

this subpart. Maintenance to correct component malfunction or failure shall be authorized in accordance with § 86.088-25.

[54 FR 14527, Apr. 11, 1989]

§ 86.127-94 Test procedures; overview.

The procedures described in this and subsequent sections are used to determine the conformity of vehicles with the standards set forth in subpart A of this part for light-duty vehicles and light-duty trucks.

(a) The overall test consists of prescribed sequences of fueling, parking, and operating conditions. Vehicles are tested for any or all of the following emissions:

(1) Gaseous exhaust THC, CO, NO_x, CO₂ (for petroleum-fueled vehicles), plus CH₃OH and HCHO for methanol-fueled vehicles, plus CH₄ (for vehicles subject to the NMHC and NMHCE standards). (Measurement of CH₃OH and HCHO may be omitted for 1990 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring THC plus CH₃OH.)

(2) Particulates.

(3) Evaporative HC (for gasoline-fueled and methanol-fueled vehicles) and CH₃OH (for methanol-fueled vehicles). A separate CH₃OH measurement may be omitted for 1990 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring HC plus CH₃OH.

(b) The Otto-cycle exhaust emission test is designed to determine gaseous THC, CO, CO₂, CH₄, NO_x, and particulate mass emissions from gasoline-fueled and methanol-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 7.5 miles (12.1 kilometers). The test consists of engine startups and vehicle operation on a chassis dynamometer, through a specified driving schedule. 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) The diesel-cycle exhaust emission test is designed to determine particu-

late and gaseous mass emissions during a test similar to the test in § 86.127(b). For petroleum-fueled diesel-cycle vehicles, diluted exhaust is continuously analyzed for THC using a heated sample line and analyzer; the other gaseous emissions (CH₄, CO, CO₂, and NO_x) are collected continuously for analysis as in § 86.127(b). For methanol-fueled vehicles, THC, methanol, formaldehyde, CO, CO₂, CH₄, and NO_x are collected continuously for analysis as in § 86.127(b). THC, methanol, and formaldehyde are collected using heated sample lines, and a heated FID is used for THC analyses. Simultaneous with the gaseous exhaust collection and analysis, particulates from a proportional part of the diluted exhaust are collected continuously on a filter. The mass of particulate is determined by the procedure described in § 86.139. This testing requires a dilution tunnel as well as the constant volume sampler.

(d) The evaporative emission test (gasoline-fueled vehicles and methanol-fueled vehicles) is designed to determine hydrocarbon and methanol evaporative emissions as a consequence of diurnal temperature fluctuation, urban driving, and hot soaks during parking. It is associated with a series of events representative of a motor vehicle's operation, which result in hydrocarbon and/or methanol vapor losses. The test procedure is designed to measure:

(1) Diurnal breathing losses resulting from daily temperature changes, measured by the enclosure technique;

(2) Running losses from suspected sources (if indicated by engineering analysis or vehicle inspection) resulting from a simulated trip on a chassis dynamometer, measured by carbon traps; and

(3) Hot soak losses, which result when the vehicle is parked and the hot engine is turned off, measured by the enclosure technique.

(e) 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 § 86.090-25.

(f) 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.)

[56 FR 25774, June 5, 1991, as amended at 60 FR 34347, June 30, 1995]

§ 86.127-96 Test procedures; overview.

The procedures described in this and subsequent sections are used to determine the conformity of vehicles with the standards set forth in subpart A of this part for light-duty vehicles and light-duty trucks.

(a) The overall test consists of prescribed sequences of fueling, parking, and operating 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 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. 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) The diesel-cycle exhaust emission test is designed to determine particulate and gaseous mass emissions during a test similar to the test in § 86.127(b). For petroleum-fueled diesel-cycle vehicles, diluted exhaust is continuously analyzed for THC using a heated sample line and analyzer; the other gaseous emissions (CH₄, CO, CO₂, and NO_x) are collected continuously for analysis as in § 86.127(b). For methanol-fueled vehicles, THC, methanol, formaldehyde, CO, CO₂, CH₄, and NO_x are collected continuously for analysis as in § 86.127(b). THC, methanol, and formaldehyde are collected using heated sample lines, and a heated FID is used for THC analyses. Simultaneous with the gaseous exhaust collection and analysis, particulates from a proportional part of the diluted exhaust are collected continuously on a filter. The mass of particulate is determined by the procedure described in § 86.139. This testing requires a dilution tunnel as well as the constant volume sampler.

(d) The evaporative emission test (gasoline-fueled vehicles, methanol-fueled and gaseous-fueled vehicles) is designed to determine hydrocarbon and methanol evaporative emissions as a consequence of diurnal temperature fluctuation, urban driving and hot soaks following drives. It is associated with a series of events that a vehicle may experience and that may result in hydrocarbon and/or methanol vapor losses. The test procedure is designed to measure:

(1) Diurnal emissions resulting from daily temperature changes (as well as relatively constant resting losses), measured by the enclosure technique (see § 86.133);

(2) Running losses resulting from a simulated trip performed on a chassis dynamometer, measured by the enclosure or point-source technique (see § 86.134; this test is not required for gaseous-fueled vehicles); and

(3) Hot soak emissions, which result when the vehicle is parked and the hot engine is turned off, measured by the enclosure technique (see § 86.138).