ICS 17.140.30, 93.080.30 SLOVENSKÁ TECHNICKÁ NORMA Apríl 2026

STN	**Zariadenia na zníženie hluku z cestnej dopravy Skúšobná metóda na určovanie akustických vlastností Časť 6: Vlastné charakteristiky Vzduchová nepriezvučnosť v podmienkach priameho zvukového poľa**	**STN EN 1793-6** 73 6041

Road traffic noise reducing devices - Test method for determining the acoustic performance - Part 6: Intrinsic characteristics - Airborne sound insulation under direct sound field conditions

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/26

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ICS 17.140.30; 93.080.30

Supersedes EN 1793-6:2018+A1:2021

English Version

Road traffic noise reducing devices - Test method for determining the acoustic performance - Part 6: Intrinsic characteristics - Airborne sound insulation under direct sound field conditions

Dispositifs de réduction du bruit du trafic routier - Méthode d'essai pour la détermination de la performance acoustique - Partie 6 : Caractéristiques intrinsèques - Isolation au bruit aérien dans des conditions de champ acoustique direct

Lärmschutzvorrichtungen an Straßen - Prüfverfahren zur Bestimmung der akustischen Eigenschaften - Teil 6: Produktspezifische Merkmale - Luftschalldämmung in gerichteten Schallfeldern

This European Standard was approved by CEN on 17 November 2025.

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

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

Ref. No. EN 1793-6:2025 E

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European foreword

This document (EN 1793-6:2025) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2026, and conflicting national standards shall be withdrawn at the latest by June 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1793-6:2018+A1:2021.

EN 1793-6:2025 includes the following significant technical changes with respect to EN 1793-6:2018+A1:2021:

— the definitions from 3.1 to 3.8 have been updated to be in accordance with all other parts of the series of standards;

— the measurement technique is based on a nine-microphone grid; the use of a single microphone displaced in nine positions has been abandoned;

— the formula to calculate the global single-number rating $DL_{SI,G}$ used in the previous version of this document has been changed;

— the use of categories of single-number rating is no longer permitted;

— one value for the standard deviation of reproducibility and repeatability in each one-third octave frequency band has been retained, in place of three values (min, max and median) as before (see Tables B.1 and B.2);

— the example in C.5 on the declaration of the measurement uncertainty has been updated accordingly.

The EN 1793 series, under the general title *Road traffic noise reducing devices — Test method for determining the acoustic performance*, consists of the following parts:

— *Part 1: Intrinsic characteristics — Sound absorption under diffuse sound field conditions;*

— *Part 2: Intrinsic characteristics — Airborne sound insulation under diffuse sound field conditions;*

— *Part 3: Normalized traffic noise spectrum;*

— *Part 4: Intrinsic characteristics — Intrinsic sound diffraction;*

— *Part 5: Intrinsic characteristics — Sound absorption under direct sound field conditions;*

— *Part 6: Intrinsic characteristics — Airborne sound insulation under direct sound field conditions.*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: 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 the United Kingdom.

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 assessing the intrinsic airborne sound insulation performance of road traffic noise reducing devices designed for non-reverberant conditions. It can be applied indoors or outdoors. Indoors, it can be applied in a purposely built test facility, e.g. inside a laboratory. Outdoors, it can be applied in a purposely built test facility, e.g. near a laboratory or a factory, as well as *in situ*, i.e. where the road traffic noise reducing devices are installed. The method can be applied without damaging the surface of the road traffic noise reducing device.

The method can be used to qualify products to be installed along roads as well as to verify the compliance of installed road traffic noise reducing devices to design specifications. Regular application of the method can be used to verify the long-term performance of road traffic noise reducing devices.

The method requires the averaging of results of measurements taken at different points behind the device under test. The method is able to investigate flat and non-flat products.

The method uses the same principles and equipment for measuring sound reflection (see EN 1793-5:2025) and airborne sound insulation (the present document).

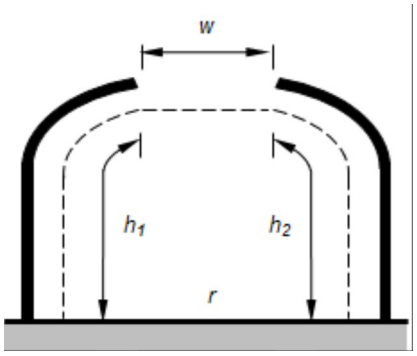
The measurement results of this method for airborne sound insulation are comparable but not identical with the results of EN 1793-2:2025 method, mainly because the present method uses a directional sound field, while EN 1793-2:2025 method assumes a diffuse sound field (where all angles of incidence are equally probable). Research studies suggest that a good correlation exists between laboratory data, measured according to EN 1793-2:2025 and field data, measured according to the method described in the present document [4-9].

