

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 NEW JERSEY ADMINISTRATIVE CODE  
 TITLE 7, CHAPTER 27B, SUBCHAPTER 5  
 AIR TEST METHOD 5: TESTING PROCEDURES FOR GASOLINE-FUELED  
 MOTOR VEHICLES

Recodification Filed:	August 31, 2001
Original Effective:	January 21, 1985
Original Operative:	July 1, 1985
See:	33 N.J.R. 3550(a)

Amendment Adopted:	December 20, 2002
Effective:	January 21, 2003
Operative:	February 18, 2003
See:	35 N.J.R. 429(a)

Amendment Adopted:	October 19, 2009
Effective:	November 16, 2009
Operative:	December 18, 2009
See:	41 N.J.R. 4195(b)

**TABLE OF CONTENTS**

7:27B-5.1 Definitions .....  
 7:27B-5.2 General instructions for all tests .....  
 7:27B-5.3 Procedures for the visible smoke test and the idle test for gasoline-fueled  
 motor vehicles .....  
 7:27B-5.4 Procedures for the two speed idle test .....  
 7:27B-5.5 Emission control apparatus examination procedure .....  
 7:27B-5.6 Procedures for the on-board diagnostics inspection .....  
 7:27B- 5.7 Procedures for the fuel cap leak test .....  
 7:27B-5.8 Specifications for motor vehicle testing equipment for use in the New Jersey  
 Enhanced Inspection and Maintenance Program .....

§ 7:27B-5.1 Definitions

The following words and terms, when used in this subchapter, have the following meanings, unless the context clearly indicates otherwise.

“Carbon monoxide” or “CO” means a gas having a molecular composition of one carbon atom and one oxygen atom.

“Chassis dynamometer” or “dynamometer” means a power absorption device utilizing a set of rollers on which a motor vehicle is driven to simulate on-road vehicle operation.

“Crankcase emissions” means substances emitted into the atmosphere from any portion of the engine crankcase ventilation or lubrication system.

“Data link connector” or “DLC” means a standardized 16-pin diagnostic test receptacle used to connect an analyzer to a motor vehicle.

“Department” means the New Jersey Department of Environmental Protection.

“Emission control apparatus” means any device utilized by the vehicle manufacturer and/or the engine manufacturer to control the emission of any regulated emission, including any associated component which monitors the function and maintenance of such a device.

“EPA” means the United States Environmental Protection Agency.

“Gasoline-fueled” means powered in whole or in part by a hydrocarbon fuel other than diesel fuel, including, but not limited to, gasoline, natural gas, liquefied petroleum gas or propane or powered by alcohol fuels, hydrocarbon-alcohol fuel blends or hydrogen.

“Heavy-duty gasoline-fueled vehicle” or “HDGV” means a gasoline-fueled motor vehicle that has a GVWR exceeding 8,500 pounds and is designed primarily for transporting persons or property.

“Hydrocarbons (HC)” means any compound or mixture of compounds whose molecules consist of atoms of hydrogen and carbon only.

“Inspector” means any person authorized by the State of New Jersey to determine whether a vehicle complies with the requirements of N.J.A.C. 7:27-15.

“Key on engine off” or “KOEO” means the motor vehicle ignition position of key-on, engine-off. This may be denoted on some ignitions by a “run” position and is the key position just prior to holding the key in the “start” position to start the engine. Although this is the same key position as KOER, the KOEO position implies that the motor vehicle engine is not running.

“Key on engine running” or “KOER” means the motor vehicle ignition position of key-on, engine-running. This may be denoted on some ignitions by a “run” position and is the key position just prior to holding the key in the “start” position to start the engine.

Although this is the same key position as KOEO, the KOER position implies that the motor vehicle engine is running.

“Light-duty gasoline-fueled truck” or “LDGT” means a gasoline-fueled motor vehicle that has a GVWR of 8,500 pounds or less, a vehicle curb weight of 6,000 pounds or less, and a basic frontal area of 45 square feet or less, and that is:

1. Designed primarily for the transportation of property or more than 12 passengers; or
2. Available with special features enabling off-street or off-highway operation and use.

