

**Environmental Protection Agency**

**§ 86.513-94**

(4) Written approval from the Administrator of the fuel specifications must be provided prior to the start of testing.

(e) The specification range of the fuels and engine lubricants to be used under paragraph (b) of this section shall be reported in accordance with § 86.416.

(f) The same lubricant(s) shall be used for both service accumulation and emission testing.

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

(h) *Mixtures of petroleum and methanol fuels for flexible fuel motorcycles.* (1) Mixtures of petroleum and methanol fuels used for exhaust and evaporative emission testing and service accumulation for flexible fuel motorcycles shall be within the range of fuel mixtures for which the vehicle was designed.

(2) Manufacturer testing and service accumulation may be performed using only those mixtures (mixtures may be different for exhaust testing, evaporative testing, and service accumulation) expected to result in the highest emissions, provided:

(i) The fuels which constitute the mixture will be used in customer service, and

(ii) Information, acceptable to the Administrator, is provided by the manufacturer to show that the designated fuel mixtures would result in the highest emissions, 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 paragraph (h)(1) of this section shall be reported in accordance with § 86.090 21(b)(3).

[53 FR 476, Jan. 7, 1988, as amended at 54 FR 14546, Apr. 11, 1989]

**§ 86.513-94 Fuel and engine lubricant specifications.**

(a) *Gasoline.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust emission testing of gasoline-fueled motorcycles. Gasoline having the following specifications or substantially equivalent specifications approved by the Admin-

istrator, shall be used by the manufacturer for emission testing except that the octane specifications do not apply.

Item	ASTM	Value
Octane, research, minimum .....	D2699	96
Lead (organic): g/liter (g/U.S. gal.) .....	D3237	<sup>1</sup> 0.013 <sup>1</sup> (0.050)
Distillation range:		
IBP: °C ( °F) .....	D86	23.9-35 (75-95)
10 pct. point: °C ( °F) .....	D86	48.9-57.2 (120-135)
50 pct. point: °C ( °F) .....	D86	93.3-110 (200-230)
90 pct. point: °C ( °F) .....	D86	148.9- 162.8 (300-325)
EP: max. °C ( °F) .....	D86	212.8 (415)
Sulfur, max. wt. % .....	D1266	0.10
Phosphorus: max. g/liter (g/U.S. gal.) .....	D3231	0.0013 (0.005)
RVP kPa (psi) .....	D323	55.2-63.4 (8.0-9.2)
Hydrocarbon composition:		
Olefins, max., % .....	D1319	10
Aromatics, max., % .....	D1319	35
Saturates .....	D1319	Remainder

<sup>1</sup> Maximum.

(2) Unleaded gasoline and engine lubricants representative of commercial fuels and engine lubricants which will be generally available through retail outlets shall be used in service accumulation.

(3) The octane rating of the gasoline used shall be no higher than 4.0 Research octane numbers above the minimum recommended by the manufacturer.

(4) The Reid Vapor Pressure of the gasoline used shall be characteristic of commercial gasoline fuel during the season in which the service accumulation takes place.

(b) *Methanol fuel.* (1) Methanol fuel used for exhaust and evaporative emission testing and in service accumulation of methanol-fueled motorcycles shall be representative of commercially available methanol fuel and shall consist of at least 50 percent methanol by volume.

(2) Manufacturers shall recommend the methanol fuel to be used for testing and service accumulation in accordance with paragraph (b)(1) of this section.

(3) The Administrator shall determine the methanol fuel to be used for testing and service accumulation.

(4) Other methanol fuels may be used for testing and service accumulation provided:

- (i) They are commercially available; and
- (ii) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service; and
- (iii) Use of a fuel listed under paragraphs (b)(1), (b)(2) or (b)(3) of this section would have a detrimental effect on emissions or durability; and
- (iv) Written approval from the Administrator of the fuel specifications must be provided prior to the start of testing.

(c) *Mixtures of petroleum and methanol fuels for flexible fuel motorcycles.* (1) Mixtures of petroleum and methanol fuels used for exhaust and evaporative emission testing and service accumulation for flexible fuel motorcycles shall consist of the petroleum fuel listed in paragraph (a) of this section and the methanol fuel listed in paragraph (b), and shall be within the range of fuel mixtures for which the vehicle was designed, as reported in accordance with § 86.90-21. The Administrator may use any fuel or fuel mixture within this range for testing.

