

(iv) Small volume manufacturers, as defined in § 86.092-14(b) (1) and (2), are exempt from the implementation schedules of table A94-16 for model years 1994 and 1995. This exemption does not apply to small volume engine families as defined in § 86.092-14(b)(5).

(v) The manufacturer must state at the time of applying for the Certificate, based on projected U.S. sales or projected production for U.S. sale, which engine families will be used to attain the required implementation schedule sales percentages.

[56 FR 25742, June 5, 1991, as amended at 57 FR 31899, July 17, 1992; 59 FR 48495, Sept. 21, 1994; 60 FR 34335, June 30, 1995; 62 FR 47120, Sept. 5, 1997]

**§ 86.094-11 Emission standards for 1994 and later model year diesel heavy-duty engines and vehicles.**

(a)(1) Exhaust emissions from new 1994 and later model year diesel heavy-duty engines shall not exceed the following (optional for 1994 through 1996 model year new natural gas- and liquefied petroleum gas-fueled heavy-duty engines):

(i)(A) *Hydrocarbons (for diesel engines fueled with either petroleum-fuel or liquefied petroleum gas)*. 1.3 grams per brake horsepower-hour (0.48 gram per megajoule), as measured under transient operating conditions.

(B) *Total Hydrocarbon Equivalent (for methanol-fueled diesel engines)*. 1.3 grams per brake horsepower-hour (0.48 gram per megajoule), as measured under transient operating conditions.

(C) *Nonmethane hydrocarbons (for natural gas-fueled diesel engines)*. 1.2 grams per brake horsepower-hour (0.45 gram per megajoule), as measured under transient operating conditions.

(ii) *Carbon monoxide*. (A) 15.5 grams per brake horsepower-hour (5.77 grams per megajoule), as measured under transient operating conditions.

(B) 0.50 percent of exhaust gas flow at curb idle (methanol-, natural gas- and liquefied petroleum gas-fueled diesel only).

(iii) *Oxides of nitrogen*. (A) 5.0 grams per brake horsepower-hour (1.9 grams per megajoule), as measured under transient operating conditions.

(B) A manufacturer may elect to include any or all of its diesel heavy-duty

engine families in any or all of the NO<sub>x</sub> averaging, trading, or banking programs for heavy-duty engines, within the restrictions described in § 86.094-15. If the manufacturer elects to include engine families in any of these programs, the NO<sub>x</sub> FELs may not exceed 6.0 grams per brake horsepower-hour (2.2 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, trading or banking programs.

(iv) *Particulate*. (A) For diesel engines to be used in urban buses, 0.07 gram per brake horsepower-hour (0.026 gram per megajoule), as measured under transient operating conditions.

(B) For all other diesel engines only, 0.10 gram per brake horsepower-hour (0.037 gram per megajoule), as measured under transient operating conditions.

(C) A manufacturer may elect to include any or all of its diesel heavy-duty engine families in any or all of the particulate averaging, trading, or banking programs for heavy-duty engines, within the restrictions described in § 86.094-15. If the manufacturer elects to include engine families in any of these programs, the particulate FEL may not exceed:

(1) For engine families intended for use in urban buses, 0.25 gram per brake horsepower-hour (0.093 gram per megajoule).

(2) For engine families *not* intended for use in urban buses, 0.60 gram per brake horsepower-hour (0.22 gram per megajoule).

(3) The ceiling values in paragraphs (a)(1)(iv)(C) (1) and (2) of this section apply whether credits for the family are derived from averaging, trading, or banking programs.

(b)(1) The opacity of smoke from new 1994 and later model year diesel heavy-duty engines shall not exceed (optional for 1994 through 1996 model year gas-fueled diesel heavy-duty engines):

(i) 20 percent during the engine acceleration mode.

(ii) 15 percent during the engine lugging mode.

(iii) 50 percent during the peaks in either mode.

(2) The standards set forth in paragraph (b)(1) of this section refer to exhaust smoke emissions generated

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under the conditions set forth in subpart I of this part and measured and calculated in accordance with those procedures.

(3) *Evaporative emissions* (total of non-oxygenated hydrocarbons plus methanol) from 1994 and later model year heavy-duty vehicles equipped with methanol-fueled diesel engines shall not exceed:

(i) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 lbs, 3.0 grams per test.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 lbs, 4.0 grams per test.

(4)(i) For vehicles with a Gross Vehicle Weight Rating of up to 26,000 lbs, the standards set forth in paragraph (b)(3) of this section refer to a composite sample of evaporative emissions collected under the conditions set forth in subpart M and measured in accordance with those procedures.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 26,000 lbs, the standard set forth in paragraph (b)(3)(ii) of this section refers to the manufacturers, engineering design evaluation using good engineering practice (a statement of which is required in § 86.091-23(b)(4)(ii)).

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1994 or later model year methanol-fueled diesel, or any naturally-aspirated diesel heavy-duty engine (optional for 1994 through 1996 model year natural gas- and liquefied petroleum gas-fueled engines). For petroleum-, natural gas- and liquefied petroleum gas-fueled engines only; this provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in subpart I or N of this

part to ascertain that such test engines meet the requirements of paragraphs (a), (b), and (c) and (d) of this section.

(Secs. 202, 203, 206, 207, 208, 301a, Clean Air Act, as amended; 42 U.S.C. 7521, 7522, 7525, 7541, 7542, 7601a)

[50 FR 10654, Mar. 15, 1985, as amended at 54 FR 14466, Apr. 11, 1989; 57 FR 19538, May 7, 1992; 58 FR 15799, Mar. 24, 1993; 59 FR 48497, Sept. 21, 1994; 62 FR 47120, Sept. 5, 1997]

§ 86.094-13 Light-duty exhaust durability programs.

(a)(1) This section describes the various durability programs available to manufacturers for determining exhaust deterioration factors (DFs) for the certification of 1994 and beyond model year light-duty vehicles and light-duty trucks. While this section describes many of the important elements of these durability programs, it is not intended as an exhaustive list of all requirements applicable either to these programs or to the certification process.

(2) The durability programs consist of various elements, such as a statement of applicability, a service accumulation method, vehicle/component selection methods, durability data vehicle compliance requirements, in-use verification requirements, optional elements, data reporting requirements, and additional requirements. Cross references to other sections in this subpart are indicated where appropriate.

(b) The following table summarizes the durability programs available to all manufacturers of light-duty vehicles and light-duty trucks. The Tier 1 and Tier 0 standards cited in the table are those specified in § 86.094-8 (for light-duty vehicles) and § 86.094-9 (for light-duty trucks). The durability programs described in this section are separate and distinct alternatives, such that determination of an exhaust deterioration factor under one program does not require compliance with the requirements of a different durability program.

Class	Standards	Durability program name	Optional elements
Light-duty Vehicles .....	Tier 1 .....	Standard AMA .....	Carryover. Extrapolation. Substitute AMA.