“Light-duty gasoline-fueled truck 1” or “LDGT1” means a light-duty gasoline-fueled truck with a GVWR of 6,000 pounds or less.

“Light-duty gasoline-fueled truck 2” or “LDGT2” means a light-duty gasoline-fueled truck with a GVWR of more than 6,000 pounds.

“Light-duty gasoline-fueled vehicle” or “LDGV” means a gasoline-fueled motor vehicle that has a GVWR of 8,500 pounds or less, is designed primarily for use as a passenger car or is a passenger car derivative and is capable of seating no more than 12 passengers.

“Malfunction indicator light” or “MIL” means the light located on the dashboard instrument panel of an OBD-equipped motor vehicle that indicates a malfunction detected by the OBD system by illuminating the words “check engine,” “service engine,” or an engine pictograph with the word “check” or “service.”

“Motor vehicle testing equipment” means equipment used to conduct a test of a gasoline-fueled motor vehicle set forth at N.J.A.C. 7:27B-5, and which satisfies all applicable specifications set forth at N.J.A.C. 7:27B-5.8, Specifications for motor vehicle testing equipment for use in the New Jersey Enhanced Inspection and Maintenance Program. For motor vehicle inspections conducted pursuant to N.J.A.C. 7:27-15 and this subchapter, this term shall include all devices used for performing a motor vehicle inspection, including, but not limited to, exhaust gas analyzers, dynamometers, on-board diagnostic scanners and analyzers, fuel cap leak testers and computers and related software.

“OBD-eligible” means capable of receiving an OBD inspection as determined by the Department in accordance with N.J.A.C. 7:27-15.5(m).

“On-board diagnostics” or “OBD” means an automotive diagnostic system complying with California OBD regulations at Title 13 California Code section 1968.1 or EPA OBD regulations at 40 CFR Part 86.

“Readiness” means the state of a motor vehicle’s OBD system that has successfully completed self-diagnostic routines on all supported subsystems as indicated by a showing of “ready” on all supported readiness monitors. Readiness does not indicate that the motor vehicle has passed the OBD inspection but only that the motor vehicle’s OBD system is ready for inspection.

“Readiness monitors” means the various indicators used by a motor vehicle’s on-board computer to record the status of subsystem diagnostic routines. A readiness monitor may record a subsystem as “ready,” “not ready” or “not supported.”

“Vehicle curb weight” means the actual weight of a motor vehicle in operational status or the weight given by the manufacturer for such a vehicle. Such weight shall include the weight of all standard equipment, of the fuel at nominal tank capacity, and of optional equipment computed in accordance with 40 CFR section 86.082-24.

#### § 7:27B-5.2 General instructions for all tests

(a) An inspector, conducting an emissions test on a gasoline-fueled motor vehicle pursuant to any provision of this subchapter, including, but not limited to, N.J.A.C. 7:27B-5.3 through 5.8, shall perform the test in accordance with the following general procedures:

1. Test the vehicle in as-received condition without making any repairs immediately prior to testing;
2. Prior to testing, turn off all vehicle accessories, including, but not limited to, air conditioning, heating, defroster, radio and lights;
3. Prior to testing, ensure that the motor vehicle emission testing equipment is calibrated and warmed-up in accordance with the manufacturer’s requirements;
4. Prior to testing, ensure that the vehicle is at normal operating temperature by doing one of the following:
  - i. Check the vehicle’s engine coolant temperature gauge and the vehicle’s engine oil temperature gauge to confirm that the vehicle is at a normal operating temperature, as indicated by the gauges; that is, that engine coolant temperature is in the “normal” range as specified by the vehicle manufacturer, or, if the “normal” range is not specified by the vehicle manufacturer, is at least 70 degrees Celsius (160 degrees Fahrenheit) and that engine oil temperature is at least 80 degrees Celsius (175 degrees Fahrenheit). If there is no oil temperature gauge, insert a temperature probe through the oil dip stick tube and into the engine oil to confirm normal operating temperature; or

ii. Operate the vehicle on the road, or on a chassis dynamometer under road load, at speeds above 35 MPH for at least 20 minutes;

