

or (a)(1)(vi) of this paragraph: *Provided*, that the total model year sales of such configuration(s), segregated by fuel type, being certified to the emission standards in paragraph (a)(1)(ii) of this section represent no more than five percent of total model year sales of each fuel type Otto-cycle heavy-duty engine intended for use in vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds by the manufacturer.

(ii) The configurations certified to the emission standards of paragraphs (a)(1) (ii) and (vi) of this section under the provisions of paragraph (a)(3)(i) of this section shall still be required to meet the evaporative emission standards set forth in paragraphs § 86.096–10(b)(1)(i), (b)(2)(i) and (b)(3)(i).

(iii) The configurations certified to the emission standards of paragraphs (a)(1) (ii) and (iv) of this section under the provisions of paragraphs (a)(3) (i) and (ii) of this section shall still be required to meet the evaporative emission standards set forth in paragraphs (b)(1)(i), (b)(2)(i), and (b)(3)(i) of this section.

(b) [Reserved]. For guidance see § 86.096–10.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1998 or later model year Otto-cycle heavy-duty engine.

(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 N or P of this part to ascertain that such test engines meet the requirements of paragraphs (a) and (c) of this section.

[58 FR 15800, Mar. 24, 1993, as amended at 59 FR 48501, Sept. 21, 1994; 62 FR 54716, Oct. 21, 1997; 65 FR 59955, Oct. 6, 2000]

§ 86.098–11 Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles.

(a) Exhaust emissions from new 1998 and later model year diesel heavy-duty engines shall not exceed the following:

(1)(i) *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.

(ii) *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.

(iii) *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.

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

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

(3) *Oxides of Nitrogen*. (i) 4.0 grams per brake horsepower-hour (1.49 grams per megajoule), as measured under transient operating conditions.

(ii) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the NO_x or NO_x plus NMHC ABT programs for HDEs, within the restrictions described in § 86.098–15 as applicable. If the manufacturer elects to include engine families in any of these programs, the NO_x FELs may not exceed 5.0 grams per brake horsepower-hour (1.9 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, trading or banking programs.

(4) *Particulate*. (i) For diesel engines to be used in urban buses, 0.05 gram per brake horsepower-hour (0.019 gram per megajoule) for certification testing and selective enforcement audit testing, and 0.07 gram per brake horsepower-hour (0.026 gram per megajoule) for in-use testing, as measured under transient operating conditions.

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

(iii) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the particulate ABT programs for HDEs, within the restrictions described in § 86.098–15 as applicable. If the manufacturer elects to include engine families in any of these

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programs, the particulate FEL may not exceed:

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

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

(C) The ceiling values in paragraphs (a)(4)(iii) (A) and (B) of this section apply whether credits for the family are derived from averaging, trading or banking programs.

(b)(1) The opacity of smoke emission from new 1998 and later model year diesel heavy-duty engine shall not exceed:

(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 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 heavy-duty vehicles equipped with methanol-fueled diesel engines shall not exceed the following standards. The standards apply equally to certification and in-use vehicles. The spitback standard also applies to newly assembled vehicles.

(i) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 lbs:

(A)(1) For the full three-diurnal test sequence described in §86.1230-96, diurnal plus hot soak measurements: 3.0 grams per test.

(2) For the supplemental two-diurnal test sequence described in §86.1230-96, diurnal plus hot soak measurements: 3.5 grams per test.

(B) *Running loss test*: 0.05 grams per mile.

(C) *Fuel dispensing spitback test*: 1.0 gram per test.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 lbs:

(A)(1) For the full three-diurnal test sequence described in §86.1230-96, diurnal plus hot soak measurements: 4.0

grams per test.

(2) For the supplemental two-diurnal test sequence described in §86.1230-96, diurnal plus hot soak measurements: 4.5 grams per test.

(B) *Running loss test*: 0.05 grams per mile.

(iii)(A) 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 and measured in accordance with the procedures set forth in subpart M of this part. For certification vehicles only, manufacturers may conduct testing to quantify a level of nonfuel background emissions for an individual test vehicle. Such a demonstration must include a description of the source(s) of emissions and an estimated decay rate. The demonstrated level of nonfuel background emissions may be subtracted from emission test results from certification vehicles if approved in advance by the Administrator.

