

the test vehicle of that evaporative/refueling emission family-emission control system combination, required to use a volume of fuel equal to 85% of fuel tank volume.

(6) *Participation in averaging programs*—(i) *Particulate averaging*. (A) If the manufacturer elects to participate in the particulate averaging program for diesel light-duty vehicles and/or diesel light-duty trucks or the particulate averaging program for heavy-duty diesel engines, the application must list the family particulate emission limit and the projected U.S. production volume of the family for the model year.

(B) The manufacturer shall choose the level of the family particulate emission limits, accurate to hundredth of a gram per mile or hundredth of a gram per brake horsepower-hour for HDEs.

(C) The manufacturer may at any time during production elect to change the level of any family particulate emission limit(s) by submitting the new limit(s) to the Administrator and by demonstrating compliance with the limit(s) as described in §§ 86.090-2 and 86.094-28(b)(5)(i).

(ii) *NO<sub>x</sub> and NO<sub>x</sub> plus NMHC averaging*. (A) If the manufacturer elects to participate in the NO<sub>x</sub> averaging program for light-duty trucks or otto-cycle HDEs or the NO<sub>x</sub> plus NMHC averaging program for diesel-cycle HDEs, the application must list the family emission limit and the projected U.S. production volume of the family for the model year.

(B) The manufacturer shall choose the level of the family emission limits, accurate to one-tenth of a gram per mile or to one-tenth of a gram per brake horsepower-hour for HDEs.

(C) The manufacturer may at any time during production elect to change the level of any family emission limit(s) by submitting the new limits to the Administrator and by demonstrating compliance with the limit(s) as described in §§ 86.088-2 and 86.094-28(b)(5)(ii).

(b)(7) and (b)(8) [Reserved]. For guidance see § 86.094-21.

(b)(9) For each light-duty vehicle, light-duty truck, evaporative/refueling emission family or heavy-duty vehicle

evaporative 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, and fuel temperature profile for the running loss test) for all vehicles in that evaporative and/or evaporative/refueling emission family, and a description of the method used to develop those unique procedures.

(10) For each light-duty vehicle or applicable light-duty truck evaporative/refueling emission family, or each heavy-duty vehicle evaporative emission family:

(i) Canister working capacity, according to the procedures specified in § 86.132-96(h)(1)(iv);

(ii) Canister bed volume; and

(iii) Fuel temperature profile for the running loss test, according to the procedures specified in § 86.129-94(d).

(c) through (j) [Reserved]. For guidance see § 86.094-21.

(k) and (l) [Reserved]. For guidance see § 86.096-21.

[62 FR 54724, Oct. 21, 1997]

#### § 86.004-25 Maintenance.

Section 86.004-25 includes text that specifies requirements that differ from § 86.094-25 or § 86.098-25. Where a paragraph in § 86.094-25 or § 86.098-25 is identical and applicable to § 86.004-25, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.094-25.” or “[Reserved]. For guidance see § 86.098-25.”.

(a)(1) *Applicability*. This section applies to light-duty vehicles, light-duty trucks, and HDEs.

(2) *Maintenance performed on vehicles, engines, subsystems, or components used to determine exhaust, evaporative or refueling emission deterioration factors, as appropriate, is classified as either emission-related or non-emission-related and each of these can be classified as either scheduled or unscheduled. Further, some emission-related maintenance is also classified as critical emission-related maintenance.*

(b) *Introductory text through (b)(3)(ii) [Reserved]. For guidance see § 86.094-25.*

(b)(3)(iii) For otto-cycle heavy-duty engines, the adjustment, cleaning, repair, or replacement of the items listed in paragraphs (b)(3)(iii) (A) through (E) of this section shall occur at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter.

(A) Positive crankcase ventilation valve.

(B) Emission-related hoses and tubes.

(C) Ignition wires.

(D) Idle mixture.

(E) Exhaust gas recirculation system related filters and coolers.

(iv) For otto-cycle light-duty vehicles, light-duty trucks and otto-cycle heavy-duty engines, the adjustment, cleaning, repair, or replacement of the oxygen sensor shall occur at 80,000 miles (or 2,400 hours) of use and at 80,000-mile (or 2,400-hour) intervals thereafter.

(v) For otto-cycle heavy-duty engines, the adjustment, cleaning, repair, or replacement of the items listed in paragraphs (b)(3)(v) (A) through (H) of this section shall occur at 100,000 miles (or 3,000 hours) of use and at 100,000-mile (or 3,000-hour) intervals thereafter.

(A) Catalytic converter.

(B) Air injection system components.

(C) Fuel injectors.

(D) Electronic engine control unit and its associated sensors (except oxygen sensor) and actuators.

(E) Evaporative emission canister.

(F) Turbochargers.

(G) Carburetors.

(H) Exhaust gas recirculation system (including all related control valves and tubing) except as otherwise provided in paragraph (b)(3)(iii)(E) of this section.