5. Discontinue testing any vehicle in an overheated condition, as indicated by a temperature gauge or warning light, or boiling of engine coolant;

6. If the vehicle has two tailpipes, determine whether they are functionally independent. If they are functionally independent, collect exhaust samples from both tailpipes simultaneously; if they are not functionally independent, collect exhaust samples from either tailpipe;

7. When prompted by the motor vehicle emission testing equipment, insert the exhaust sampling probe into the vehicle's tailpipe, using a tailpipe extension if necessary, to an insertion depth of at least ten inches and collect exhaust gases from each tailpipe of a functionally independent exhaust system; and

8. If using a chassis dynamometer, ensure that the air pressure of each of the vehicle's drive wheel tires is in accordance with the recommendation of the motor vehicle manufacturer; or, if such a recommendation is not available, in accordance with the pressure recommendations on the tire sidewall; if not in accordance, inflate or deflate the drive wheel tires, as appropriate.

(b) Equipment to be used in conducting an emissions test on a gasoline-fueled motor vehicle in accordance with N.J.A.C. 7:27-15.5 shall satisfy all specifications and standards for motor vehicle testing equipment as set forth at N.J.A.C. 7:27B-5.8.

(c) An inspector conducting a motor vehicle emissions test on a gasoline-fueled motor vehicle as set forth in this subchapter shall use only motor vehicle testing equipment that has been approved by the Department prior to its use in the test. Approval by the Department is based on the following criteria:

1. The equipment conforms to the requirements set forth at N.J.A.C. 7:27B-5.8;

2. The equipment hardware and software comply with the data collection and transfer protocols in use throughout New Jersey's motor vehicle inspection programs;

3. The equipment maintains compatibility with other test equipment used concurrently during the motor vehicle inspection process with which it is required to interface; and

4. The equipment is complete in that it includes all options and accessories necessary for performing each emissions inspection test procedure for which it was designed and it is to be used.

(d) The Department maintains a list of approved equipment for specific test procedures. The Department shall periodically review and evaluate equipment offered by

manufacturers of motor vehicle testing equipment of which it is aware or has been made aware and update this list. A copy of this list can be obtained from:

New Jersey Department of Environmental Protection  
Bureau of Motor Vehicle Inspection and Maintenance  
PO Box 437  
Trenton, NJ 08625-0437

§ 7:27B-5.3 Procedures for the visible smoke test and the idle test for gasoline-fueled motor vehicles

(a) An inspector conducting a visible smoke test to determine a gasoline-fueled motor vehicle's compliance with the standard set forth at N.J.A.C. 7:27-15.6(a) shall perform the test as follows:

1. Place the vehicle in neutral gear with all accessories off and the emergency or parking brake secured;

2. Increase the engine speed to an engine speed greater than the idle mode, and observe the exhaust emissions and crankcase emissions for visible continuous smoke;

3. If there is visible smoke in the exhaust emissions or crankcase emissions for a period in excess of three consecutive seconds, the motor vehicle has failed the smoke test; and

4. If there is no visible smoke in the exhaust emissions or crankcase emissions for a period in excess of three consecutive seconds, the motor vehicle has passed the smoke test.