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

(iv) All fuel vapor generated during in-use operations shall be routed exclusively to the evaporative control system (e.g., either canister or engine purge). The only exception to this requirement shall be for emergencies.

(v)(A) At least 90 percent of a manufacturer's sales of 1998 model year heavy-duty vehicles equipped with methanol-fueled diesel engines shall not exceed the standards described in paragraph (b)(3) of this section. The remaining vehicles shall be subject to the standards described in §86.094-11(b)(3). All 1999 model year and later heavy-duty vehicles equipped with methanol-fueled diesel engines shall not exceed the standards described in paragraph (b)(3) of this section.

(B) Optionally, 90 percent of a manufacturer's combined sales of 1998 model year gasoline- and methanol-fueled light-duty vehicles, light-duty trucks,

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and heavy-duty vehicles shall not exceed the applicable standards.

(C) Small volume manufacturers, as defined in § 86.092-14(b) (1) and (2), are exempt from the phase-in described in paragraph (b)(3)(v)(A) of this section. For small volume manufacturers, the standards of § 86.094-11(b)(3), and the associated test procedures, apply for the 1998 model year. Beginning in the 1999 model year, 100 percent compliance with the standards of this section is required. This exemption does not apply to small volume engine families as defined in § 86.092-14(b)(5).

(4) *Evaporative emissions* from 1998 and later model year heavy-duty vehicles equipped with natural gas-fueled or liquefied petroleum gas-fueled heavy-duty engines shall not exceed the following standards. The standards apply equally to certification and in-use vehicles.

(i) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds for the full three-diurnal test sequence described in § 86.1230-96, diurnal plus hot soak measurements: 3.0 grams per test.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds for the full three-diurnal test sequence described in § 86.1230-96, diurnal plus hot soak measurements: 4.0 grams per test.

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

(B) For vehicles with a Gross Vehicle Weight Rating greater than 26,000 lbs, the standards set forth in paragraphs (b)(3)(ii) and (b)(4)(ii) of this section refer to the manufacturer's 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 1998 or later model year methanol-, natural gas-, or liquefied petroleum gas-fueled diesel, or any naturally-aspirated diesel heavy-duty engine. For petroleum-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), (c), and (d) of this section.

[58 FR 15801, Mar. 24, 1993, as amended at 58 FR 34536, June 28, 1993; 59 FR 48502, Sept. 21, 1994; 60 FR 43888, Aug. 23, 1995; 62 FR 54716, Oct. 21, 1997]

§ 86.098-14 Small-volume manufacturers certification procedures.

Section 86.098-14 includes text that specifies requirements that differ from §§ 86.094-14 or 86.095-14. Where a paragraph in § 86.094-14 or § 86.095-14 is identical and applicable to § 86.098-14, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.094-14." or "[Reserved]. For guidance see § 86.095-14."

(a)-(c)(7)(i)(C)(3) [Reserved]. For guidance see § 86.094-14.

(c)(7)(i)(C)(4) For light-duty vehicle, light-duty truck, and heavy-duty vehicle evaporative and/or refueling emissions (as applicable) and for light-duty truck, and heavy-duty engine exhaust emissions, deterioration factors shall be determined in accordance with § 86.098-24.

(c)(7)(ii)-(c)(11)(ii)(B) introductory text [Reserved]. For guidance see § 86.094-14.

(c)(11)(ii)(B)(I) Engine evaporative/refueling family names and vehicle (or engine) configurations.

(c)(11)(ii)(B)(2)-(c)(11)(ii)(B)(15) [Reserved]. For guidance see § 86.094-14.

(c)(11)(ii)(B)(16)-(c)(11)(ii)(B)(18) [Reserved]. For guidance see § 86.095-14.

(c)(11)(ii)(B)(19) For each light-duty vehicle, light-duty truck, or heavy-duty vehicle evaporative/refueling emission family, a description of any unique procedures required to perform evaporative and/or refueling emission tests (as applicable) (including canister working capacity, canister bed volume,