TABLE 1 OF § 1065.703—TEST FUEL SPECIFICATIONS FOR DISTILLATE DIESEL FUEL

Item	Units	Ultra low sulfur	Low sulfur	High sulfur	Reference procedure [1]
Cetane Number		40–50	40–50	40–50	ASTM D 613–03b
Distillation range:					
Initial boiling point	°C	171–204	171–204	171–204	ASTM D 86–04b
10 pct. point	°C	204–238	204–238	204–238	
50 pct. point	°C	243–282	243–282	243–282	
90 pct. point	°C	293–332	293–332	293–332	
Endpoint	°C	321–366	321–366	321–366	
Gravity	°API	32–37	32–37	32–37	ASTM D 287–92
Total sulfur	mg/kg	7–15	300–500	2000–4000	ASTM D 2622–03
Aromatics, minimum. (Remainder shall be paraffins, naphthalenes, and olefins).	g/kg	100	100	100	ASTM D 5186–03
Flashpoint, min	°C	54	54	54	ASTM D 93–02a
Viscosity	cSt	2.0–3.2	2.0–3.2	2.0–3.2	ASTM D 445–04

[1] All ASTM procedures are incorporated by reference in § 1065.1010. See § 1065.701(d) for other allowed procedures.

EFFECTIVE DATE NOTE: At 73 FR 37340, June 30, 2008, § 1065.703 was amended by revising Table 1, effective July 7, 2008. For the convenience of the user, the revised text is set forth as follows:

§ 1065.703 Distillate diesel fuel.

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TABLE 1 OF § 1065.703.—TEST FUEL SPECIFICATIONS FOR DISTILLATE DIESEL FUEL

Item	Units	Ultra low sulfur	Low sulfur	High sulfur	Reference procedure [1]
Cetane Number	40–50	40–50	40–50	ASTM D613–05.	
Distillation range	°C				
Initial boiling point	171–204	171–204	171–204	ASTM D86–07a.	
10 pct. point	204–238	204–238	204–238		
50 pct. point	243–282	243–282	243–282		
90 pct. point	293–332	293–332	293–332		
Endpoint	321–366	321–366	321–366		
Gravity	° API	32–37	32–37	32–37	ASTM D4052–96e01.
Total sulfur	mg/kg	7–15	300–500	2000–4000	ASTM D2622–07.
Aromatics, min. (Remainder shall be paraffins, naphthalenes, and olefins).	g/kg	100	100	100	ASTM D5186–03.
Flashpoint, min.	°C	54	54	54	ASTM D93–07.
Kinematic Viscosity	cSt	2.0–3.2	2.0–3.2	2.0–3.2	ASTM D445–06.

[1] ASTM procedures are incorporated by reference in § 1065.1010. See § 1065.701(d) for other allowed procedures.

§ 1065.705 Residual and intermediate residual fuel.

This section describes the specifications for fuels meeting the definition of residual fuel in 40 CFR 80.2, including fuels marketed as intermediate fuel. Residual fuels for service accumulation and any testing must meet the following specifications:

(a) The fuel must be a commercially available fuel that is representative of the fuel that will be used by the engine in actual use.

(b) The fuel must meet the specifications for one of the categories in the following table:

TABLE 1 OF § 1065.705.—SERVICE ACCUMULATION AND TEST FUEL SPECIFICATIONS FOR RESIDUAL FUEL

Characteristic	Unit	Category ISO–F–										Test method reference [1]
		RMA 30	RMB 30	RMD 80	RME 180	RMF 180	RMG 380	RMH 380	RMK 380	RMH 700	RMK 700	
Density at 15 °C, max.	kg/m³	960.0	975.0	980.0	991.0		991.0		1010.0	991.0	1010.0	ISO 3675 or ISO 12185: 1996/Cor 1:2001 (see also ISO 8217:2005(E) 7.1).
Kinematic viscosity at 50 °C, max.	cSt	30.0		80.0	180.0		380.0		700.0			ISO 3104:1994/Cor 1:1997.
Flash point, min	°C	60		60	60		60		60			ISO 2719 (see also ISO 8217:2005(E) 7.2).
Pour point (upper):												
Winter quality, max.	°C	0	24	30	30		30		30			ISO 3016.
Summer quality, max.	6	24	30	30		30		30			ISO 3016.	
Carbon residue, max.	(kg/kg)%	10		14	15	20	18	22	22			ISO 10370:1993/Cor 1:1996.
Ash, max.	(kg/kg)%	0.10		0.10	0.10	0.15	0.15		0.15			ISO 6245.
Water, max	(m³/m³)%	0.5		0.5	0.5		0.5		0.5			ISO 3733.
Sulfur, max	(kg/kg)%	3.50		4.00	4.50		4.50		4.50			ISO 8754 or ISO 14596: 1998/Cor 1:1999 (see also ISO 8217:2005(E) 7.3).
Vanadium, max	mg/kg	150		350	200	500	300	600	600			ISO 14597 or IP 501 or IP 470 (see also ISO 8217:2005(E) 7.8).

