D4683, D4741, or D5481, High Temp./High Shear Viscosity @ 150°C, mPa·s, min	NR	2.6

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.
[a]Tests are per ASTM requirements.
[b]Does not include SAE 0W-16 and 5W-16.
[c]If 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.
[d]Calculated conversions specified in ASTM D5800 are allowed.
[e]For 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.
[f]This is a non-critical specification as described in ASTM D3244.
[g]After 10-minute settling period.
[h]After 1-minute settling period.
[i]Shall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.
[j]Ten-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥5.6 mm²/s.
[k]To 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[a]
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 IIIGB) 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_2O	50	50	50
with 1.0% H_2O	50	50	50
with 2.0% H_2O	50	50	50
with 3.0% H_2O	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

ASTM D4683, D4741, or D5481, High Temp./High Shear Viscosity @ 150°C, mPa·s, min	2.3	2.6	2.3

Note: All oils must meet the requirements of the most recent edition of SAE J300; NR = Not required.
[a]~~Resource Conserving does not apply to SAE 0W-16 and 5W-16.~~
[a]Tests are per ASTM requirements.
[b]If 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.
[c]Viscosity grades are limited to 0W, 5W and 10W multigrade oils.
[d]Not required for monograde and 15W, 20W, and 25W multigrade oils.
[e]Calculated conversions specified in ASTM D5800 are allowed.
[f]For 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.
[g]This is a non-critical specification as described in ASTM D3244.
[h]After 1-minute settling period.
[i]After 10-minute settling period.
[j]Shall remain homogenous and, when mixed with ASTM reference oils, shall remain miscible.
[k]Ten-hour stripped kinematic viscosity must remain in original SAE viscosity grade except XW-20 which must remain ≥5.6 mm²/s.
[l]To 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.