
**Acoustics — Specification of test
tracks for measuring noise emitted by
road vehicles and their tyres**

*Acoustique — Spécification des surfaces d'essai pour le mesurage du
bruit émis par les véhicules routiers et leurs pneumatiques*



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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Requirements of the test track	3
4.1 Size and geometry.....	3
4.2 Surface properties of the propagation area.....	7
4.3 Surface properties of the drive lane.....	7
4.4 Conformity tests.....	7
4.5 Homogeneity of surface properties.....	9
4.6 Stability with time and maintenance.....	9
4.7 Break-in of the test track.....	9
5 Measurement methods and data processing	9
5.1 Irregularity measurement methods.....	9
5.2 Texture measurements methods.....	10
5.3 Acoustic absorption measurement method.....	10
6 Conformity report	10
7 Practices from different countries	12
8 Summary of improvements on the 1994 edition	12
Annex A (informative) Calculation of the Expected pass-by noise level difference from texture level variation of road surface (END_T)	13
Annex B (informative) Maintenance and stability of acoustic performance of test surface over time	18
Annex C (informative) Examples of test track construction practices	19
Annex D (informative) Improvements on ISO 10844:1994	43
Bibliography	44

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*, in collaboration with ISO/TC 22, *Road vehicles*.

This third edition cancels and replaces the second edition (ISO 10844:2011), of which it constitutes a minor revision.

Introduction

In general, the road surface parameters affecting the noise emission of vehicles are the texture and sound absorption characteristics. In addition, the mechanical impedance and the skid resistance properties of the surface layer can also influence measured noise levels.

In order to minimize the variation in rolling sound emission and vehicle sound emission measurements made at different testing locations, it is therefore necessary to specify the relevant surface properties and recommend carefully the properties of the materials, design, and construction of the test surface.

The principal objective of this International Standard is to provide a revised specification of the surface which improves the reproducibility of measurement.

This International Standard is designed in a way that test tracks conforming to this International Standard are compatible with the first edition, but in addition the variability of properties is reduced.

It is important that the test provides a high degree of reproducibility between different test sites and that the surface design should not only minimize the inter-site variation of tyre or road noise, but should also ensure that the propagation of noise is unaffected by the surface used. This latter consideration precludes the use of road surfaces which have open textures and which have the property of absorbing noise from the power unit and other related sources.

In relation to the first edition, this International Standard includes, including more restrictive specifications of the surface and recommendations for the test track construction process and maintenance. The basic properties of the surface remain unchanged.

The users of this International Standard are encouraged to measure END_T and to communicate the data to the ISO/TC 43/SC 1 for analysis before the next periodical review.

Furthermore, this International Standard recommends a non-destructive test method for periodical checking of the surface characteristics.

This International Standard is quoted in several International Standards (e.g. the ISO 362 series, ISO 13325).

Acoustics — Specification of test tracks for measuring noise emitted by road vehicles and their tyres

1 Scope

This International Standard specifies the essential characteristics of a test surface intended to be used for measuring vehicle and tyre or road noise emissions.

The surface design given in this International Standard

- produces consistent levels of tyre or road sound emission under a wide range of operating conditions including those appropriate to vehicle sound testing,
- minimizes inter-site variation,
- provides minor absorption of the vehicle sound sources, and
- is consistent with road-building practice.

NOTE For the purposes of this International Standard, the terms noise and sound are used interchangeably.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 362-1, *Measurement of noise emitted by accelerating road vehicles — Engineering method — Part 1: M and N categories*

ISO 13472-2, *Acoustics — Measurement of sound absorption properties of road surfaces in situ — Part 2: Spot method for reflective surfaces*

ISO 13473-1, *Characterization of pavement texture by use of surface profiles — Part 1: Determination of mean profile depth*

ISO 13473-3, *Characterization of pavement texture by use of surface profiles — Part 3: Specification and classification of profilometers*

ISO/TS 13473-4, *Characterization of pavement texture by use of surface profiles — Part 4: Spectral analysis of surface profiles*

EN 13036-7, *Road and airfield surface characteristics — Test methods — Part 7: Irregularity measurement of pavement courses: the straightedge test*

3 Terms and definitions

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

3.1

sound absorption coefficient

α

fraction of the sound power incident on the test object that is absorbed within the test object for a plane wave at normal incidence

Note 1 to entry: Expressed as a percentage, it is called sound absorption.