(b)(3)(vi)(A) through (b)(3)(vi)(D) [Reserved]. For guidance see §86.094-25.

(b)(3)(vi)(E) through (b)(3)(vi)(J) [Reserved]. For guidance see §86.098-25.

(4) For diesel-cycle light-duty vehicles, light-duty trucks, and HDEs, emission-related maintenance in addition to or at shorter intervals than that listed in paragraphs (b)(4) (i) through (iv) of this section will not be accepted as technologically necessary, except as provided in paragraph (b)(7) of this section.

(i) For diesel-cycle heavy-duty engines, the adjustment, cleaning, repair, or replacement of the items listed in paragraphs (b)(4)(i) (A) through (C) of this section shall occur at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter.

(A) Exhaust gas recirculation system related filters and coolers.

(B) Positive crankcase ventilation valve.

(C) Fuel injector tips (cleaning only).

(ii) For diesel-cycle light-duty vehicles and light-duty trucks, the adjustment, cleaning, repair, or replacement of the positive crankcase ventilation valve shall occur at 50,000 miles of use and at 50,000-mile intervals thereafter.

(iii) The adjustment, cleaning, repair, or replacement of items listed in paragraphs (b)(4)(iii) (A) through (G) of this section shall occur at 100,000 miles (or 3,000 hours) of use and at 100,000-mile (or 3,000-hour) intervals thereafter for light heavy-duty diesel engines, or, at 150,000 miles (or 4,500 hours) intervals thereafter for medium and heavy heavy-duty diesel engines.

(A) Fuel injectors.

(B) Turbocharger.

(C) Electronic engine control unit and its associated sensors and actuators.

(D) Particulate trap or trap-oxidizer system (including related components).

(E) Exhaust gas recirculation system (including all related control valves and tubing) except as otherwise provided in paragraph (b)(4)(i)(A) of this section.

(F) Catalytic converter.

(G) Any other add-on emissions-related component (i.e., a component whose sole or primary purpose is to reduce emissions or whose failure will significantly degrade emissions control and whose function is not integral to the design and performance of the engine.)

(iv) For diesel-cycle light-duty vehicles and light-duty trucks, the adjustment, cleaning, repair, or replacement shall occur at 100,000 miles of use and at 100,000-mile intervals thereafter of the items listed in paragraphs (b)(4)(iv) (A) through (G) of this section.

(A) Fuel injectors.

(B) Turbocharger.

(C) Electronic engine control unit and its associated sensors and actuators.

(D) Particulate trap or trap-oxidizer system (including related components).

(E) Exhaust gas recirculation system including all related filters and control valves.

(F) Catalytic converter.

(G) Superchargers.

(5) [Reserved]

(6)(i) The components listed in paragraphs (b)(6)(i) (A) through (H) of this section are currently defined as critical emission-related components.

(A) Catalytic converter.

(B) Air injection system components.

(C) Electronic engine control unit and its associated sensors (including oxygen sensor if installed) and actuators.

(D) Exhaust gas recirculation system (including all related filters, coolers, control valves, and tubing).

(E) Positive crankcase ventilation valve.

(F) Evaporative and refueling emission control system components (excluding canister air filter).

(G) Particulate trap or trap-oxidizer system.

(H) Any other add-on emissions-related component (i.e., a component whose sole or primary purpose is to reduce emissions or whose failure will significantly degrade emissions control and whose function is not integral to the design and performance of the engine.)

(ii) All critical emission-related scheduled maintenance must have a reasonable likelihood of being performed in-use. The manufacturer shall be required to show the reasonable likelihood of such maintenance being performed in-use, and such showing shall be made prior to the performance of the maintenance on the durability data vehicle. Critical emission-related scheduled maintenance items which satisfy one of the conditions defined in paragraphs (b)(6)(ii) (A) through (F) of this section will be accepted as having a reasonable likelihood of the maintenance item being performed in-use.

(A) Data are presented which establish for the Administrator a connection between emissions and vehicle performance such that as emissions in-

crease due to lack of maintenance, vehicle performance will simultaneously deteriorate to a point unacceptable for typical driving.

(B) Survey data are submitted which adequately demonstrate to the Administrator that, at an 80 percent confidence level, 80 percent of such engines already have this critical maintenance item performed in-use at the recommended interval(s).

(C) A clearly displayed visible signal system approved by the Administrator is installed to alert the vehicle driver that maintenance is due. A signal bearing the message "maintenance needed" or "check engine", or a similar message approved by the Administrator, shall be actuated at the appropriate mileage point or by component failure. This signal must be continuous while the engine is in operation and not be easily eliminated without performance of the required maintenance. Resetting the signal shall be a required step in the maintenance operation. The method for resetting the signal system shall be approved by the Administrator. For HDEs, the system must not be designed to deactivate upon the end of the useful life of the engine or thereafter.

