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Responsible committee: B/509/6 Fences for the attenuation of noise

Interested committees:

Title: Draft BS EN 1793-2 Road traffic noise reducing devices - Test method for determining the acoustic performance. Part 2: Intrinsic characteristics of airborne sound insulation under diffuse sound field conditions.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Road traffic noise reducing devices - Test method for
determining the acoustic performance - Part 2: Intrinsic
characteristics of airborne sound insulation under diffuse
sound field conditions

Dispositifs de réduction du bruit du trafic routier -
Méthode d'essai pour la détermination de la
performance acoustique - Partie 2 : Caractéristiques
intrinsèques de l'isolation aux bruits aériens dans des
conditions de champ acoustique diffus

Lärmschutzvorrichtungen an Straßen - Prüfverfahren
zur Bestimmung der akustischen Eigenschaften - Teil
2: Produktspezifische Merkmale der
Luftschalldämmung in diffusen Schallfeldern

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 226.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 1793-2:2023) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1793-2:2018.

EN 1793-2:2023 includes the following significant technical changes with respect to EN 1793-2:2018:

- The title has been slightly changed.
- The declaration of measurement uncertainty and the related confidence level is now mandatory.
- The categories of single-number rating have been removed. Prior Annex A has been deleted. The performance of the noise reducing device is, from now on, only to be reported in terms of the numeric values of the single-number rating.
- An annex with the values of the standard deviation of reproducibility and repeatability has been added; this makes possible the declaration of the measurement uncertainty and the related confidence level, which is now mandatory (Annex B).
- A detailed example has been added, including the declaration of the uncertainty (Annex C).

EN 1793-3:2023 is part of a series of documents and will be read in conjunction with the following:

- EN 1793-1:2023, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 1: Intrinsic characteristics – Sound absorption under diffuse sound field conditions*;
- EN 1793-3:2023, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 3: Normalized traffic noise spectrum*;
- EN 1793-4:2023, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 4: Intrinsic characteristics - Intrinsic sound diffraction*;
- EN 1793-5:2023, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 5: Intrinsic characteristics - Sound absorption under direct sound field conditions*;
- EN 1793-6:2023, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 6: Intrinsic characteristics - Airborne sound insulation under direct sound field conditions*.

Introduction

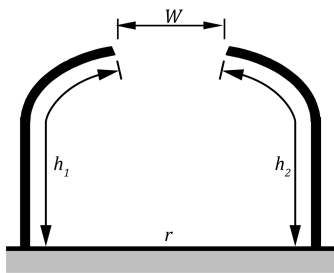
Noise reducing devices alongside roads should provide adequate sound insulation so that sound transmitted through the device is not significant compared with the sound diffracted over the top. This document specifies a test method for qualifying the intrinsic airborne sound insulation performance for noise reducing devices designed for roads in reverberant conditions, e.g. inside tunnels or deep trenches or under covers.

The measurement results of this method for airborne sound insulation are comparable but not identical with the results of the test method EN 1793-6:2021, mainly because the present method uses a diffuse sound field, while the other method assumes a directional sound field. Research studies suggest that good correlation exists between field data, measured according to EN 1793-6:2021 and laboratory data, measured according to the method described in the present document [1], [2], [3], [4].

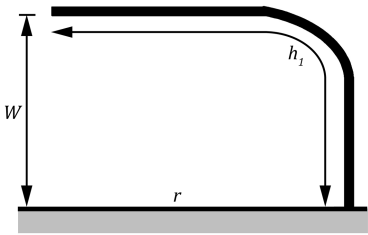
This document is not concerned with determining insertion loss (extrinsic performance) which additionally depends on factors which are not related to the product itself; e.g. the dimensions of the barrier and quality of installation work and site factors such as ground impedance, site geometry, etc. The test is designed to allow the intrinsic airborne sound insulation performance of the device to be measured; the resulting rating should aid the selection of devices for reverberant roadside applications.

For the purpose of this document reverberant conditions are defined based on the geometric envelope, e , across the road formed by the barriers, trench sides or buildings (the geometric envelope does not include the road surface) as shown by the dashed lines in Figure 1. Conditions are defined as being reverberant when the percentage of open space in the geometric envelope is less than or equal to 25 %, i.e. reverberant conditions occur when $w/e \leq 0,25$, where $e = (w+h_1+h_2)$.

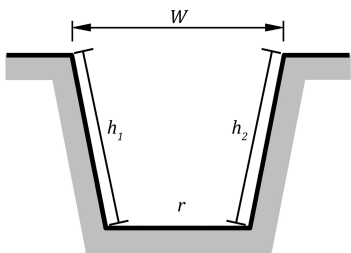
NOTE This method can be used to qualify noise reducing devices for other applications, e.g. to be installed nearby industrial sites. In this case, the single-number ratings can preferably be calculated using an appropriate spectrum.



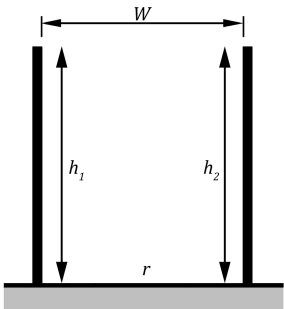
a) Partial cover on both sides of the road;
geometric envelope, $e = w+h_1+h_2$



b) Partial cover on one side of the road;
geometric envelope, $e = w+h_1$



c) Deep trench;
geometric envelope, $e = w+h_1+h_2$



d) Tall barriers or buildings;
geometric envelope, $e = w+h_1+h_2$

Key

- r road surface
- w width of open space
- h_1 developed length of element, e.g. cover, trench side, barrier or building
- h_2 developed length of element, e.g. cover, trench side, barrier or building

NOTE Figure 1 is not to scale.

Figure 1 — Sketch of the reverberant condition check in four cases

1 Scope

This document specifies the laboratory method for measuring the airborne sound insulation performance of road traffic noise reducing devices in reverberant conditions. It covers the assessment of the intrinsic performance of barriers that can reasonably be assembled inside the testing facility described in EN ISO 10140-2 and EN ISO 10140-4.

This method is not intended for the determination of the intrinsic characteristics of airborne sound insulation of noise reducing devices to be installed on roads in non-reverberant conditions.

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.

EN 1793-3:2021, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 3: Normalized traffic noise spectrum*

EN ISO 10140-1:2016, *Acoustics - Laboratory measurement of sound insulation of building elements – Part 1: Application rules for specific products (ISO 10140-1)*

EN ISO 10140-2:2010, *Acoustics - Laboratory measurement of sound insulation of building elements – Part 2: Measurement of airborne sound insulation (ISO 10140-2)*

EN ISO 10140-3:2010, *Acoustics - Laboratory measurement of sound insulation of building elements – Part 3: Measurement of impact sound insulation (ISO 10140-3)*

EN ISO 10140-4:2010, *Acoustics - Laboratory measurement of sound insulation of building elements – Part 4: Measurement procedures and requirements (ISO 10140-4)*

EN ISO 10140-5:2010, *Acoustics - Laboratory measurement of sound insulation of building elements – Part 5: Requirements for test facilities and equipment (ISO 10140-5)*

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement – Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO 12999-1:2020, *Acoustics - Determination and application of measurement uncertainties in building acoustics - Sound insulation*