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 1: Vlastné charakteristiky Zvuková pohltivosť v podmienkach rozptýleného zvukového poľa**	**STN EN 1793-1** 73 6041

Road traffic noise reducing devices - Test method for determining the acoustic performance - Part 1: Intrinsic characteristics - Sound absorption under diffuse 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 1793-1:2017

English Version

Road traffic noise reducing devices - Test method for determining the acoustic performance - Part 1: Intrinsic characteristics - Sound absorption under diffuse sound field conditions

Dispositifs de réduction du bruit du trafic routier - Méthode d'essai pour la détermination de la performance acoustique - Partie 1 : Caractéristique intrinsèques - Absorption acoustique dans des conditions de champ acoustique diffus

Lärmschutzvorrichtungen an Straßen - Prüfverfahren zur Bestimmung der akustischen Eigenschaften - Teil 1: Produktspezifische Merkmale - Schallabsorption unter den Bedingungen eines diffusen Schallfeldes

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 1793-1:2025 E

Contents

Page

European foreword

This document (EN 1793-1:2025) 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of an identical text or by endorsement, at the latest by June 2026, and conflicting national standards shall be withdrawn at the latest by June 2026.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 1793-1:2017.

EN 1793-1:2025 includes the following significant technical changes with respect to EN 1793-1:2017:

— ISO/IEC Guide 98-3 and ISO 12999-2 have been added to the References.

— a clause for terms and definitions has been added (new Clause 3).

— an annex has been added explaining the physical hypotheses under the assumption of a diffuse sound field (Annex A).

— 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 C).

— the detailed example has been improved to include the declaration of the uncertainty (Annex D);

— the Bibliography has been updated.

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

Where a sound reflecting surface is installed along a road, it may be effective to use sound absorbing devices on its traffic side to reduce additional noise nuisance caused by reflected sound. This treatment may be needed in the presence of the following:

— noise barriers, rocks or retaining walls that can reflect sound waves toward unprotected areas;

— vertical cuttings or reflective surfaces that face each other;

— tunnels and their approaches;

— traffic passing close to a barrier where reflections between the vehicles and the barrier may reduce effectiveness.

This document specifies a test method for qualifying the sound absorption performance of noise reducing devices designed for roads (a measure of intrinsic performance). It is not concerned with determining insertion loss (extrinsic performance), which depends on additional 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 sound absorption performance of the device to be measured under diffuse sound field conditions; the resulting rating should aid the selection of devices for particular roadside applications.

More information on the realization of a diffuse sound field is given in Annex A.

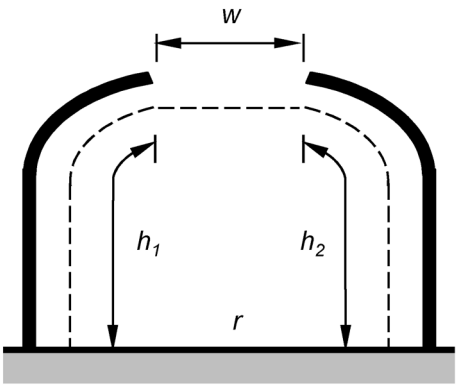
The measurement results of this method for sound absorption are not directly comparable with the results of the direct sound field method (EN 1793-5), mainly because the present method uses a diffuse sound field, while the direct sound field method assumes a directional sound field. The test method described in the present document should not be used to determine the intrinsic characteristics of sound absorption for noise reducing devices to be installed on roads under non-reverberant conditions.

Typically, reverberant conditions can occur when road traffic noise reducing devices are installed inside tunnels or deep trenches (see the following).

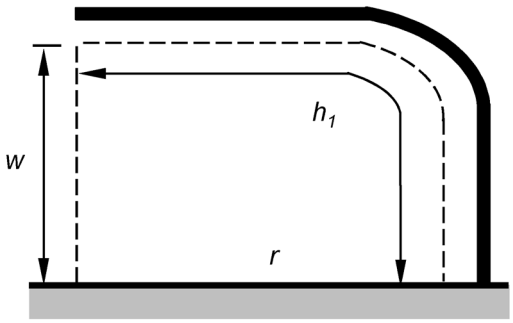
Research studies suggest that some correlation exists between laboratory data, measured according to EN 1793-5 [12] and laboratory data, measured according to the method described in this document [1], [2], [3], [4].

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 $e = (w+h_1+h_2)$.

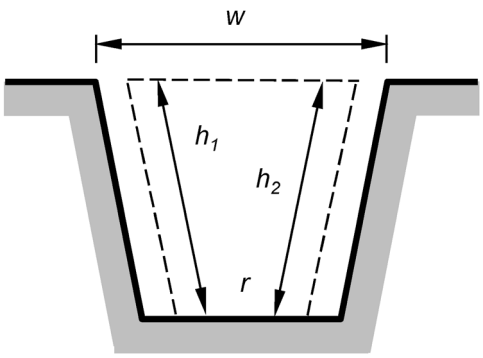
This method may be used to qualify noise reducing devices for other applications, e.g. to be installed near industrial sites. In this case, the single-number ratings can preferably be calculated using an appropriate spectrum.



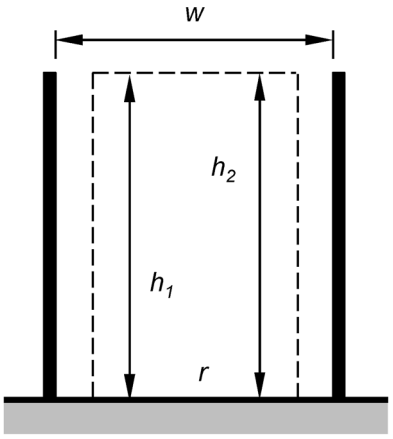
a) Partial cover on both sides of the road;
geometric envelope, $e = w+h_1+h_2$



b) Partial cover on one side of the road;
geometric envelope, $e = w+h_1$; $h_2 = 0$



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 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 the laboratory method for measuring the sound absorption performance of road traffic noise reducing devices in reverberant conditions. It covers the assessment of the intrinsic sound absorption performance of devices that can reasonably be assembled inside the testing facility described in EN ISO 354.

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

The test method in EN ISO 354 referred to in this document excludes devices that act as weakly damped resonators. Some devices will depart significantly from these requirements and in these cases, care is needed in interpreting the results.

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 ISO 354:2003, *Acoustics — Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 12999-2:2020, *Acoustics — Determination and application of measurement uncertainties in building acoustics — Part 2: Sound absorption (ISO 12999-2:2020)*

ISO 9613-1, *Acoustics — Attenuation of sound during propagation outdoors — Part 1: Calculation of the absorption of sound by the atmosphere*

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