The test method described in this document should not be used to determine the intrinsic characteristics of airborne sound insulation for road traffic noise reducing devices to be installed in reverberant conditions, e.g. inside tunnels or deep trenches or under covers.

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 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 envelope is less than or equal to 25 %, i.e. reverberant conditions occur when $w/e \leq 0{,}25$, where $e = (w+h_1+h_2)$.

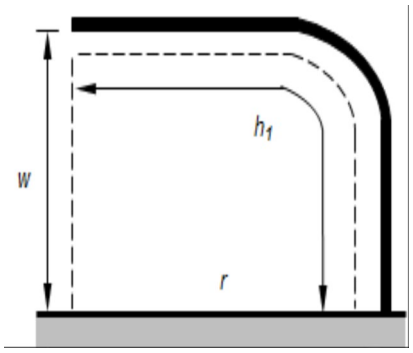
This document introduces a specific quantity, called sound insulation index, to define the airborne sound insulation of a road traffic noise reducing device. This quantity should not be confused with the sound reduction index used in building acoustics, sometimes also called transmission loss.

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.



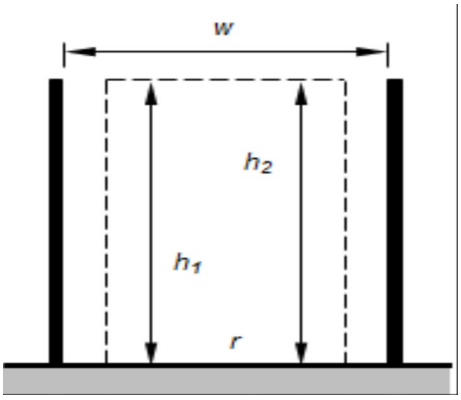
a) Partial cover on both sides of the road;

envelope, $e = w+h_1+h_2$



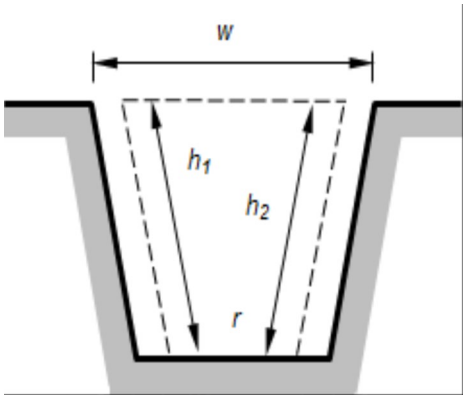
b) Partial cover on one side of the road;

envelope, $e = w+h_1$; $h_2 = 0$



c) Deep trench;

envelope, $e = w+h_1+h_2$



d) Tall barriers or buildings;

envelope, $e = w+h_1+h_2$

Key

r	road surface
w	width of open space
h_1	developed length of the construction, e.g. cover, trench side, barrier or building
h_2	developed length of the construction, 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 a test method for measuring a quantity representative of the intrinsic characteristics of airborne sound insulation for road traffic noise reducing devices: the sound insulation index.

This document is applicable to:

— determination of the intrinsic characteristics of airborne sound insulation of noise reducing devices to be installed along roads, to be measured either on typical installations alongside roads or in laboratory conditions;

— determination of the intrinsic characteristics of airborne sound insulation of road traffic noise reducing devices in actual use;

— comparison of design specifications with actual performance data after the completion of the construction work;

— verification of the long-term performance of road traffic noise reducing devices (with a repeated application of the method);

— interactive design process of new products, including the formulation of installation manuals.

This document does not apply to:

— the determination of the intrinsic characteristics of airborne sound insulation of road traffic noise reducing devices to be installed in reverberant conditions, e.g. inside tunnels or deep trenches or under covers.

Results for the sound insulation index are expressed as a function of frequency in one-third octave bands, between 200 Hz and 5 kHz for qualification purposes. If it is not possible to get valid measurement results over the whole frequency range indicated, the results are given in a restricted frequency range and the reasons for the restriction(s) are clearly reported.

For indoor measurements, see Annex D.

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, *Road traffic noise reducing devices — Test method for determining the acoustic performance — Part 3: Normalized traffic noise spectrum*

EN 14389:2023, *Road traffic noise reducing devices — Procedures for assessing long term performance*

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

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