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D4485 Information Letter 19-1
Sequence Number 1
May 24, 2019

ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.

TO: D4485 Mailing List

SUBJECT:

1. Addition of the use of the information letter system to update the specification
2. API Service Category SN description added
3. API Service Category Resource Conserving Oil + SN description added
4. API Service Category SN Plus description added
5. API Service Category CK-4 description added
6. API Service Category FA-4 description added
7. Editorial Items
8. GF-4 Inclusion to support SM pass limits

On March 21, 2019 the D4485 Surveillance Panel approved the use of the information letter system to provide a timelier update to ASTM Specification D4485. Subcommittee B and D02 balloting will follow the published information letter items. On May 2, 2019 the panel approved the addition of several current API service classifications descriptions to ASTM Specification D4485. The revisions are detailed below.

1. The information letter system will be used to update the specification in a timelier manner. As a result footnote 1 was revised.
2. The SN API Service Category description was added as Appendix X2.4.
3. The Resource Conserving Oil Classification in Conjunction with API Service Category SN description was added as Appendix X2.5.
4. The SN PLUS Classification in Conjunction with API Service Category SN and API SN with Resource Conserving description was added as Appendix X2.6
5. The CK-4—For 2017 Heavy-Duty Diesel Engine Service Category was added as Appendix X2.10.
6. The FA-4—For 2017 Heavy-Duty Diesel Engine Service Category was added as Appendix X2.10.

ASTM Specification D4485-18a has been revised to incorporate these changes and are effective with the issuance of this letter. The text of the revisions is shown in the attachment.

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Chairman
ASTM Subcommittee B

Frank M. Farber
Director
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Attachment

c: http://www.astmtmc.cmu.edu/ftp/docs/d4485/IL_19-001_D4485.pdf

Distribution: Email

Revises D4485-18a

¹ This specification is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.B0 on Automotive Lubricants.

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Until the next revision of this specification, the ASTM Test Monitoring Center will update changes in specification by means of information letters. Information letters may be obtained from the ASTM Test Monitoring Center, 6555 Penn Avenue, Pittsburgh, PA 15206-4489, www.astmtmc.cmu.edu. This edition incorporates revisions in all information letters through No. 19-1.

X2.4 SN-2011 Gasoline Engine Warranty Maintenance Service

X2.4.1 API Service Category SN was adopted for use in describing engine oils available in 2011. These oils are for use in service typical of gasoline engines in current and earlier passenger cars, sport utility vehicles, vans, and light-duty trucks operating under vehicle manufacturers' recommended maintenance procedures. Vehicle owners and operators should follow their vehicle manufacturer's recommendations on engine oil viscosity and performance standard.

X2.4.2 Engine oils that meet the API Service Category SN designation (see X6 and Annex G, Table G-4 of API Publication 1509) may be used where API Service Category SM and earlier S categories have been recommended.

X2.4.3 Engine oils that meet the API Service Category SN designation have been tested in accordance with the ACC Code and may use the API Base Oil Interchangeability Guidelines and the API Guidelines for SAE Viscosity-Grade Engine Testing (see Annexes E and F of API Publication 1509).

X2.4.4 Engine oils that meet these requirements may display API Service Category SN in the upper portion of the API Service Symbol.

X2.5 Resource Conserving Oil Classification in Conjunction with API Service Category SN

X2.5.1 The Resource Conserving oil classification for gasoline-powered passenger cars, sport utility vehicles, vans, and light-duty trucks is a supplementary classification for engine oils that have resource conserving properties and is displayed—when used—in the lower portion of the API Service Symbol. The performance requirements for this supplementary classification are described technically in SAE J1423 and ASTM D4485 (latest version). Testing for conformance to this classification must be in accordance with the ACC Code. The API Base Oil Interchangeability Guidelines and the API Guidelines for SAE Viscosity-Grade Engine Testing (see Annexes E and F) may be used.

