

engineering judgement, demonstrates the durability of the emissions control system. The combination shall be selected such that the cumulative volumes of both the methanol fuel and the petroleum fuel used shall be at least 25 percent of the total fuel volume. The fuels shall be or alternated at intervals not to exceed 500 hours.

(iii) Or, other combinations for testing and/or service accumulation which demonstrate compliance with the standards over the entire design range of the vehicle, provided that written approval is obtained from the Administrator prior to the start of testing.

(3) The specification range of the fuels to be used under this paragraph (d) shall be reported in accordance with § 86.094-21.

(e) *Natural gas-fuel.* (1) Natural gas-fuel having the following specifications will be used by the Administrator for exhaust and evaporative emission testing of natural gas-fueled engines:

NATURAL GAS CERTIFICATION FUEL SPECIFICATIONS

Item		ASTM test method No.	Value
Methane .....	min. mole pct.	D1945	89.0
Ethane .....	max. mole pct.	D1945	4.5
C <sub>3</sub> and higher .....	max. mole pct.	D1945	2.3
C <sub>6</sub> and higher .....	max. mole pct.	D1945	0.2
Oxygen .....	max. mole pct.	D1945	0.6
Inert gases: Sum of CO <sub>2</sub> and N <sub>2</sub> ....	max. mole pct.	D1945	4.0
Odorant <sup>1</sup>			

<sup>1</sup> The natural gas at ambient conditions must have a distinctive odor potent enough for its presence to be detected down to a concentration in air of not over 1/5 (one-fifth) of the lower limit of flammability.

(2) Natural gas-fuel representative of commercial natural gas-fuel and which will be generally available through retail outlets shall be used in service accumulation.

(3) Other natural gas-fuels may be used for testing and service accumulation provided:

- (i) They are commercially available;
- (ii) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service; and
- (iii) Written approval from the Administrator of the fuel specifications must be provided prior to the start of testing.

(4) The specification range of the fuels to be used under paragraphs (e)(1) and (e)(2) of this section shall be reported in accordance with § 86.094-21(b)(3).

(f) *Liquefied petroleum gas-fuel.* (1) Liquefied petroleum gas-fuel used for exhaust and evaporative emission testing and in service accumulation shall be commercially available liquefied petroleum gas-fuel.

(i) Manufacturers shall recommend the liquefied petroleum gas-fuel to be used for testing and service accumulation.

(ii) The Administrator shall determine the liquefied petroleum gas-fuel to be used for testing and service accumulation.

(2) Other liquefied petroleum gas-fuels may be used for testing and service accumulation provided:

- (i) They are commercially available;
- (ii) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service; and
- (iii) Written approval from the Administrator of the fuel specifications must be provided prior to the start of testing.

(3) The specification range of the fuels to be used under paragraphs (f)(1) and (f)(2) of this section shall be measured in accordance with ASTM D2163-91 and reported in accordance with § 86.094-21(b)(3).

(g) Fuels not meeting the specifications set forth in this section may be used only with the advance approval of the Administrator.

[59 FR 48528, Sept. 21, 1994, as amended at 60 FR 34371, June 30, 1995; 62 FR 47125, Sept. 5, 1997]

**§ 86.1313-98 Fuel specifications.**

Section 86.1313-98 includes text that specifies requirements that differ from § 86.1313-94. Where a paragraph in § 86.1313-94 is identical and applicable to § 86.1313-98, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1313-94”.

- (a) through (b)(1) [Reserved]. For guidance see § 86.1313-94.
- (b)(2) Petroleum fuel for diesel engines meeting the specifications in

Table N98-2, or substantially equivalent specifications approved by the Administrator, shall be used in exhaust emissions testing. The grade of petroleum fuel used shall be commercially designated as "Type 2-D" grade diesel fuel except that fuel commercially designated as "Type 1-D" grade diesel fuel may be substituted provided that the manufacturer has submitted evidence

to the Administrator demonstrating to the Administrator's satisfaction that this fuel will be the predominant in-use fuel. Such evidence could include such things as copies of signed contracts from customers indicating the intent to purchase and use "Type 1-D" grade diesel fuel as the primary fuel for use in the engines or other evidence acceptable to the Administrator.

TABLE N98-2

Item		ASTM test method No.	Type 1-D	Type 2-D
Cetane Number .....		D 613	40-54	40-50
Cetane Index .....		D 976	40-54	40-50
Distillation range:				
IBP .....	°F	D 86	330-390	340-400
	(°C)		(165.6-198.9)	(171.1-204.4)
10 pct. point .....	°F	D 86	370-430	400-460
	(°C)		(187.8-221.1)	(204.4-237.8)
50 pct. point .....	°F	D 86	410-480	470-540
	(°C)		(210.0-248.9)	(243.3-282.2)
90 pct. point .....	°F	D 86	460-520	560-630
	(°C)		(237.8-271-1)	(293.3-332.2)
EP .....	°F	D 86	500-560	610-690
	(°C)		(260.0-293.3)	(321.1-365.6)
Gravity .....	°API	D 287	40-44	32-37
Total sulfur .....	pct.	D 2622	0.03-0.05	0.03-0.05
Hydrocarbon composition:				
Aromatics, minimum .....	pct.	D 5186	8	27
Paraffins, Naphthenes, Olefins .....		D 1319	1	1
Flashpoint, min. ....	°F	D 93	120	130
	(°C)		(48.9)	(54.4)
Viscosity .....	centistokes	D 445	1.6-2.0	2.0-3.2

<sup>1</sup> Remainder.

(b)(3) through (e) [Reserved]. For guidance see §86.1313-94.

[62 FR 47126, Sept. 5, 1997, as amended at 65 FR 8278, Feb. 18, 2000]

**§ 86.1313-2004 Fuel specifications.**

Section 86.1313-04 includes text that specifies requirements that differ from §86.1313-94 and §86.1313-98. Where a paragraph in §86.1313-94 or §86.1313-98 is identical and applicable to §86.1313-04, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see §86.1313-94." or "[Reserved]. For guidance see §86.1313-98."

(a) *Gasoline fuel.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust and evaporative emission testing of petroleum-fueled Otto-cycle engines, except that the Administrator will not use gasoline having a sulfur specification higher than 0.0045 weight percent. Gasoline having the following specification or substantially equivalent specifications approved by the Administrator, must be used by the manufacturer in exhaust and evaporative testing except that octane specifications do not apply:

Item	ASTM test method No.	Value
(i) Octane, Research, Min. ....	D2699	93
(ii) Sensitivity, Min. ....		7.5
(iii) Lead (organic), maximum: g/U.S. gal. (g/liter) .....	D3237	0.050 (0.013)
(iv) Distillation Range: .....	D86	
(A) IBP <sup>1</sup> : °F ( °C) .....		75-95 (23.9-35)
(B) 10 pct. point: °F ( °C) .....		120-135 (48.9-57.2)
(C) 50 pct. point: °F ( °C) .....		200-230 (93.3-110)