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point shall be used to determine concentration.

[56 FR 25774, June 5, 1991]

§ 86.126-90 Calibration of other equipment.

Other test equipment used for testing shall be calibrated as often as required by the manufacturer or as necessary according to good practice. Specific equipment requiring calibration are the gas chromatograph and flame ionization detector used in measuring methanol and the high pressure liquid chromatograph (HPLC) and ultraviolet detector for measuring formaldehyde.

[54 FR 14527, Apr. 11, 1989]

§ 86.127-00 Test procedures; overview.

Applicability. The procedures described in this and subsequent sections are used to determine the conformity of vehicles with the standards set forth in subpart A or S of this part (as applicable) for light-duty vehicles and light-duty trucks. Except where noted, the procedures of paragraphs (a) through (b) of this section, § 86.127-96 (c) and (d), and the contents of §§ 86.135-94, 86.136-90, 86.137-96, 86.140-94, 86.142-90, and 86.144-94 are applicable for determining emission results for vehicle exhaust emission systems designed to comply with the FTP emission standards, or the FTP emission element required for determining compliance with composite SFTP standards. Paragraphs (f) and (g) of this section discuss the additional test elements of aggressive driving (US06) and air conditioning (SC03) that comprise the exhaust emission components of the SFTP. Section 86.127-96(e) discusses fuel spitback emissions and paragraphs (h) and (i) of this section are applicable to all vehicle emission test procedures. Section 86.127-00 includes text that specifies requirements that differ from § 86.127-96. Where a paragraph in § 86.127-96 is identical and applicable to § 86.127-00, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.127-96.”

(a) The overall test consists of prescribed sequences of fueling, parking, and operating test conditions. Vehicles

are tested for any or all of the following emissions:

(1) Gaseous exhaust THC, CO, NO_x, CO₂ (for petroleum-fueled and gaseous-fueled vehicles), plus CH₃OH and HCHO for methanol-fueled vehicles, plus CH₄ (for vehicles subject to the NMHC and NMHCE standards).

(2) Particulates.

(3) Evaporative HC (for gasoline-fueled, methanol-fueled and gaseous-fueled vehicles) and CH₃OH (for methanol-fueled vehicles). The evaporative testing portion of the procedure occurs after the exhaust emission test; however, exhaust emissions need not be sampled to complete a test for evaporative emissions.

(4) Fuel spitback (this test is not required for gaseous-fueled vehicles).

(b) The FTP Otto-cycle exhaust emission test is designed to determine gaseous THC, CO, CO₂, CH₄, NO_x, and particulate mass emissions from gasoline-fueled, methanol-fueled and gaseous-fueled Otto-cycle vehicles as well as methanol and formaldehyde from methanol-fueled Otto-cycle vehicles, while simulating an average trip in an urban area of 11 miles (18 kilometers). The test consists of engine start-ups and vehicle operation on a chassis dynamometer through a specified driving schedule (see paragraph (a), EPA Urban Dynamometer Driving Schedule, of appendix I to this part). A proportional part of the diluted exhaust is collected continuously for subsequent analysis, using a constant volume (variable dilution) sampler or critical flow venturi sampler.

(c)-(e) [Reserved]. For guidance see § 86.127-96.

(f) The element of the SFTP for exhaust emissions related to aggressive driving (US06) is designed to determine gaseous THC, NMHC, CO, CO₂, CH₄, and NO_x emissions from gasoline-fueled or diesel-fueled vehicles (see § 86.158-00 Supplemental test procedures; overview, and § 86.159-00 Exhaust emission test procedures for US06 emissions). The test cycle simulates urban driving speeds and accelerations that are not represented by the FTP Urban Dynamometer Driving Schedule simulated trips discussed in paragraph (b) of this section. The test consists of vehicle operation on a chassis dynamometer

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through a specified driving cycle (see paragraph (g), US06 Dynamometer Driving Schedule, of appendix I to this part). A proportional part of the diluted exhaust is collected continuously for subsequent analysis, using a constant volume (variable dilution) sampler or critical flow venturi sampler.

(g)(1) The element of the SFTP related to the increased exhaust emissions caused by air conditioning operation (SC03) is designed to determine gaseous THC, NMHC, CO, CO₂, CH₄, and NO_x emissions from gasoline-fueled or diesel fueled vehicles related to air conditioning use (see § 86.158-00 Supplemental federal test procedures; overview and § 86.160-00 Exhaust emission test procedure for SC03 emissions). The test cycle simulates urban driving behavior with the air conditioner operating. The test consists of engine startups and vehicle operation on a chassis dynamometer through specified driving cycles (see paragraph (h), SC03 Dynamometer Driving Schedule, of appendix I to this part). A proportional part of the diluted exhaust is collected continuously for subsequent analysis, using a constant volume (variable dilution) sampler or critical flow venturi sampler. The testing sequence includes an approved preconditioning cycle, a 10 minute soak with the engine turned off, and the SC03 cycle with measured exhaust emissions.

(2) The SC03 air conditioning test is conducted with the air conditioner operating at specified settings and the ambient test conditions of:

- (i) Air temperature of 95 °F;
- (ii) 100 grains of water/pound of dry air (approximately 40 percent relative humidity);
- (iii) Simulated solar heat intensity of 850 W/m² (see § 86.161-00(d)); and
- (iv) air flow directed at the vehicle that will provide representative air conditioner system condenser cooling at all vehicle speeds (see § 86.161-00(e)).

(3) Manufacturers have the option of simulating air conditioning operation during testing at other ambient test conditions provided they can demonstrate that the vehicle tail pipe exhaust emissions are representative of the emissions that would result from the SC03 cycle test procedure and the ambient conditions of paragraph (g)(2)

of this section. The Administrator has approved two optional air conditioning test simulation procedures AC1 and AC2 (see § 86.162-00) for only the model years of 2000 through 2002. If a manufacturer desires to conduct simulation SC03 testing for model year 2003 and beyond, the simulation test procedure must be approved in advance by the Administrator (see §§ 86.162-00 and 86.163-00).

(h) Except in cases of component malfunction or failure, all emission control systems installed on or incorporated in a new motor vehicle shall be functioning during all procedures in this subpart. Maintenance to correct component malfunction or failure shall be authorized in accordance with § 86.098-25 or § 86.1834-01 as applicable.

(i) Background concentrations are measured for all species for which emissions measurements are made. For exhaust testing, this requires sampling and analysis of the dilution air. For evaporative testing, this requires measuring initial concentrations. (When testing methanol-fueled vehicles, manufacturers may choose not to measure background concentrations of methanol and/or formaldehyde, and then assume that the concentrations are zero during calculations.)

[61 FR 54891, Oct. 22, 1996, as amended at 64 FR 23921, May 4, 1999]

§ 86.127-12 Test procedures; overview.

Applicability. The procedures described in this subpart are used to determine the conformity of vehicles with the standards set forth in subpart A or S of this part (as applicable) for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. Except where noted, the procedures of paragraphs (a) through (d) of this section, and the contents of §§ 86.135-00, 86.136-90, 86.137-96, 86.140-94, 86.142-90, and 86.144-94 are applicable for determining emission results for vehicle exhaust emission systems designed to comply with the FTP emission standards, or the FTP emission element required for determining compliance with composite SFTP standards. Paragraph (e) of this section discusses fuel spitback emissions. Paragraphs (f) and