X2.5.2 API Service SN engine oils designated as Resource Conserving are formulated to help improve fuel economy and protect vehicle emission system components in passenger cars, sport utility vehicles, vans, and light-duty trucks powered by gasoline engines. These oils have demonstrated a fuel economy improvement (FEI) in a specific sequence test at the percentages listed in Table 1 when compared with a baseline oil (BL). Additionally, these oils have demonstrated in other tests listed in Table 1 that they provide greater emission system and turbocharger protection and help protect engines when operating on ethanol-containing fuels up to E85.

X2.5.3 Resource Conserving in conjunction with API SN focuses on fuel economy, emission system and turbocharger protection, and compatibility with ethanol-containing fuel up to E85.

X2.5.4 Oils that have passed the tests at the limits shown in Table 1 and are properly licensed by API may display "Resource Conserving" in the lower portion of the API Service Symbol in conjunction with API Service SN in the upper portion. The fuel economy and other resource conserving benefits obtained by individual vehicle operators using engine oils labeled Resource Conserving may differ because of many factors, including the type of vehicle and engine, engine manufacturing variables, the mechanical condition and maintenance of the engine, oil that has been previously used, operating conditions, and driving habits.

**Table X2.5.1 —Resource Conserving Primary Performance Criteria with
API Service Category SN**

Performance Test	Performance Criteria	
Sequence VID (ASTM D7589) ^a		
Viscosity Grade	FEI SUM	FEI2 minimum after 100 hours aging
XW-16 ^b	2.8% min	1.3% min
XW-20	2.6% min	1.2% min
XW-30	1.9% min	0.9% min
10W-30 and all other viscosity grades not listed above	1.5% min	0.6% min
OR		
Sequence VIE (ASTM D8114) ^a		
Viscosity Grade	FEI SUM	FEI2 minimum after 100 hours aging
XW-20	3.2% min	1.5% min
XW-30	2.5% min	1.2% min
10W-30 and all other viscosity grades not listed above	2.2% min	1.0% min
Sequence VIF (ASTM 8226) ^a		
Viscosity Grade	FEI SUM	FEI2 minimum after 100 hours aging
XW-16 ^b	3.7% min	1.8% min
Sequence IIIGB (ASTM D7320)	79% phosphorus retention min	
OR		
Sequence IIIHB (ASTM D8111)	81% phosphorus retention min	
Emulsion Retention (ASTM D7563)	No water separation	
High Temperature Deposits, TEOST 33C (ASTM D6335), Total Deposit Weight, mg		
SAE XW-16, 0W-20	Not Required	
All other viscosity grades	30 max	

^aViscosity grades are limited to 0W, 5W and 10W multi-grade oils.

^bResource Conserving does not apply to 5W-16.

X.2.6 SN PLUS Classification in Conjunction with API Service Category SN and API SN with Resource Conserving

X.2.6.1 API Service Category SN engine oils that also carry the classification SN PLUS are formulated to provide API SN performance and additional protection against low-speed pre-ignition for turbocharged direct injection gasoline-powered vehicles.

X.2.6.2 Oils that meet the requirements for API SN with SN PLUS or API SN with SN PLUS and Resource Conserving at the limits shown in API Publication 1509 Annex G, Table G-4, and are properly licensed may display “SN PLUS” or “Resource Conserving SN PLUS” in the lower portion of the API Service Symbol in conjunction with API SN in the upper portion.

X.2.6.3. Oils that satisfy SN PLUS can also effectively lubricate engines calling for API SN, API SN with Resource Conserving, or ILSAC GF-5, see X6. API SN with SN PLUS and API SN with SN PLUS and Resource Conserving are also backward compatible to API Service Categories before API SN.

Renumber existing sections as follows:

X2.4 → X2.7

X2.5 → X2.8

X2.6 → X2.9

X.2.10 CK-4—For 2017 Heavy-Duty Diesel Engine Service

X.2.10.1 API Service Category CK-4 describes oils for use in high-speed four-stroke cycle diesel engines designed to meet 2017 model year on-highway and Tier 4 non-road exhaust emission standards as well as for previous model year diesel engines. These oils are formulated for use in all applications with diesel fuels ranging in sulfur content up to 500 ppm (0.05% by weight). However, the use of these oils with greater than 15 ppm (0.0015% by weight) sulfur fuel may impact exhaust aftertreatment system durability and/or oil drain interval.

