BS ISO 5130:2019

BSI Standards Publication

Acoustics — Measurements of sound pressure level emitted by stationary road vehicles

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National foreword

This British Standard is the UK implementation of ISO 5130:2019. It supersedes BS ISO 5130:2007+A1:2012, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/1/2, Transport noise.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Acoustics — Measurements of sound pressure level emitted by stationary road vehicles

Acoustique — Mesurages du niveau de pression acoustique émis par les véhicules routiers en stationnement

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This third edition cancels and replaces the second edition (ISO 5130:2007) which has been technically revised. It also incorporates the Amendment ISO 5130:2007/Amd.1:2012. The main changes compared to the previous edition are as follows:

— In the scope, it has been clarified that this document applies only to vehicles of categories L, M and N equipped with internal combustion engines, and furthermore that vehicles with an internal combustion engine which cannot operate when the vehicle is operated at stationary are outside the scope of this document.

— The microphone position to be used, depending on the location of the exhaust outlets, has been modified to include new variations of exhaust outlet design. New and updated figures have been added to clarify the position of microphone to be used.

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.

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Introduction

This sound pressure level measurement procedure has been developed for use in the engineering evaluation of the sound pressure level performance of road vehicles in the vicinity of the exhaust systems. The method is intended to check vehicles in use and also to determine variations in the exhaust sound pressure level that can result from

— the wear, maladjustment or modification of particular components, when the defect does not appear by visual inspection;

— the partial or complete removal of devices increasing the emission of certain sound pressure levels.

It is possible to determine some of these variations by comparing the measurements with reference measurements made under similar conditions, for example during the type approval of the vehicle, using the same method. Other variations can be detected only when the engine is operated at a realistic load.

The document incorporates certain provisions of SAE J1492:2008-10[1] for measuring the sound pressure levels of exhaust systems of passenger cars and light trucks.

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Acoustics — Measurements of sound pressure level emitted by stationary road vehicles

1 Scope

This document specifies a test procedure, environment and instrumentation for measuring the exterior sound pressure levels from road vehicles under stationary conditions, providing a continuous measure of the sound pressure level over a range of engine speeds.

This document applies only to road vehicles of categories L, M, and N equipped with internal combustion engines. Vehicles where an internal combustion engine cannot operate when the vehicle is at stationary conditions are outside the scope of this document.

The method is designed to meet the requirements of simplicity as far as they are consistent with reproducibility of results under the operating conditions of the vehicle.

It is within the scope of this document to measure the stationary A-weighted sound pressure level during

— type approval measurements of vehicle;

— measurements at the manufacturing stage;

— measurements at official testing stations;

— measurements at roadside testing.

This document specifices a test method to determine a reference sound level which is unique for the vehicle and therefore not suitable to compare against a general limit, as test condition, microphone condition location relative to the sound sources can vary significantly. The test conditions in proximity and at engine speeds significantly higher compared to real operation conditions in traffic are deliberately chosen to enable in-use tests at higher background conditions, which are typical for road-side checks.

Technical background information is given in Annex A.

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/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO 26101:2017, *Acoustics — Test methods for the qualification of free-field environments*

IEC 60942:2017, *Electroacoustics — Sound calibrators*

IEC 61183, *Electroacoustics — Random-incidence and diffuse-field calibration of sound level meters*

IEC 61260-1, *Electroacoustics — Octave-band and fractional-octave-band filters — Part 1: Specifications*

IEC 61260-3, *Electroacoustics — Octave-band and fractional-octave-band filters — Part 3: Periodic tests*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

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