



BSI Standards Publication

Motorcycles — Measurement method for evaporative emissions

Part 1: SHED test procedure

National foreword

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Motorcycles — Measurement method for evaporative emissions —

Part 1: SHED test procedure

*Motocycles — Méthode de mesure pour les émissions par
évaporation —*

Partie 1: Procédure d'essai SHED





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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

A list of all parts in the ISO 21755 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Recently, exhaust emissions from tailpipes of motorcycles have been dramatically reduced. Accordingly, evaporative emissions have begun to attract attention. Therefore, measurement methods for evaporative emissions are specified as an international standard for multi-application, e.g. certification, research, developments. This document specifies the basic measurement method by using the SHED (Sealed Housing for Evaporative Determination) test procedure for evaporative emissions from motorcycles.

Motorcycles — Measurement method for evaporative emissions —

Part 1: SHED test procedure

1 Scope

This document specifies a basic measurement method by using the SHED (Sealed Housing for Evaporative Determination) test procedure for evaporative emissions from motorcycles. It is applicable to motorcycles equipped with a spark ignition engine (four-stroke engine, two-stroke engine or rotary piston engine).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6460-1, *Motorcycles — Measurement method for gaseous exhaust emissions and fuel consumption — Part 1: General test requirements*

ISO 6460-2, *Motorcycles — Measurement method for gaseous emissions and fuel consumption — Part 2: Test cycles and specific test conditions*

ISO 9277:2010, *Determination of the specific surface area of solids by gas adsorption — BET method*

ISO 11486, *Motorcycles — Methods for setting running resistance on a chassis dynamometer*

ISO 7117, *Motorcycles — Measurement method for determining maximum speed*

ISO 4106, *Motorcycles — Engine test code — Net power*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

evaporative emissions

hydrocarbon vapours lost from the fuel storage and supply system of a motorcycle and not those from tailpipe emissions

3.2

SHED test

motorcycle test in a constant temperature sealed house for evaporation determination, in which a special evaporative emission test is conducted

3.3

tank diurnal breathing loss

hydrocarbon emissions caused by temperature changes in the fuel storage

3.4

hot soak loss

hydrocarbon emissions arising from the fuel system of a stationary motorcycle after a period of driving

3.5

non-exposed type fuel tank

fuel tank and fuel delivery system, except the fuel tank cap, which are not directly exposed to radiation of sunlight

3.6

rated capacity

fuel capacity of the fuel tank as declared by the manufacturer

4 Evaporative emissions, SHED test

4.1 Description of SHED test

The evaporative emission SHED (Sealed Housing for Evaporative Determination) test consists of a conditioning phase and a test phase (see [Figure 1](#)):

- a) conditioning phase:
 - 1) test cycle;
 - 2) motorcycle soak;
- b) test phase:
 - 1) tank diurnal breathing loss test;
 - 2) test cycle;
 - 3) hot soak loss test.

Running loss test may be conducted during the test cycle and if it is conducted, the test procedure shall be in accordance with [Annex A](#).

Mass emissions of hydrocarbons from the tank diurnal breathing loss and the hot soak loss phases are added together to provide an overall result for the test. If running loss test is conducted in the test cycle, mass emissions of hydrocarbons from the diurnal breathing loss, the running loss and the hot soak loss phases are summed to provide an overall result for the test.

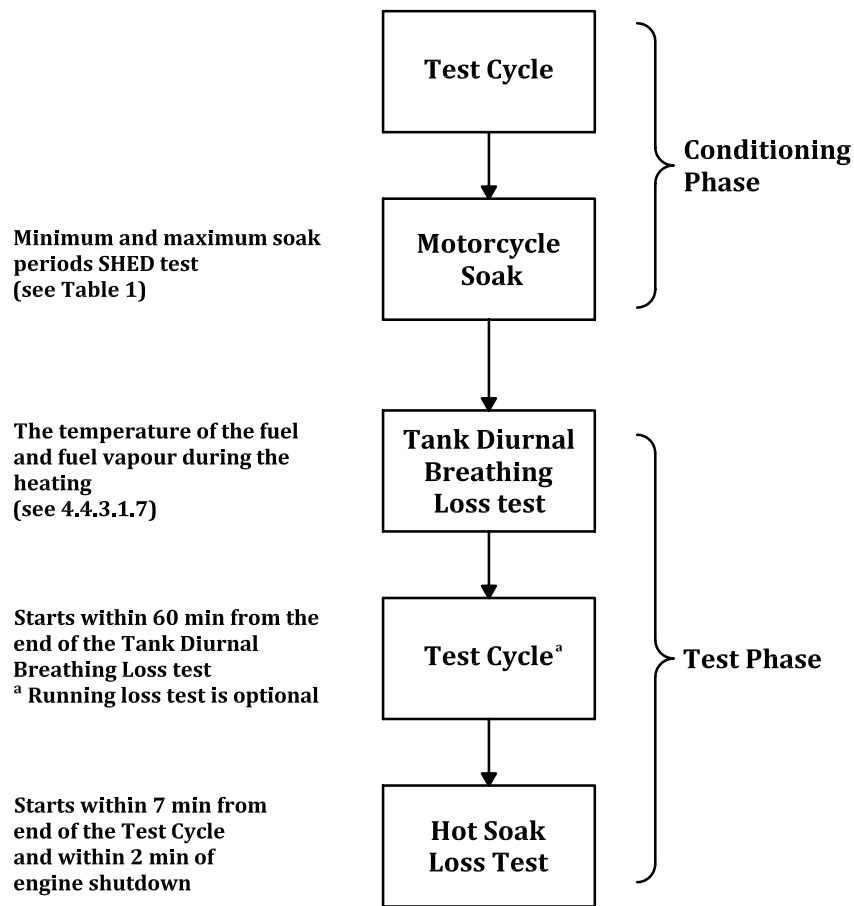


Figure 1 — Flow chart of evaporative emission SHED test

4.2 Test motorcycles and test fuel

4.2.1 Test motorcycles

The test motorcycle shall be run in at least 1 000 km after first start on the production line.

4.2.2 Test fuel

The test fuel shall be selected in accordance with agreement among the parties involved or the manufacturer's requirements, and the specifications of test fuel shall be reported. The record form is given in [Annex C](#).

NOTE This test is influenced by the vapour pressure of the fuel property greatly, therefore the test vapour pressure is decided among the parties because the market fuel vapour pressure largely varies according to the season depending on the area.

4.3 Test equipment

4.3.1 Chassis dynamometer

The dynamometer shall have a single roll with a diameter of at least 0,400 m.

The dynamometer shall be equipped with a roll revolution counter for measuring actual distance travelled.