

TEST PROCEDURE FOR PRIVATE EMISSION TESTING CENTER

Free Acceleration test for Registered or In Use Spark ignition motor vehicles

1. Scope

The test procedure is for the determination of the concentration of exhaust carbon monoxide (CO) and hydrocarbon (HC) emissions from in use motor vehicles equipped with spark ignition engines running at idle speed.

2. Test Equipment (Reference: ISO – 3930)

- 2.A. Carbon Monoxide Analyzer – a NDIR (Non dispersive infrared) CO exhaust gas analyzer.
- 2.B. Hydrocarbon Analyzer – a NDIR HC exhaust gas analyzer, HC as hexane (C₆H₁₄).
- 2.C. Tachometer – an easily installed and operated tachometer to measure engine speed (RPM).

3. Vehicle Preparation

- 3.A. Set the vehicle transmission at neutral with the hand brake engaged.
- 3.B. Ensure that the idling speed or the engine rpm with the accelerator in the rest position, conforms with the vehicle manufacturer's recommendation.
- 3.C. All accessories like rear window heating, air conditioning system, air fan and other equipment necessary for the vehicle operation at idle should be switched off.
- 3.D. Check that the temperature of the engine is at least 70C; otherwise, run the vehicle for at least 15 minutes on a normal road before testing.
- 3.E. Ensure that the vehicle exhaust system is reasonably leak proof and will allow the insertion of the sampling probe by at least 30 cm. from the tailpipe outlet. If this is not possible due to tailpipe configuration, use the appropriate correction factor.

4. Measurement

- 4.A. Immediately preceding the measurement, adjust the instrument to zero and accelerate the engine to about 2,500 rpm, using the tachometer, if available. Maintain this speed from ten (10) to fifteen (15) seconds, then release the pedal to return the engine at idle speed.
- 4.B. While the engine idles, insert the sampling probe into the exhaust pipe as deeply as possible which shall not be less than thirty (30) cm. wait for twenty (20) seconds and take the Co / HC reading.
- 4.C. If the vehicle has multiple exhaust outlets the arithmetic average of the CO / HC readings in each exhaust outlet is taken as the final result.

5. Instrument Calibration, Adjustments (Reference: ISO 3929)

- 5.A. Prepare, use and maintain the analyzer following the directions given in the instrument manufacturer's operation manual and service the instrument at such intervals as to ensure accuracy.
- 5.B. Carry out a span and zero calibration within a period of four (4) hours before the instrument is moved or transferred to a new location. The calibration shall be performed well away from the exhaust of motor vehicles whose engines are running.

If the instrument is not self compensated for non standard conditions of altitude and ambient temperature or not equipped with a manually controlled system of compensation, the scale calibration shall be performed using calibration gas.

5.C. If the sample handling system is not integral with the analyzer, make certain that the effectiveness of the gas sampling system are leak proof. Check that filters are clean, that filter holders are fitted with their gaskets and that these are all in good condition.

5.D. Ensure that the sample handling line and probe are free from contaminants.