(i)(1) The manufacturers may exempt 1990 and later model year vehicles from compliance at low altitude with the emission standards set forth in paragraphs (a) and (b) of this section if the vehicles:

(i) Are not intended for sale at low altitude; and

(ii) Are equipped with a unique, high-altitude axle ratio (rear-wheel drive vehicles) or a unique, high-altitude drivetrain (front-wheel drive vehicles) with a higher N/V ratio than other configurations of that model type which are certified in compliance with the emission standards of paragraphs (a) and (b) of this section under low-altitude conditions.

(2) The sale of a vehicle for principal use at low altitude that has been exempted as set forth in paragraph (h)(1) of this section will be considered a violation of section 203(a)(1) of the Clean Air Act.

[54 FR 14461, Apr. 11, 1989]

§ 86.090–9 Emission standards for 1990 and later model year light-duty trucks.

(a)(1) The standards set forth in paragraphs (a) through (c) of this section shall apply to light-duty trucks sold for principal use at other than a designated high-altitude location. Exhaust emissions from 1990 and later model year light-duty trucks shall not exceed (compliance with these standards is optional for 1990 model year methanol-fueled vehicles):

(i)(A) *Hydrocarbons (for petroleum-fueled Otto-cycle and diesel light-duty trucks).* 0.80 gram per vehicle mile (0.50 gram per vehicle kilometer).

(B) *Total Hydrocarbon Equivalent (for methanol-fueled Otto-cycle and diesel light-duty trucks).* 0.80 gram per vehicle mile (0.50 gram per vehicle kilometer).

(ii) *Carbon monoxide.* (A) 10 grams per vehicle mile (6.2 grams per vehicle kilometer).

(B) 0.50 percent of exhaust gas flow at curb idle (for Otto-cycle and methanol-fueled diesel light-duty trucks only).

(iii) *Oxides of nitrogen.* (A) For light-duty trucks up to and including 3,750 lbs loaded vehicle weight, 1.2 grams per vehicle mile (0.75 gram per vehicle kilometer).

(B) For light-duty trucks greater loaded vehicle weight, 1.7 grams per vehicle mile (1.1 grams per vehicle kilometer).

(C) A manufacturer may elect to include all or some of its light-duty truck engine families in the NO_X averaging program, provided that trucks produced for sale in California or in designated high-altitude areas may be averaged only within each of those areas. Petroleum-fueled and methanol-fueled engine families may not be averaged together. Otto-cycle and diesel engines families also may not be averaged together. If the manufacturer elects to participate in the NO_X averaging program, individual family NO_X emission limits may not exceed 2.3 grams per mile. If the manufacturer elects to average together NO_X emissions of light-duty trucks subject to the standards of paragraphs (a)(1)(iii)(A) and (a)(1)(iii)(B) of this section, its composite NO_X standard applies to the combined fleets of light-duty trucks up to and including, and over, 3,750 lbs loaded vehicle weight included in the average and is calculated as defined in § 86.088–2.

(iv) *Particulate (for diesel light-duty trucks only).* (A) For light-duty trucks up to and including 3,750 lbs. loaded vehicle weight, 0.26 gram per vehicle mile (0.16 gram per vehicle kilometer).

(B) For light-duty trucks 3,751 lbs and greater loaded vehicle weight, 0.45 gram per vehicle mile (0.28 gram per vehicle kilometer).

(C) A manufacturer may elect to include all or some of its diesel light-duty truck engine families subject to the standard of paragraph (a)(1)(w)(A) of this section in the appropriate particulate averaging program (petroleum or methanol), provided that trucks produced for sale in California or in designated high-altitude areas may be averaged only within each of those areas. Averaging is not permitted between fuel types. If the manufacturer elects to average both light-duty trucks subject to the standard of paragraph (a)(1)(w)(A) of this section and light-duty vehicles together in the appropriate particulate averaging program, its composite particulate standard applies to the combined set of light-duty vehicles and light-duty

trucks included in the average and is calculated as defined in § 86.088–2.

(2) The standards set forth in paragraphs (a)(1)(i), (a)(1)(ii)(A), (a)(1)(iii), and (a)(1)(iv) of this section refer to the exhaust emitted over a driving schedule as set forth in subpart B of this part and measured and calculated in accordance with those procedures. The standard set forth in paragraph (a)(1)(ii)(B) of this section refers to the exhaust emitted at curb idle and measured and calculated in accordance with the procedures set forth in subpart P of this part.

(b) Fuel evaporative emissions from 1990 and later model year light-duty trucks shall not exceed (compliance with these standards is optional for 1990 model year methanol-fueled vehicles):

(1) *Hydrocarbons (for gasoline-fueled light-duty trucks).* 2.0 grams per test.

(2) *Total Hydrocarbon Equivalent (for methanol-fueled light-duty trucks).* 2.0 grams per test.

(3) The standards set forth in paragraphs (b) (1) and (2) of this section refer to a composite sample of the fuel evaporative emissions collected under the conditions set forth in subpart B of this part and measured in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any 1990 and later model year light-duty truck.

