

(i) The engine family from the previous model year differs from the current engine family only with respect to model year.

(ii) The emission-data vehicle from the previous model year remains the appropriate emission-data vehicle under paragraph (b) of this section.

(iii) The data show that the emission-data vehicle would meet all the requirements that apply to the engine family covered by the application for certification.

(2) You may submit emission data for equivalent engine families performed to show compliance with other standards (such as California standards) instead of doing new tests, but only if the data show that the test vehicle or engine would meet all of this part's requirements.

(3) You may submit evaporative emission data measured by a fuel system supplier. We may require you to verify that the testing was conducted in accordance with the applicable regulations.

(e) We may require you to test a second vehicle or engine of the same or different configuration in addition to the vehicle or engine tested under paragraph (b) of this section.

(f) If you use an alternate test procedure under 40 CFR 1065.10 and later testing shows that such testing does not produce results that are equivalent to the procedures specified in subpart F of this part, we may reject data you generated using the alternate procedure.

(g) If you are a small-volume manufacturer, you may certify by design on the basis of preexisting exhaust emission data for similar technologies and other relevant information, and in accordance with good engineering judgment. In those cases, you are not required to test your vehicles. This is called "design-certification" or "certifying by design." To certify by design, you must show that the technology used on your engines is sufficiently similar to the previously tested technology that a person reasonably familiar with emission-control technology would believe that your engines will comply with the emission standards.

(h) For fuel tanks that are certified based on permeability treatments for

plastic fuel tanks, you do not need to test each engine family. However, you must use good engineering judgment to determine permeation rates for the tanks. This requires that more than one fuel tank be tested for each set of treatment conditions. You may not use test data from a given tank for any other tanks that have thinner walls. You may, however, use test data from a given tank for other tanks that have thicker walls. This applies to both low-hour (i.e., baseline testing) and durability testing. Note that §1051.245 allows you to use design-based certification instead of generating new emission data.

[70 FR 40495, July 13, 2005]

§ 1051.240 How do I demonstrate that my engine family complies with exhaust emission standards?

(a) For purposes of certification, your engine family is considered in compliance with the applicable numerical exhaust emission standards in subpart B of this part if all emission-data vehicles representing that family have test results showing deteriorated emission levels at or below these standards. (Note: if you participate in the ABT program in subpart H of this part, your FELs are considered to be the applicable emission standards with which you must comply.)

(b) Your engine family is deemed not to comply if any emission-data vehicle representing that family has test results showing a deteriorated emission level above an applicable FEL or emission standard from subpart B of this part for any pollutant.

(c) To compare emission levels from the emission-data vehicle with the applicable emission standards, apply deterioration factors to the measured emission levels. Section 1051.243 specifies how to test your vehicle to develop deterioration factors that represent the deterioration expected in emissions over your vehicle's full useful life. Your deterioration factors must take into account any available data from in-use testing with similar engines. Small-volume manufacturers may use assigned deterioration factors that we establish. Apply deterioration factors as follows:

§ 1051.243

(1) For vehicles that use aftertreatment technology, such as catalytic converters, use a multiplicative deterioration factor for exhaust emissions. A multiplicative deterioration factor for a pollutant is the ratio of exhaust emissions at the end of the useful life and exhaust emissions at the low-hour test point. In these cases, adjust the official emission results for each tested vehicle or engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the factor is less than one, use one. Multiplicative deterioration factors must be specified to three significant figures.

(2) For vehicles that do not use aftertreatment technology, use an additive deterioration factor for exhaust emissions. An additive deterioration factor for a pollutant is the difference between exhaust emissions at the end of the useful life and exhaust emissions at the low-hour test point. In these cases, adjust the official emission results for each tested vehicle or engine at the selected test point by adding the factor to the measured emissions. If the factor is less than zero, use zero. Additive deterioration factors must be specified to one more decimal place than the applicable standard.

(d) Collect emission data using measurements to one more decimal place than the applicable standard. Apply the deterioration factor to the official emission result, as described in paragraph (c) of this section, then round the adjusted figure to the same number of decimal places as the emission standard. Compare the rounded emission levels to the emission standard for each emission-data vehicle. In the case of HC+NO_x standards, add the emission results and apply the deterioration factor to the sum of the pollutants before rounding. However, if your deterioration factors are based on emission measurements that do not cover the vehicle's full useful life, apply the deterioration factor to each pollutant and then add the results before rounding.

[70 FR 40496, July 13, 2005]

40 CFR Ch. I (7-1-06 Edition)

§ 1051.243 How do I determine deterioration factors from exhaust durability testing?

Establish deterioration factors to determine whether your engines will meet emission standards for each pollutant throughout the useful life, as described in subpart B of this part and § 1051.240. This section describes how to determine deterioration factors, either with pre-existing test data or with new emission measurements.

(a) You may ask us to approve deterioration factors for an engine family based on emission measurements from similar vehicles or engines if you have already given us these data for certifying other vehicles in the same or earlier model years. Use good engineering judgment to decide whether the two vehicles or engines are similar. We will approve your request if you show us that the emission measurements from other vehicles or engines reasonably represent in-use deterioration for the engine family for which you have not yet determined deterioration factors.

(b) If you are unable to determine deterioration factors for an engine family under paragraph (a) of this section, select vehicles, engines, subsystems, or components for testing. Determine deterioration factors based on service accumulation and related testing to represent the deterioration expected from in-use vehicles over the full useful life, as follows:

(1) You must measure emissions from the emission-data vehicle at a low-hour test point and the end of the useful life. You may also test at evenly spaced intermediate points.

(2) Operate the vehicle or engine over a representative duty cycle for a period at least as long as the useful life (in hours or kilometers). You may operate the vehicle or engine continuously.

(3) You may perform maintenance on emission-data vehicles as described in § 1051.125 and 40 CFR part 1065, subpart E.

(4) If you measure emissions at only two points to calculate your deterioration factor, base your calculations on a linear relationship connecting these two data points for each pollutant. If you measure emissions at three or more points, use a linear least-squares