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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Road vehicles — Measurement of opacity of exhaust gas from compression-ignition (diesel) engines — Steady single-speed test

*Véhicules routiers — Mesure de l'opacité des gaz d'échappement des moteurs à allumage par
compression (diesel) — Essai à vitesse constante unique*

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Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7645 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Road vehicles — Measurement of opacity of exhaust gas from compression-ignition (diesel) engines — Steady single-speed test

1 Scope

This International Standard specifies a test method for the measurement of exhaust gas opacity from compression-ignition (diesel-)engined vehicles. It describes the measurement of exhaust opacity under quasi-steady conditions at a single speed at full load, and is designed to ensure a correlation with measurement under steady-state conditions.

NOTE — This method is most suitable as an inspection station test but the test may also be carried out on the road. The lug-down test specified in ISO 7644 is only suited to an inspection station test.

2 Field of application

This International Standard applies to compression-ignition (diesel-)engined road vehicles. It is not intended to cover agricultural tractors and special vehicles for use in civil engineering.¹⁾

3 References

ISO 1585, *Road vehicles — Engines test code — Net power.*

ISO 3173, *Apparatus for measurement of the opacity of exhaust gas from diesel engines operating under steady state conditions.*

ISO 7644, *Road vehicles — Measurement of opacity of exhaust gas from compression-ignition (diesel) engines — Lug-down test.*

4 Definitions

For the purposes of this International Standard, the definitions in ISO 7644 apply.

5 Principle

Positioning the vehicle on a free-running roller assembly and, with the transmission engaged, measuring the exhaust opacity

while the vehicle is run at a selected steady speed with the engine at full load for a maximum of 8 s. The load is absorbed by the vehicle brakes on the drive axle(s).

6 Test equipment

6.1 Roller assembly

The roller assembly shall be capable of accepting single or tandem drive axles (laden up to 13 t per axle) with coupling of left and right rollers (if separate) on at least one pair of the rollers used for the drive axle(s).²⁾

Roller brakes or other suitable means shall be provided to facilitate removing the test vehicle from the roller assembly. The roll diameter shall not be less than 200 mm. The roller assembly need not be capable of absorbing power, i.e., it may consist of "free rollers".³⁾

6.2 Speed indicator

Means shall be provided for displaying the engine speed. The accuracy shall be within ± 60 r/min or 2 % of the engine speed, whichever is the greater. The response time shall be better than 0,5 s for 90 % of a step input and the linearity shall be better than 1 %.

6.3 Elapsed time indicator

Means shall be provided for indicating when the elapsed time is outside the limits specified in 8.6 and 8.8.

6.4 Opacimeter

6.4.1 The opacimeter shall conform to ISO 3173 and to the manufacturer's instructions.

6.4.2 Other measuring instruments are allowed. If an instrument other than those described in ISO 3173⁴⁾ is used, it shall be shown to be equivalent.

1) This test has been developed for vehicles of more than 3,5 t G.V.M., since there is less experience with lighter vehicles. The test should be limited to conditions where the power torque at the drive axle is less than the available brake torque. (See ISO/TR 9130.)

2) It is preferable that the left- and right-hand rollers are coupled to all drive axles.

3) If an adequately-sized absorption-type roller dynamometer is available, this may be used for absorbing the engine load instead of the vehicle brakes.

4) An International Standard on filter-type smoke meters is under preparation.