(D) A manufacturer may desire to demonstrate through a survey that a critical maintenance item is likely to be performed without a visible signal on a maintenance item for which there is no prior in-use experience without the signal. To that end, the manufacturer may in a given model year market up to 200 randomly selected vehicles per critical emission-related maintenance item without such visible signals, and monitor the performance of the critical maintenance item by the owners to show compliance with paragraph (b)(6)(ii)(B) of this section. This option is restricted to two consecutive model years and may not be repeated until any previous survey has been completed. If the critical maintenance involves more than one engine family, the sample will be sales weighted to ensure that it is representative of all the families in question.

(E) The manufacturer provides the maintenance free of charge, and clearly informs the customer that the maintenance is free in the instructions provided under § 86.087-38.

(F) Any other method which the Administrator approves as establishing a reasonable likelihood that the critical maintenance will be performed in-use.

(iii) Visible signal systems used under paragraph (b)(6)(ii)(C) of this section are considered an element of design of the emission control system. Therefore, disabling, resetting, or otherwise rendering such signals inoperative without also performing the indicated maintenance procedure is a prohibited act under section 203(a)(3) of the Clean Air Act (42 U.S.C. 7522(a)(3)).

(b)(7) through (h) [Reserved]. For guidance see § 86.094–25.

[62 FR 54725, Oct. 21, 1997]

**§ 86.004–28 Compliance with emission standards.**

Section 86.004–28 includes text that specifies requirements that differ from § 86.094–28, § 86.098–28, § 86.000–28 or § 86.001–28. Where a paragraph in § 86.094–28, § 86.098–28, § 86.000–28 or § 86.001–28 is identical and applicable to § 86.004–28, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.094–28.” or “[Reserved]. For guidance see § 86.098–28.” or “[Reserved]. For guidance see § 86.000–28.” or “[Reserved]. For guidance see § 86.001–28.”

(a)(1) through (a)(2) [Reserved]. For guidance see § 86.000–28.

(a)(3) [Reserved]. For guidance see § 86.094–28.

(a)(4) introductory text [Reserved]. For guidance see § 86.098–28.

(a)(4)(i) [Reserved]. For guidance see § 86.000–28.

(a)(4)(i)(A) through (a)(4)(i)(B)(2)(i) [Reserved]. For guidance see § 86.094–28.

(a)(4)(i)(B)(2)(ii) [Reserved]. For guidance see § 86.000–28.

(a)(4)(i)(B)(2)(iii) through (a)(4)(i)(B)(2)(iv) [Reserved]. For guidance see § 86.094–28.

(a)(4)(i)(C) through (a)(4)(i)(D)(2) [Reserved]. For guidance see § 86.098–28.

(a)(4)(ii)(A)(1) through (a)(4)(ii)(A)(2) [Reserved]. For guidance see § 86.000–28.

(a)(4)(ii)(B) through (a)(4)(ii)(C) [Reserved]. For guidance see § 86.098–28.

(a)(4)(iii) [Reserved]. For guidance see § 86.000–28.

(a)(4)(iv) [Reserved]. For guidance see § 86.094–28.

(a)(4)(v) [Reserved]. For guidance see § 86.098–28.

(a)(5) through (a)(6) [Reserved]. For guidance see § 86.094–28.

(a)(7) introductory text [Reserved]. For guidance see § 86.098–28.

(a)(7)(i) [Reserved]. For guidance see § 86.000–28.

(a)(7)(ii) [Reserved]. For guidance see § 86.094–28.

(b)(1) This paragraph (b) applies to light-duty trucks.

(2) Each exhaust, evaporative and refueling emission standard (and family emission limits, as appropriate) of § 86.004–9 applies to the emissions of vehicles for the appropriate useful life as defined in §§ 86.098–2 and 86.004–9.

(b)(3) through (b)(4)(i) [Reserved]. For guidance see § 86.094–28.

(b)(4)(ii) through (b)(6) [Reserved]. For guidance see § 86.000–28.

(b)(7)(i) through (b)(9) [Reserved]. For guidance see § 86.001–28.

(c)(1) Paragraph (c) of this section applies to heavy-duty engines.

(2) The applicable exhaust emission standards (or family emission limits, as appropriate) for Otto-cycle engines and for diesel-cycle engines apply to the emissions of engines for their useful life.

(3) Since emission control efficiency generally decreases with the accumulation of service on the engine, deterioration factors will be used in combination with emission data engine test results as the basis for determining compliance with the standards.

(4)(i) Paragraph (c)(4) of this section describes the procedure for determining compliance of an engine with emission standards (or family emission limits, as appropriate), based on deterioration factors supplied by the manufacturer. Deterioration factors shall be established using applicable emissions test procedures. NO<sub>x</sub> plus NMHC deterioration factors shall be established based on the sum of the pollutants. When establishing deterioration factors for NO<sub>x</sub> plus NMHC, a negative deterioration (emissions decrease from the official exhaust emissions test result) for one pollutant may not offset deterioration of the other pollutant. Where negative deterioration occurs for NO<sub>x</sub> and/or NMHC, the official exhaust emission test result shall be used