(d)(1) Model year 1990 and later light-duty trucks sold for principal use at a designated high-altitude location shall be capable of meeting the following exhaust emission standards when tested under high-altitude conditions:

(i)(A) *Hydrocarbons (for petroleum-fueled Otto-cycle and diesel light-duty trucks).* 1.0 grams per vehicle mile (0.62 grams per vehicle kilometer).

(B) *Total Hydrocarbon Equivalent (for methanol-fueled Otto-cycle and diesel light-duty trucks).* 1.0 gram per vehicle mile (0.62 gram per vehicle kilometer).

(ii) *Carbon Monoxide.* (A) 14 grams per vehicle mile (8.7 grams per vehicle kilometer).

(B) 0.50 percent of exhaust gas flow at curb idle (for Otto-cycle and methanol-fueled diesel light-duty trucks only).

(iii) *Oxides of Nitrogen.* (A) For light-duty trucks up to and including 3,750 lbs loaded vehicle weight, 1.2 grams per vehicle mile (0.75 grams per vehicle kilometer).

(B) For light-duty trucks 3,751 lbs and greater loaded vehicle weight, 1.7 grams per vehicle mile (1.1 grams per vehicle kilometer).

(iv) *Particulate (for diesel light-duty trucks only).* For light-duty trucks up to and including 3,750 lbs loaded vehicle weight, 0.26 gram per vehicle mile (0.16 gram per vehicle kilometer).

(2) The standards set forth in paragraph (d)(1)(i), (d)(1)(ii)(A), (d)(1)(iii), and (d)(1)(iv) of this section refer to the exhaust emitted over a driving schedule as set forth in subpart B of this part and measured and calculated in accordance with those procedures. The standard set forth in paragraph (d)(1)(ii)(B) of this section refers to the exhaust emitted at curb idle and measured and calculated in accordance with the procedures set forth in subpart P of this part.

(e) Fuel evaporative emissions from 1990 and later model year light-duty trucks sold for principal use at a designated high-altitude location, when tested under high-altitude conditions, shall not exceed:

(1) *Hydrocarbons (for gasoline-fueled light-duty trucks).* 2.6 grams per test.

(2) *Total Hydrocarbon Equivalent (for methanol-fueled light-duty trucks).* 2.6 grams per test.

(3) The standards set forth in paragraphs (e) (1) and (2) of this section refer to a composite sample of the fuel evaporative emissions collected under the conditions set forth in subpart B of this part and measured in accordance with those procedures.

(f) No crankcase emissions shall be discharged into the ambient atmosphere from any 1990 and later model year light-duty trucks sold for principal use at a designated high-altitude location.

(g)(1) Any light-duty truck that a manufacturer wishes to certify for sale at low altitude must be capable of meeting high-altitude emission standards (specified in paragraphs (d) through (f) of this section). The manufacturer may specify vehicle adjustments or modifications to allow the vehicle to meet high-altitude standards but these adjustments or modifications

may not alter the vehicle's basic engine, inertia weight class, transmission configuration, and axle ratio.

(i) A manufacturer may certify unique configurations to meet the high-altitude standards but is not required to certify these vehicle configurations to meet the low-altitude standards.

(ii) Any adjustments or modifications that are recommended to be performed on vehicles to satisfy the requirements of paragraph (g)(1) of this section:

(A) Shall be capable of being effectively performed by commercial repair facilities, and

(B) Must be included in the manufacturer's application for certification.

(2) The manufacturer may exempt 1990 and later model year vehicles from compliance with the high-altitude emission standards set forth in paragraphs (d) and (e) of this section if the vehicles are not intended for sale at high altitude and if the following requirements are met. A vehicle configuration shall only be considered eligible for exemption if the requirements of either paragraph (g)(2) (i), (ii), (iii), or (iv) of this section are met.

(i) Its design parameters (displacement-to-weight ratio (D/W) and engine speed to-vehicle-speed ratio (N/V)) fall within the exempted range for that manufacturer for that year. The exempted range is determined according to the following procedure:

(A) The manufacturer shall graphically display the D/W and N/V data of all vehicle configurations it will offer for the model year in question. The axis of the abscissa shall be D/W (where (D) is the engine displacement expressed in cubic centimeters and (W) is the gross vehicle weight (GVW) expressed in pounds), and the axis of the ordinate shall be N/V (where (N) is the crankshaft speed expressed in revolutions per minute and (V) is the vehicle speed expressed in miles per hour). At the manufacturer's option, either the 1:1 transmission gear ratio or the lowest numerical gear ratio available in the transmission will be used to determine N–V. The gear selection must be the same for all N/V data points on the manufacturer's graph. For each transmission/axle ratio combination, only the lowest N/V value shall be used in the graphical display.

(B) The product line is then defined by the equation, $N/V = C(D/W)^{-0.9}$, where the constant, C, is determined by the requirement that all the vehicle data points either fall on the line or lie to the upper right of the line as displayed on the graphs.

(C) The exemption line is then defined by the equation, $N/V = C(0.84\ D/W)^{-0.9}$, where the constant, C is the same as that found in paragraph (g)(2)(i)(B) of this section.

