the provisions of both paragraphs (f)(1) and (f)(2) of this section in a model year. For example, a manufacturer may not use the provisions of paragraph (f)(1) of this section for their passenger automobile fleet and the provisions of paragraph (f)(2) for their light truck fleet in the same model year.

(1) Standards applicable to each test group.

(i) Exhaust emissions of nitrous oxide (N\textsubscript{2}O) shall not exceed 0.010 grams per mile at full useful life, as measured according to the Federal Test Procedure (FTP) described in subpart B of this part.

(ii) Exhaust emissions of methane (CH\textsubscript{4}) shall not exceed 0.030 grams per mile at full useful life, as measured according to the Federal Test Procedure (FTP) described in subpart B of this part.

(2) Including N\textsubscript{2}O and CH\textsubscript{4} in fleet averaging program. Manufacturers may elect to not meet the emission standards in paragraph (f)(1) of this section. Manufacturers making this election shall include N\textsubscript{2}O and CH\textsubscript{4} emissions in the determination of their fleet average carbon-related exhaust emissions, as calculated in subpart F of part 600 of this chapter. Manufacturers using this option must include both N\textsubscript{2}O and CH\textsubscript{4} full useful life values in the fleet average calculations for passenger automobiles and light trucks. Use of this option will account for N\textsubscript{2}O and CH\textsubscript{4} emissions within the carbon-related exhaust emission value determined for each model type according to the provisions part 600 of this chapter. This option requires the determination of full useful life emission values for both the Federal Test Procedure and the Highway Fuel Economy Test.

(75 FR 25686, May 7, 2010)

Effective Date Note: At 75 FR 25686, May 7, 2010, §86.1820–01 was added, effective July 6, 2010.

§ 86.1819 [Reserved]

§ 86.1820–01 Durability group determination.

This section applies to the grouping of vehicles into durability groups. Manufacturers shall divide their product line into durability groups based on the following criteria:

(a) The vehicles covered by a certification application shall be divided into groups of vehicles which are expected to have similar emission deterioration and emission component durability characteristics throughout their useful life. Manufacturers shall use good engineering judgment in dividing their vehicles into durability groups. Such groups of vehicles are defined as durability groups.

(b) To be included in the same durability group, vehicles must be identical in all the respects listed in paragraphs (b) (1) through (7) of this section:

(1) Combustion cycle (e.g., two stroke, four stroke, Otto cycle, diesel cycle).

(2) Engine type (e.g., piston, rotary, turbine, air cooled versus water cooled).

(3) Fuel used (e.g., gasoline, diesel, methanol, ethanol, CNG, LPG, flexible fuels).

(4) Basic fuel metering system (e.g., throttle body injection, port injection (including central port injection), carburetor, CNG mixer unit).

(5) Catalyst construction (for example, beads or monolith).

(6) Precious metal composition of the catalyst by the type of principal active material(s) used (e.g., platinum based oxidation catalyst, palladium based oxidation catalyst, platinum and rhodium three-way catalyst, palladium and rhodium three way catalyst, platinum and palladium and rhodium three way catalyst).

(7) The manufacturer must choose one of the following two criteria:

(i) Grouping statistic:

(A) Vehicles are grouped based upon the value of the grouping statistic determined using the following equation:

\[ GS = \frac{\text{Cat Vol}}{\text{Disp}} \times \text{Loading Rate} \]

Where:

GS = Grouping Statistic used to evaluate the range of precious metal loading rates and relative sizing of the catalysts compared to the engine displacement that are allowable within a durability group. The grouping statistic shall be rounded to a tenth of a gram/liter, in accordance with the Rounding-Off Method specified in ASTM E29-93a, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (incorporated by reference, see §86.1).
Cat Vol = Total volume of the catalyst(s) in liters.
Disp = Displacement of the engine in liters.
Loading rate = The mass of total precious metal(s) in the catalyst (or the total mass of all precious metal(s) of all the catalysts if the vehicle is equipped with multiple catalysts) in grams divided by the total volume of the catalyst(s) in liters.

(B) Engine-emission control system combinations which have a grouping statistic which is either less than 25 percent of the largest grouping statistic value, or less than 0.2 g/liter (whichever allows the greater coverage of the durability group) shall be grouped into the same durability group.

(ii) The manufacturer may elect to use another procedure which results in at least as many durability groups as required using criteria in paragraph (b)(7)(i) of this section providing that only vehicles with similar emission deterioration or durability are combined into a single durability group.

(c) Where vehicles are of a type which cannot be divided into durability groups based on the criteria listed above (such as non-catalyst control system approaches), the Administrator will establish durability groups for those vehicles based upon the features most related to their exhaust emission deterioration characteristics.

(d) Manufacturers may further divide groups determined under paragraph (b) of this section provided that only vehicles with similar emission deterioration or durability are combined into a single durability group.

(e) Manufacturers may request the Administrator’s approval to combine vehicles into a single durability group which would normally not be eligible to be in a single durability group. The petition should provide:

1. Substantial evidence that all the vehicles in the larger grouping will have the same degree of emission deterioration;
2. Evidence of equivalent component durability over the vehicle’s useful life; and
3. Evidence that the groups will result in sufficient In-Use Verification Program data, appropriate tracking in use, and clear liability for the Agency’s recall program.

§ 86.1821–01 Evaporative/refueling family determination.

(a) The gasoline-, methanol-, liquefied petroleum gas-, and natural gas-fueled light-duty vehicles and light-duty trucks described in a certification application will be divided into groupings which are expected to have similar evaporative and/or refueling emission characteristics (as applicable) throughout their useful life. Each group of vehicles with similar evaporative and/or refueling emission characteristics shall be defined as a separate evaporative/refueling family. Manufacturers shall use good engineering judgment to determine evaporative/refueling families.

(b) For gasoline-fueled or methanol-fueled light-duty vehicles and light-duty trucks to be classed in the same evaporative/refueling family, vehicles must be similar with respect to the items listed in paragraphs (b) (1) through (9) of this section.

1. Type of vapor storage device (e.g., canister, air cleaner, crankcase).
2. Basic canister design.
   (i) Working capacity—grams adsorption within a 10 g. range.
   (ii) System configuration—number of canisters and method of connection (i.e., series, parallel).
3. Canister geometry, construction and materials.
4. Fuel system.
5. Type of refueling emission control system—non-integrated or integrated with the evaporative control system. Further, if the system is non-integrated, whether or not any other evaporative emissions, e.g. diurnal or hot soak emissions, are captured in the same storage device as the refueling emissions.
6. Vapor control system or method of controlling vapor flow through the vapor line to the canister (for example, type of valve, vapor control strategy).
7. Purge control system (for example, type of valve, purge control strategy).
8. Vapor hose material.