X.2.10.2 These oils are especially effective at sustaining emission control system durability where particulate filters and other advanced aftertreatment systems are used. API CK-4 oils are designed to provide enhanced protection against oil oxidation, viscosity loss due to shear, and oil aeration as well as protection against catalyst poisoning, particulate filter blocking, engine wear, piston deposits, degradation of low- and high-temperature properties, and soot-related viscosity increase.

X.2.10.3 Engine oils that meet the API Service Category CK-4 designation have been tested in accordance with the ACC Code of Practice and may use the API Base Oil Interchangeability Guidelines and the API Guidelines for SAE Viscosity-Grade Read Across shown in API Publication 1509.

X.2.10.4 API CK-4 oils exceed the performance criteria of API CJ-4, CI-4 with CI-4 PLUS, CI-4, and CH-4 and can effectively lubricate engines calling for those API Service Categories. When using CK-4 oil with higher than 15 ppm sulfur fuel, consult the engine manufacturer for service interval recommendations.

X.2.10.5 Marketers may license products meeting API CK-4 requirements as API CJ-4, CI-4 with CI-4 PLUS, CI-4, and CH-4.

X.2.11 FA-4—For 2017 Heavy-Duty Diesel Engine Service

X.2.11.1 API Service Category FA-4 describes certain XW-30 oils specifically formulated for use in select high-speed four-stroke cycle diesel engines designed to meet 2017 model year on-highway greenhouse gas (GHG) emission standards. These oils are formulated for use in on-highway applications with diesel fuel sulfur content up to 15 ppm (0.0015% by weight). Refer to individual engine manufacturer recommendations regarding compatibility with API FA-4 oils.

X.2.11.2 These oils are blended to a high temperature high shear (HTHS) viscosity range of 2.9cP to 3.2cP to assist in reducing GHG emissions. These oils are especially effective at sustaining emission control system durability where particulate filters and other advanced after treatment systems are used. API FA-4 oils are designed to provide enhanced protection against oil oxidation, viscosity loss due to shear, and oil aeration as well as protection against catalyst poisoning, particulate filter blocking, engine wear, piston deposits, degradation of low- and high-temperature properties, and soot-related viscosity increase.

X.2.11.3 Engine oils that meet the API Service Category FA-4 designation have been tested in accordance with the ACC Code of Practice and may use the API Base Oil Interchangeability Guidelines and the API Guidelines for SAE Viscosity-Grade Read Across shown in API Publication 1509.

X.2.11.4 API FA-4 oils are not interchangeable or backward compatible with API CK-4, CJ-4, CI-4 with CI-4 PLUS, CI-4, and CH-4 oils. Refer to engine manufacturer recommendations to determine if API FA-4 oils are suitable for use. API FA-4 oils are not recommended for use with fuels having greater than 15 ppm sulfur. For fuels with sulfur contents greater the 15 ppm, refer to engine manufacturer recommendations.

Editorial Items

Table 5 under CK: Change IN to 1N

Table 6 under FA-4: Change IN to 1N

In Table 3, CI-4 table. Footnote "A" needs to point to Annex A3 not A6.

X1.3, X1.6, X2.2.2, X2.2.3, X2.3.2, X2.3.3 change Appendix to Annex

X4.1 See Table X4.1 & X5

X5. ILSAC GF-4 Minimum Performance Standard for Passenger Car Engine Oils

X5.1 The Japan Automobile Manufacturers Association, Inc. and representatives from DaimlerChrysler Corporation, Ford Motor Company and General Motors Corporation, through an organization called the International Lubricants Standardization and Approval Committee (ILSAC), jointly developed and approved an ILSAC GF-4 minimum performance standard for gasoline-fueled passenger car engine oils.