TABLE 1 OF § 1065.705.—SERVICE ACCUMULATION AND TEST FUEL SPECIFICATIONS FOR RESIDUAL FUEL—Continued

Characteristic	Unit	Category ISO–F–										Test method reference [1]
		RMA 30	RMB 30	RMD 80	RME 180	RMF 180	RMG 380	RMH 380	RMK 380	RMH 700	RMK 700	
Total sediment potential, max.	(kg/kg)%	0.10		0.10	0.10		0.10		0.10			ISO 10307–2 (see also ISO 8217:2005(E) 7.6).
Aluminium plus silicon, max.	mg/kg	80		80	80		80		80			ISO 10478 or IP 501 or IP 470 (see also ISO 8217:2005(E) 7.9).
Used lubricating oil (ULO), max.		Fuel shall be free of ULO. We consider a fuel to be free of ULO if one or more of the elements zinc, phosphorus, or calcium is at or below the specified limits. We consider a fuel to contain ULO if all three elements exceed the specified limits.										IP 501 or IP 470 (see ISO 8217:2005(E) 7.7). IP 501 or IP 500 (see ISO 8217:2005(E) 7.7). IP 501 or IP 470 (see ISO 8217:2005(E) 7.7).
	mg/kg	15										
Zinc		15										
Phosphorus		15										
Calcium		30										

[1] ISO procedures are incorporated by reference in § 1065.1010. See § 1065.701(d) for other allowed procedures.

[73 FR 37340, June 30, 2008]

EFFECTIVE DATE NOTE: At 73 FR 37340, June 30, 2008, § 1065.705 was added, effective July 7, 2008.

§ 1065.710 Gasoline.

(a) Gasoline for testing must have octane values that represent commercially available fuels for the appropriate application.

(b) There are two grades of gasoline specified for use as a test fuel. If the standard-setting part requires testing with fuel appropriate for low temperatures, use the test fuel specified for low-temperature testing. Otherwise, use the test fuel specified for general testing. The two grades are specified in Table 1 of this section.

TABLE 1 OF § 1065.710—TEST FUEL SPECIFICATIONS FOR GASOLINE

Item	Units	General testing	Low-temperature testing	Reference procedure [1]
Distillation Range:				
Initial boiling point	°C	24–35 [2]	24–36	ASTM D 86–04b
10% point	°C	49–57	37–48.	
50% point	°C	93–110	82–101.	
90% point	°C	149–163	158–174.	
End point	°C	Maximum, 213	Maximum, 212.	
Hydrocarbon composition:				
1. Olefins	mm^3/m^3	Maximum, 100,000	Maximum, 175,000	ASTM D 1319–03
2. Aromatics	mm^3/m^3	Maximum, 350,000	Maximum, 304,000.	
3. Saturates	mm^3/m^3	Remainder	Remainder.	
Lead (organic)	g/liter	Maximum, 0.013	Maximum, 0.013	ASTM D 3237–02
Phosphorous	g/liter	Maximum, 0.0013	Maximum, 0.005	ASTM D 3231–02
Total sulfur	mg/kg	Maximum, 80	Maximum, 80	ASTM D 1266–98
Volatility (Reid Vapor Pressure)	kPa	60.0–63.4 [2,3]	77.2–81.4	ASTM D 323–99a

[1] All ASTM procedures are incorporated by reference in § 1065.1010. See § 1065.701(d) for other allowed procedures.
[2] For testing at altitudes above 1 219 m, the specified volatility range is (52 to 55) kPa and the specified initial boiling point range is (23.9 to 40.6) °C.
[3] For testing unrelated to evaporative emissions, the specified range is (55 to 63) kPa.

EFFECTIVE DATE NOTE: At 73 FR 37341, June 30, 2008, § 1065.710 was amended by revising Table 1, effective July 7, 2008. For the convenience of the user, the revised text is set forth as follows:

§ 1065.710 Gasoline.

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TABLE 1 OF § 1065.710.—TEST FUEL SPECIFICATIONS FOR GASOLINE

Item	Units	General testing	Low-temperature testing	Reference procedure [1]
Distillation Range:				
Initial boiling point	°C	24–35 [2]	24–36.	
10% point	°C	49–57	37–48	ASTM D86–07a.
50% point	°C	93–110	82–101.	
90% point	°C	149–163	158–174.	
End point	°C	Maximum, 213	Maximum, 212.	
Hydrocarbon composition:				
Olefins	m^3/m^3	Maximum, 0.10	Maximum, 0.175	ASTM D1319–03.
Aromatics	Maximum, 0.35.	Maximum, 0.304.		
Saturates	Remainder	Remainder.		
Lead (organic)	g/liter	Maximum, 0.013	Maximum, 0.013	ASTM D3237–06e01.
Phosphorous	g/liter	Maximum, 0.0013	Maximum, 0.005	ASTM D3231–07.
Total sulfur	mg/kg	Maximum, 80	Maximum, 80	ASTM D2622–07.
Volatility (Reid Vapor Pressure).	kPa	60.0–63.4 [2,3]	77.2–81.4	ASTM D5191–07.

[1] ASTM procedures are incorporated by reference in § 1065.1010. See § 1065.701(d) for other allowed procedures.
[2] For testing at altitudes above 1,219 m, the specified volatility range is (52.0 to 55.2) kPa and the specified initial boiling point range is (23.9 to 40.6) °C.
[3] For testing unrelated to evaporative emissions, the specified range is (55.2 to 63.4) kPa.