then assume that the concentrations are zero during calculations.)

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

§ 86.127–90 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 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 HC, CO, NO_X, CO_2 (for petroleum-fueled vehicles), plus CH_3OH and HCHO for methanol-fueled vehicles (measurement of CH_3OH and HCHO may be omitted for 1990 through 1994 model year methanol-fueled vehicles provided a HFID calibrated on methanol is used for measuring HC plus CH_3OH).

(2) Particulates (diesel vehicles).

(3) Evaporative HC (for gasoline-fueled and methanol-fueled vehicles) and CH_3OH (for methanol-fueled vehicles). A separate CH_3OH 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 CH_3OH.

The evaporative portion of the test procedure occurs before and after the exhaust emission test, and in some cases, during the exhaust emission test.

(b) The Otto-cycle exhaust emission test is designed to determine gaseous hydrocarbon, carbon monoxide, carbon dioxide, and oxides of nitrogen mass emissions from gasoline-fueled and methanol-fueled 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 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 vehicles, diluted exhaust is continuously analyzed for total hydrocarbons using a heated sample line and analyzer. The other gaseous emissions, CO, CO_2 and NO_X are collected continuously for analysis as in §86.127(b). For methanol-fueled vehicles, hydrocarbons, methanol, formaldehyde, CO, CO_2, and NO_X are collected continuously for analysis as in §86.127(b). Hydrocarbons, methanol and formaldehyde are collected using heated sample lines, and a heated FID is used for hydrocarbons 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 § 86.088–25.

[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, CO_2 (for petroleum-fueled vehicles), plus CH_3OH and HCHO for methanol-fueled vehicles, plus CH_4 (for vehicles subject to the NMHC and NMHCE standards). (Measurement of CH_3OH 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 CH_3OH.)

(2) Particulates.

(3) Evaporative HC (for gasoline-fueled and methanol-fueled vehicles) and CH_3OH (for methanol-fueled vehicles). A separate CH_3OH 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 CH_3OH.

(b) The Otto-cycle exhaust emission test is designed to determine gaseous THC, CO, CO_2, CH_4, 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 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 (CH_4, CO, CO_2, and NO_X) are collected continuously for analysis as in § 86.127(b). For methanol-fueled vehicles, THC, methanol, formaldehyde, CO, CO_2, CH_4, 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.