(b) An inspector conducting an idle test to determine a gasoline-fueled motor vehicle's compliance with the exhaust emission standards set forth at N.J.A.C. 7:27-15.6(b)1 shall perform the test as follows:

1. With the engine operating at idle and transmission in neutral, insert the sample probe at least 10 inches into the tailpipe. If the motor vehicle's exhaust system prevents insertion to this depth, use a tailpipe extension. For motor vehicles equipped with multiple tailpipes, take exhaust gas measurements from all tailpipes simultaneously;

2. Measure the exhaust concentrations as percent carbon monoxide and parts per million hydrocarbons after stabilized readings are obtained or at the end of 30 seconds, whichever occurs first;

3. If the percent carbon monoxide or parts per million hydrocarbons recorded in (b)2 above exceeds the applicable standards specified in Table 1 at N.J.A.C. 7:27-15.6, increase the vehicle's engine speed to between 2,200 and 2,800 RPM for a period of 30 seconds. Allow the vehicle's engine speed to return to idle and then repeat the exhaust concentration measurement as in (b)2 above;

4. If the percent carbon monoxide or parts per million hydrocarbons recorded in (b)3 above exceeds the applicable standards specified in Table 1 at N.J.A.C. 7:27-15.6, the motor vehicle has failed the idle test; and

5. If the percent carbon monoxide or parts per million hydrocarbons recorded in (b)2 or 3 above does not exceed the applicable standards specified in Table 1 at N.J.A.C. 7:27-15.6, the motor vehicle has passed the idle test.

#### § 7:27B-5.4 Procedures for the two speed idle test

An inspector conducting a two speed idle test to determine a gasoline-fueled motor vehicle's compliance with the exhaust emission standards set forth at N.J.A.C. 7:27-15.6(b)2 shall perform the test in accordance with 40 CFR 85.2215, Two speed idle test—EPA 91, incorporated herein by reference.

#### § 7:27B-5.5 Emission control apparatus examination procedure

(a) The procedure for examination of the emission control apparatus of a gasoline-fueled motor vehicle, required at N.J.A.C. 7:27-15.5(f)3, shall, if the motor vehicle had a catalytic converter as original equipment, consist of a visual check to determine whether a properly installed catalytic converter is present on the motor vehicle.

(b) The absence in a gasoline-fueled motor vehicle of a properly installed catalytic converter shall result in a determination of failure to pass the emission control apparatus compliance examination.

(c) A gasoline-fueled motor vehicle that has failed to pass the emission control apparatus compliance examination in accordance with (b) above shall be required to be properly equipped with a replacement catalytic converter certified according to EPA procedures and subsequently reinspected. The reinspection shall consist of a visual check to verify the proper installation of an appropriate replacement catalytic converter.

#### § 7:27B-5.6 Procedures for the on-board diagnostics inspection

(a) The procedure for the OBD inspection, to be used to determine a motor vehicle's compliance with the OBD inspection requirements at N.J.A.C. 7:27-15.5(f)2, is specified as follows:

1. Turn off the motor vehicle's engine and connect the analyzer to the motor vehicle computer via the DLC located on the motor vehicle;
2. If the DLC is damaged, missing or obstructed, the motor vehicle has failed the OBD inspection;
3. Determine if the MIL is functional by briefly turning the motor vehicle ignition system to the KOEO position;
4. If the MIL is not functional, the motor vehicle has failed the OBD inspection;
5. Start the motor vehicle and leave the engine running. Determine if the MIL remains illuminated while the engine is running;
6. If the MIL is illuminated with the engine running, the motor vehicle has failed the OBD inspection;
7. The analyzer will attempt to communicate with the motor vehicle's OBD system;
8. If the analyzer cannot successfully communicate with the motor vehicle's OBD system, the motor vehicle has failed the OBD inspection;
9. If the analyzer successfully communicates with the motor vehicle OBD system, it will then retrieve stored information relating to the identification of the motor vehicle and any malfunctions recorded by the OBD system;
10. If the analyzer determines that the OBD system or the motor vehicle is malfunctioning, the motor vehicle has failed the OBD inspection;
11. If the analyzer indicates that the motor vehicle does not meet the EPA's criteria for "readiness," that is, if the vehicle's OBD system does not indicate that the critical number of supported readiness monitors have been set, the motor vehicle is deemed "not ready" for an OBD inspection and has failed the OBD inspection;
12. If the analyzer indicates that the motor vehicle is deemed "ready" and determines that all components of the OBD system are functioning properly, and the OBD system is not indicating any malfunctions of the motor vehicle, then the motor vehicle has passed the OBD inspection;

13. A motor vehicle that failed an initial OBD inspection for not having a properly functioning catalyst must, on reinspection, have its catalyst monitor set to ready and must meet all other criteria required to pass the OBD inspection.