X5.2 This standard specifies the minimum performance requirements (both engine sequence and bench tests) and chemical and physical properties for those engine oils that vehicle manufacturers deem necessary for satisfactory equipment performance and life.

X5.3 In addition to meeting the requirements of the standard, it is the oil marketer's responsibility to be aware of and comply with all applicable legal and regulatory requirements on substance use restrictions, labeling, and health and safety information when marketing products meeting the GF-4 standard. It is also the marketer's responsibility to conduct its business in a manner which represents minimum risk to consumers and the environment.

X5.4 The ultimate assessment of an engine oil's performance must include a variety of vehicle fleet tests which simulate the full range of customer driving conditions. The engine sequence tests listed in this document have been specified instead of fleet testing to minimize testing time and costs. This simplification of test requirements is only possible because the specified engine sequence tests have been judged to be predictive of a variety of vehicle tests.

X5.5 The relationships between engine sequence tests and vehicle fleet tests are judged valid based only on the range of base oils and additive technologies investigated—generally those which have proven to have satisfactory performance in service, and which are in widespread use at this time. The introduction of base oils or additive technologies which constitute a significant departure from existing practice requires sufficient supporting vehicle fleet testing data to ensure there is no adverse effect to vehicle components or to emission control systems. This vehicle fleet testing should be conducted in addition to the other performance requirements listed in this specification.

X5.6 Engine oil compatibility with sealing materials and gaskets is not controlled by performance tests in this specification. However, an SAE Committee on Automotive Rubber Specifications (CARS) has established a slate of reference elastomers (see SAE J2643) which may be used for testing of different base oils and additive technologies which constitute a significant departure from existing materials. The CARS committee has also established an ASTM reference oil (Service Fluid 105) which should be considered as an aggressive oil and could also be used as a reference. ILSAC recommends that additive or base oil technologies that exceed the aggression of this reference oil be revised or adequately field tested to ensure no chance of customer seal failures when placed in commercial service.

X5.7 It is the responsibility of any individual or organization introducing a new technology to perform this vehicle fleet testing, and the responsibility of the oil marketer to ensure the above testing of new technology was satisfactorily completed. No marketer can claim to be acting in a reasonable and prudent manner if the marketer knowingly uses a new technology based only on the results of engine sequence testing without verifying the suitability of the new technology in vehicle fleet testing which simulates the full range of customer operation.

X5.8 The ILSAC GF-4 Minimum Performance Standard includes tests for which Viscosity Grade Read Across and Base Oil Interchange Guidelines have been developed by the appropriate groups. It should be pointed out, however, that when oil marketers use the Guidelines, they do so based on their own judgment and at their own risk. The use of any guidelines does not absolve the marketer of the responsibility for meeting all specified requirements for any products the marketer sells in the marketplace that are licensed as ILSAC GF-4 with API.

Table X5.1—ILSAC GF-4 Passenger Car Engine Oil Minimum Performance Standard

Performance Test	Performance Criteria
Fresh Oil Viscosity Requirements	Oils shall meet all requirements of SAE J300. Viscosity grades are limited to SAE 0W, 5W, and 10W multigrade oils
Gelation index	ASTM D5133 12 (max) 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.
Engine Test Requirements	
Wear and oil thickening	Sequence IIIG (ASTM D7320)
Kinematic viscosity increase @ 40°C , %	150 (max)
Average weighted piston deposits, merits	3.5 (min)
Hot stuck rings	None
Average cam plus lifter wear, μm	60 (max)
Aged oil low temperature viscosity	Sequence IIIGA (ASTM D7320)
Evaluate the EOT oil from the ASTM D7320 Sequence IIIGA test with ASTM D4684 (MRV TP-1)	The ASTM D4684 viscosity of the EOT sample must meet the requirements of the original grade or the next higher grade
Wear, sludge, and varnish	Sequence VG (ASTM D6593)
Average engine sludge, merits	7.8 (min)
Average rocker cover sludge, merits	8.0 (min)
Average engine varnish, merits	8.9 (min)
Average piston skirt varnish, merits	7.5 (min)
Oil screen sludge, % area	20 (max)
Oil screen debris, % area	Rate and report
Hot-stuck compression rings	None
Cold stuck rings	Rate and report
Oil ring clogging, % area	Rate and report
Follower pin wear, cyl #8, avg, μm	Rate and report ^A
Ring gap increase, cyl #1 and #8, avg, μ	Rate and report ^A
Valvetrain wear	ASTM Sequence IVA (ASTM D6891)
Average cam wear (7 position avg.), μm	90 (max)
Bearing corrosion	ASTM Sequence VIII (ASTM D6709)
Bearing weight loss, mg	26 (max)

