

Mopeds — Fuel consumption measurements

ICS 43.140

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The UK participation in its preparation was entrusted to Technical Committee AUE/14, Motorcycles and mopeds, which has the responsibility to:

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to iv, pages 1 to 22, an inside back cover and a back cover.

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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 7859 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 23, *Mopeds*.

Annexes A and B form a normative part of this International Standard.

Mopeds — Fuel consumption measurements

1 Scope

This International Standard specifies two tests for determining the fuel consumption of mopeds.

It is applicable to mopeds as defined in ISO 3833.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3833:1977, *Road vehicles — Types — Terms and definitions*.

ISO 4164:1978, *Road vehicles — Mopeds — Engine test code — Net power*.

ISO 6726:1988, *Mopeds and motorcycles with two wheels — Masses — Vocabulary*.

ISO 6855:1983, *Road vehicles — Measurement method for gaseous pollutants emitted by mopeds equipped with a controlled ignition engine*.

ISO 6970:1994, *Motorcycles and mopeds — Pollution tests — Chassis dynamometer bench*.

ISO 7116:1995, *Mopeds — Measurement of maximum speed*.

ISO 11486:1993, *Two-wheeled motorcycles — Fuel consumption measurements — Chassis dynamometer setting by coastdown method*.

3 Term and definition

For the purposes of this International Standard, the following term and definition apply.

3.1

reference speed

running speed of the vehicle to be tested for the fuel consumption

4 Tests and test conditions

4.1 Tests

4.1.1 Type 1 test: Measurement of the average fuel consumption during a conventional driving cycle

4.1.1.1 The moped shall be placed on a chassis dynamometer equipped with a brake and an inertia simulation system. A test shall include two cycles as described in 7.1 carried out without interruption.

During the test, the fuel consumption shall be measured by the equipment as described in 7.3.2 and 7.3.3

4.1.1.2 The test shall be carried out in accordance with the method described in clause 7.

4.1.2 Type 2 test: Measurement of fuel consumption at constant speed

The test shall be carried out either on the road or on a chassis dynamometer according to the requirements described in clause 8.

4.2 Atmospheric conditions

- Relative humidity: less than 95 %
- Maximum wind speed: 3 m/s
- Maximum wind speed for gusts: 5 m/s
- Air temperature: 278 K to 303 K

4.3 Standard conditions

- Pressure: $p_0 = 100 \text{ kPa}$
- Temperature: $T_0 = 293 \text{ K}$
- Relative air density: $d_0 = 0,919 7$

The relative air density when the moped is tested, calculated using the formula given below, shall not differ by more than 7,5 % from the air density under the standard conditions.

The relative air density shall be calculated by the formula:

$$d_T = d_0 \times \frac{p_T}{p_0} \times \frac{T_0}{T_T}$$

where

d_T is the relative air density at test conditions;

p_T is the test pressure;

T_T is the absolute temperature during the test, in kelvins.

5 Description of the test moped

The moped shall be described according to annex A.

6 Preparation of the test moped

6.1 The moped shall conform in all its components with the production series. If the moped is different from the production series, a full description shall be given in the test report.

6.2 The vehicle shall be properly run in, according to the manufacturer's requirements.

6.3 The viscosity of the oils for the moving mechanical parts and the tyre pressures shall conform to the instructions given by the manufacturer of the moped.

6.4 Before the test, all parts of the moped shall be stabilized at the normal temperature for the moped in use.

6.5 The mass of the moped shall be the kerb mass, as defined in ISO 6726.

6.6 The total test mass including the masses of the rider and the instruments shall be measured before beginning of the test.

6.7 The distribution of the load between the wheels shall conform to the manufacturer's instructions.

6.8 When installing the measuring instruments on the test moped, care shall be taken to minimize their effects on the distribution of the load among the wheels.

6.9 When installing the speed sensor and/or fuel consumption measurement equipment on the outside of the moped, care shall be taken to minimize the additional aerodynamic loss.

6.10 For the test, the following reference fuels shall be used, as appropriate:

- CEC¹⁾ Specification RF-01-A-80 (see reference [1]);
- CEC¹⁾ Specification RF-03-A-84 (see reference [2]);
- CEC¹⁾ Specification RF-05-A-83 (see reference [3]);
- CEC¹⁾ Specification RF-08-A-85 (see reference [4]).

The lubrication of the engine, including engine lubricated mixture, shall comply, as to grade and quantity of oil, with the manufacturer's recommendations.

7 Measurement of the average fuel consumption of moped during a conventional driving cycle (Type 1 test)

7.1 Operating cycle on the roller bench

7.1.1 Description of the cycle

The operating cycle on the roller bench shall be that indicated in Table 1 and depicted in the graph in Figure 1.

¹⁾ Coordinating European Council for the development of performance tests for transportation fuels, lubricants and other fluids.