(b) The OBD inspection procedure is largely a process whereby the motor vehicle testing equipment and the motor vehicle's OBD system interface and exchange information. As such, the description of the on-board diagnostics inspection procedure set forth at (a) above is a brief, simplified description that does not contain explicit technical details. A more detailed flow chart version, reflecting the logic flow of pass and fail determinations within the procedure, as well as the Department's OBD equipment specifications, which contain additional technical details, are available electronically by contacting the Department's Bureau of Motor Vehicle Inspection and Maintenance at (609) 530-4035.

(c) In the case of a motor vehicle that is not OBD-eligible, as determined by the Department in accordance with N.J.A.C. 7:27-15.5(m), the procedure to be used to determine compliance with the OBD inspection requirements at N.J.A.C. 7:27-15.5(f)2, is specified as follows:

1. Determine if the MIL is functional by briefly turning the motor vehicle ignition system to the KOEO position;

2. If the MIL is not functional, the motor vehicle has failed the OBD inspection;

3. Start the motor vehicle and leave the engine running. Determine if the MIL remains illuminated while the engine is running;

4. If the MIL is illuminated with the engine running, the motor vehicle has failed the OBD inspection;

5. Administer the appropriate tailpipe exhaust test, as determined at N.J.A.C. 7:27-15.5(g);

6. If the MIL is determined to be functional and is not illuminated with the engine running, then the results of the appropriate tailpipe exhaust test will be used to determine the pass or fail status of the motor vehicle;

7. If the motor vehicle has failed the OBD inspection described in (c)1 through 4 above, the reinspection of the motor vehicle shall include both a repeat of the procedure described in (c)1 through 4 above and, if it has also failed the appropriate tailpipe exhaust pursuant to (c)5 above, a repeat of the tailpipe exhaust test.

§ 7:27B-5.7 Procedures for the fuel cap leak test

(a) An inspector conducting a fuel cap leak test to determine a gasoline-fueled motor vehicle's compliance with the fuel cap leak test requirements at N.J.A.C. 7:27-15.5(f)4 shall perform the test in accordance with the applicable procedures and standards described in the EPA technical guidance document EPA420 R-00-007, entitled IM240 and Evap Technical Guidance, incorporated herein by reference. A copy of this EPA technical guidance document may be obtained from the Public Access Center in the Department of Environmental Protection.

§ 7:27B-5.8 Specifications for motor vehicle testing equipment for use in the New Jersey Enhanced Inspection and Maintenance Program

(a) Equipment used for performing the idle test, as set forth at N.J.A.C. 7:27B-5.3(b), and the two speed idle test, as set forth at N.J.A.C. 7:27B-5.4, shall conform with the requirements for such equipment at 40 CFR 85.2225, Steady state test exhaust analysis system—EPA 91, and all subsequent revisions thereto, incorporated herein by reference.

(b) Equipment used for performing the fuel cap leak test, as set forth at N.J.A.C. 7:27B-5.7, shall be in accordance with the applicable specifications described in the EPA technical guidance document EPA420 R-00-007, entitled IM240 and Evap Technical Guidance, incorporated herein by reference. A copy of this EPA technical guidance document may be obtained from the Public Access Center in the Department of Environmental Protection.

(c) Equipment used for performing the OBD inspection, as set forth at N.J.A.C. 7:27B-5.6, shall be approved by the Department as provided at N.J.A.C. 7:27B-5.2(c) and shall conform with the provisions of 40 CFR 85.2231, and all subsequent revisions thereto, incorporated herein by reference.