^AASTM Surveillance Panel will review statistics annually.

Table X5.1 *Continued*

Performance Test	Performance Criteria
Engine Test Requirements (continued)	
Fuel Efficiency	ASTM Sequence VIB ^B (ASTM D6837) SAE 0W-20 and 5W-20 viscosity grades: 2.3% FEI 1 (min) after 16 hours aging 2.0% FEI 2 (min) after 96 hours aging SAE 0W-30 and 5W-30 viscosity grades: 1.8% FEI 1 (min) after 16 hours aging 1.5% FEI 2 (min) after 96 hours aging SAE 10W-30 and all other viscosity grades not listed above: 1.1% FEI 1 (min) after 16 hours aging 0.8% FEI 2 (min) after 96 hours aging
Bench Test Requirements	
Catalyst compatibility	ASTM D4951
Phosphorus content, % (mass)	0.08 (max)
Sulfur content	ASTM D4951 or D 2622
SAE 0W and 5W multigrades, % (mass)	0.5 (max)
SAE 10W multigrades, % (mass)	0.7 (max)
Wear	ASTM D4951
Phosphorus content, % (mass)	0.06 (min)
Volatility	ASTM D5800
Evaporation loss, %	15 (max), 1 hour at 250°C (Note: Calculated conversions specified in D 5800 are allowed.)
Simulated distillation, %	ASTM D6417 10 (max) at 371°C
High Temperature deposits	TEOST MHT
Deposits weight, mg	35 (max)
Filterability	
EOWTT, %	ASTM D6794
with 0.6% H ₂ O	50 (max) flow reduction
with 1.0% H ₂ O	50 (max) flow reduction
with 2.0% H ₂ O	50 (max) flow reduction
with 3.0% H ₂ O	50 (max) flow reduction
	(Note: Test formulation with highest additive (DI/VI) concentration. Read across results to all other base oil/viscosity grade formulations using same or lower concentration of identical additive (DI/VI) combination. Each different DI/VI combination must be tested.)
EOFT, %	ASTM D6795 50 (max) flow reduction

^BAll Fuel Economy Improvement (FEI) 1 and FEI 2 values determined relative to ASTM Reference Oil BC.

Table X5.1 *Continued*

Performance Test	Performance Criteria
Bench Test Requirements (continued)	
Foaming characteristics	ASTM D892 (Option A)
Tendency, mL	
Sequence I	10 (max)
Sequence II	50 (max)
Sequence III	10 (max)
Stability ^C , mL	
Sequence I	0 (max)
Sequence II	10 (max)
Sequence III	0 (max)
High temperature foaming characteristics	ASTM D6082 (Option A)
Tendency, mL	100 (max)
Stability ^D , mL	0 (max)
Shear stability	ASTM Sequence VIII (ASTM D6709)
10-hour stripped KV @ 100°C	Kinematic viscosity must remain in original SAE viscosity grade.
Homogeneity and miscibility	ASTM D6922
	Shall remain homogeneous and, when mixed with ASTM reference oils, shall remain miscible.
Engine rusting	Ball Rust Test (ASTM D6557)
Average gray value	100 (min)

^C After 10-minute settling period.

^D After 1-minute settling period.

Re-number existing X5 → X6

Re-number existing X6 → X7

Re-number existing X7 → X8

Re-number existing X8 → X9