dinitrophenylhydrazine (DNPH) derivatives using ultraviolet (UV) detection. The exhaust gas analytical system shall conform to the following requirements:

(1) The CL requires that the nitrogen dioxide present in the sample be converted to nitric oxide before analysis. Other types of analyzers may be used if shown to yield equivalent results and if approved in advance by the Administrator.

(2) The carbon monoxide (CO) NDIR analyzer may require a sample conditioning column containing $CaSO_4$, or indicating silica gel to remove water vapor and containing ascarite to remove carbon dioxide from the CO analysis stream.

(i) If CO instruments which are essentially free of CO_2 and water vapor interference are used, the use of the conditioning column may be deleted, see §§ 86.522 and 86.544.

(ii) A CO instrument will be considered to be essentially free of CO_2 and water vapor interference if its response to a mixture of 3 percent CO_2 in N_2 which has been bubbled through water at room temperature produces an equivalent CO response, as measured on the most sensitive CO range, which is less than 1 percent of full scale CO concentration on ranges above 300 ppm full scale or less than 3 ppm on ranges below 300 ppm full scale; see § 86.522.

(c) *Other analyzers and equipment.* Other types of analyzers and equipment may be used if shown to yield equivalent results and if approved in advance by the Administrator.

[54 FR 14544, 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 Administrator, 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	[1]0.013 [1](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

[1] 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_3 and higher	max. mole pct.	D1945	2.3
C_6 and higher	max. mole pct.	D1945	0.2
Oxygen	max. mole pct.	D1945	0.6
Inert gases:			
Sum of CO_2 and N_2	max. mole pct.	D1945	4.0
Odorant [1]			

[1] 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.

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

(4) Other liquefied petroleum gasfuels 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 [1]
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 maximum
3. Saturates	ASTM D 1319–98	Remainder
Lead (organic), g/liter	ASTM D 3237	0.013 maximum
Phosphorous, g/liter	ASTM D 3231	0.0013 maximum
Sulfur, weight %	ASTM D 1266	0.008 maximum
Volatility (Reid Vapor Pressure), kPa	ASTM D 323	55.2 to 63.4 [1]

[1] 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 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) through (d) [Reserved]. For guidance see § 86.513–94.

[69 FR 2441, Jan. 15, 2004, as amended at 70 FR 40437, July 13, 2005]