(2) The fuel mixtures used by the manufacturers shall be sufficient to demonstrate compliance over the full design range, and shall include:

- (i) For emission testing,
  - (A) The petroleum fuel specified in paragraph (a) or (b),
  - (B) A methanol fuel representative of the methanol fuel expected to the found in use, as specified in paragraph (b).

(ii) For service accumulation, an alternating combination of the fuels specified in paragraphs (a) and (b) will be used to demonstrate the durability of the emission control systems based on good engineering judgement. The combination shall be selected such that the cumulative volumes of both the methanol fuel and the petroleum fuel used shall be at least twenty-five percent of the total fuel volume. The fuels shall be alternated at mileage intervals not to exceed 1,000 kilometers.

(3) The specification range of the fuels to be used under paragraph (c) of

this section shall be reported in accordance with § 86.094-21.

(d) *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 motorcycles. Natural gas-fuel having the following specifications or substantially similar specifications approved by the Administrator, shall be used by the manufacturer for emission testing.

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>4</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 and engine lubricants representative of commercial fuels and engine lubricants 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;
- (iii) Written approval from the Administrator of the fuel specifications must be provided prior to the start of testing.

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

(2) Manufacturers shall recommend the liquefied petroleum gas-fuel to be used for testing and service accumulation in accordance with paragraph (e)(1) of this section.

**Environmental Protection Agency**

**§ 86.513-2004**

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

(4) 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.

(f) *Lubricants.* (1) If the manufacturer specifies several lubricants to be used by the ultimate purchaser, the Administrator will select one to be used during service accumulation.

(2) The same lubricant(s) shall be used for both service accumulation and emission testing.

(g) The specification range of the fuels and of the engine lubricants to be used under paragraphs (a), (b), (c), (d) and (e) of this section shall be reported in accordance with § 86.416.

(h) Written approval from the Administrator of the fuel and lubricant specifications must be provided prior to the start of testing.

[59 FR 48512, Sept. 21, 1994, as amended at 60 FR 34354, June 30, 1995]

**§ 86.513-2004 Fuel and engine lubricant specifications.**

Section 86.513-2004 includes text that specifies requirements that differ from § 86.513-94. Where a paragraph in § 86.513-94 is identical and applicable to § 86.513-2004, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.513-94.” Where a corresponding paragraph of § 86.513-94 is not applicable, this is indicated by the statement “[Reserved].”

(a) *Gasoline.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust emission testing of gasoline-fueled motorcycles. Gasoline having the following specifications or substantially equivalent specifications approved by the Administrator, shall be used by the manufacturer for emission testing except that the octane specifications do not apply.

TABLE 1 OF § 86.513-2004.—GASOLINE TEST FUEL SPECIFICATIONS

Item	Procedure	Value
Distillation Range:		
1. Initial boiling point, °C .....	ASTM D 86-97	23.9—35.0 <sup>1</sup> .
2. 10% point, °C .....	ASTM D 86-97	48.9—57.2.
3. 50% point, °C .....	ASTM D 86-97	93.3—110.0.
4. 90% point, °C .....	ASTM D 86-97	148.9—162.8.
5. End point, °C .....	ASTM D 86-97	212.8.
Hydrocarbon composition:		
1. Olefins, volume % .....	ASTM D 1319-98	10 maximum.
2. Aromatics, volume % .....	ASTM D 1319-98	35 minimum.
3. Saturates .....	ASTM D 1319-98	Remainder.
Lead (organic), g/liter .....	ASTM D 3237	0.013 maximum.
Phosphorous, g/liter .....	ASTM D 3231	0.005 maximum.
Sulfur, weight % .....	ASTM D 1266	0.08 maximum.
Volatility (Reid Vapor Pressure), kPa .....	ASTM D 3231	55.2 to 63.4 <sup>1</sup> .

<sup>1</sup> 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.

(2) Unleaded gasoline and engine lubricants representative of commercial fuels and engine lubricants which will be generally available through retail outlets shall be used in service accumulation.

(3) The octane rating of the gasoline used shall be no higher than 4.0 Research octane numbers above the min-

imum recommended by the manufacturer.

(4) The Reid Vapor Pressure of the gasoline used shall be characteristic of commercial gasoline fuel during the season in which the service accumulation takes place.