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Measurement of noise emitted by accelerating road vehicles — Engineering method —

Part 2: L category

*Mesurage du bruit émis par les véhicules routiers en accélération —
Méthode d'expertise —*

Partie 2: Catégorie L



Reference number
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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 362-2 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This first edition of ISO 362-2, together with ISO 362-1, cancels and replaces ISO 362:1998 and ISO 7188:1994, which have been technically revised.

ISO 362 consists of the following parts, under the general title *Measurement of noise emitted by accelerating road vehicles — Engineering method*:

- *Part 1: M and N categories*
- *Part 2: L category*

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Introduction

From as early as 1994, the International Motorcycle Manufacturers Association (IMMA) has collected in-use data for vehicles of category L3 (two-wheeled motorcycles) to study motorcycle dynamics, rider attitude and behaviour. In 1999 and 2000, additional in-use data was collected through a tripartite project in which the Dutch Ministry of the Environment (VROM), the Dutch research institute TNO-Automotive and the IMMA took part. This project eventually led to the adoption of the Worldwide Motorcycle Exhaust Emission Test Cycle (WMTC) as a UNECE Global Technical Regulation under the 1998 Agreement (*Agreement concerning the establishing of global technical regulations for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles*).

Though the aim of the WMTC project was to collect data with which to construct an exhaust emissions test cycle for motorcycles, the in-use data was equally suitable as a basis for the definition of a more representative and performance-based urban noise test procedure. From 2002 to 2004, additional in-use data for low-performance motorcycles was added to ensure the representativity of the in-use database for small engine displacement motorcycles. Additional wide-open-throttle acceleration data from large engine displacement motorcycles was collected in the course of 2005 to upgrade the acceleration equations. Prior to preparation of this part of ISO 362, an extensive test programme was conducted to verify the practicability and technical accuracy of the new noise test.

This noise test was developed in accordance with the following set of demands:

- performance-based concept with prescribed acceleration rate prescriptions related to vehicle acceleration capability and engine speed corresponding to typical motorcycle usage in urban and conurban areas, i.e. where motorcycles are in closest proximity to the greater part of the population — this typically relates to motorcycle usage on roads with speed limits of 50 km/h and 70 km/h;
- accurate simulation of noise source distribution (intake, exhaust, engine/gearbox ...) in relation to the most relevant motorcycle operations;
- comparability with other vehicle types in the same operating environment;
- independency of vehicle design to allow future propulsion technologies to be tested.

The procedure uses two operating conditions, i.e. a wide-open-throttle acceleration phase and a constant speed phase, to simulate real-life partial throttle acceleration actually used in urban traffic. The combination of these two primary operating conditions was demonstrated to be equivalent in terms of noise generation to the partial throttle and partial power (engine load) acceleration. Both primary operating conditions are also more repeatable and reproducible than partial throttle/power acceleration.

The measurement procedure for categories L4 and L5, already contained in ISO 362:1998, is retained until in-use data for these categories that suggests the need for change becomes available.

Categories L6 and L7, previously not covered in ISO 362:1998, are excluded pending in-use data becoming available and thereby allowing a representative test procedure to be considered.