(D) The exempted range includes all values of N/V and D/W which simultaneously fall to the lower left of the exemption line as drawn on the graph.

(ii) Its design parameters fall within the alternate exempted range for that manufacturer that year. The alternate exempted range is determined by substituting rated horsepower (hp) for displacement (D) in the exemption procedure described in paragraph (g)(2)(i) of this section and by using the product line $N/V = C(hp/W)^{-0.9}$.

(A) Rated horsepower shall be determined by using the Society of Automotive Engineers Test Procedure J 1349, or any subsequent version of that test procedure. Any of the horsepower determinants within that test procedure may be used, as long as it is used consistently throughout the manufacturer s product line in any model year.

(B) No exemptions will be allowed under paragraph (g)(2)(ii) of this section to any manufacturer that has exempted vehicle configurations as set forth in paragraph (g)(2)(i) of this section.

(iii) Its acceleration time (the time it takes a vehicle to accelerate from 0 to a speed not less than 40 miles per hour and not greater than 50 miles per hour) under high-altitude conditions is greater than the largest acceleration time under low-altitude conditions for that manufacturer for that year. The procedure to be followed in making this determination is:

(A) The manufacturer shall list the vehicle configuration and acceleration time under low-altitude conditions of that vehicle configuration which has the highest acceleration time under low-altitude conditions of all the vehicle configurations it will offer for the

model year in question. The manufacturer shall also submit a description of the methodology used to make this determination.

(B) The manufacturer shall then list the vehicle configurations and acceleration times under high-altitude conditions of all those vehicle configurations which have higher acceleration times under high-altitude conditions than the highest acceleration time at low altitude identified in paragraph (g)(2)(iii)(A) of this section.

(iv) In lieu of performing the test procedure of paragraph (g)(2)(iii) of this section, its acceleration time can be estimated based on the manufacturer's engineering evaluation, in accordance with good engineering practice, to meet the exemption criteria of paragraph (g)(2)(iii) of this section.

(3) The sale of a vehicle for principal use at a designated high-altitude location that has been exempted as set forth in paragraph (g)(2) of this section will be considered a violation of section 203(a)(1) of the Clean Air Act.

[52 FR 47865, Dec. 16, 1987, as amended at 54 FR 14462, Apr. 11, 1989]

§ 86.090–14 Small-volume manufacturers certification procedures.

(a) The small-volume manufacturers certification procedures described in paragraphs (b) and (c) of this section are optional. Small-volume manufacturers may use these optional procedures to demonstrate compliance with the general standards and specific emission requirements contained in this subpart.

(b)(1) The optional small-volume manufacturers certification procedures apply to light-duty vehicles, light-duty trucks, and heavy-duty engines produced by manufacturers with U.S. sales (for the model year in which certification is sought) of fewer than 10,000 units (light-duty vehicles, light-duty trucks, and heavy-duty engines combined).

(2) For the purpose of determining the applicability of paragraph (b)(1) of this section, where there is more than one importer or distributor of vehicles and/or engines manufactured by the same person, the sales the Administrator shall use shall be the aggregate of the projected or actual sales of those vehicles and/or engines by all of the importers and distributors.

(c) Small-volume manufacturers shall demonstrate compliance with the applicable sections of this subpart as follows:

(1) Sections 86.090–1, 86.088–2, 86.090–3, 86.084–4, 86.090–5, 86.078–6, 86.078–7, and 86.090–8 through 86.090–11 are applicable.

(2) Section 86.080–12 is not applicable.

(3) Sections 86.085–13, 86.090–14, 86.084–15, and 86.085–20 are applicable.

(4) Small-volume manufacturers shall include in its records all of the information that EPA requires in § 86.090–21. This information will be considered part of the manufacturer's application for certification. However, the manufacturer is not required to submit the information to the Administrator unless the Administrator requests it.

(5) Section 86.085–22 is applicable except as noted below.

(i) Small-volume light-duty vehicle and light-duty truck manufacturers may satisfy the requirements of paragraph (e) of § 86.085–22 by including a statement of compliance on adjustable parameters in the application for certification. In the statement of compliance the manufacturer shall state that the limits, stops, seals, or other means used to inhibit adjustment have been designed to accomplish their intended purpose based on good engineering practice and past experience. If the vehicle parameter is adjustable the vehicle must meet emission standards with the parameter set any place within the adjustable range (reference § 86.090–21).

(ii) Paragraphs (a), (b), (c), and (d) of § 86.085–22 are not applicable.

(6) Section 86.090–23 is applicable.

(7) Section 86.085–24 is applicable except as noted below.

(i) Small-volume manufacturers may satisfy the requirements of paragraphs (b) and (c) of § 86.085–24 by:

(A) Selecting emission-data test vehicles (engines) by the worst case emissions criteria as follows:

(*1*) *Light-duty vehicles and light-duty trucks.* The test vehicle shall be selected based on the following criteria: The manufacturer shall select the heaviest (including options) vehicle within the family. Then within that vehicle it shall select, in the order listed,