



SLOVENSKI STANDARD

oSIST prEN 14388:2017

01-oktober-2017

Protihrupne ovire za cestni promet - Specifikacije

Road traffic noise reducing devices - Specifications

Lärmschutzvorrichtungen an Straßen - Vorschriften

Dispositifs de réduction du bruit du trafic routier - Spécifications

Ta slovenski standard je istoveten z: **prEN 14388**

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ICS:

17.140.30	Emisija hrupa transportnih sredstev	Noise emitted by means of transport
93.080.30	Cestna oprema in pomožne naprave	Road equipment and installations

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en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 14388

August 2017

ICS 93.080.30

Will supersede EN 14388:2015

English Version

Road traffic noise reducing devices - Specifications

Dispositifs de réduction du bruit du trafic routier -
Spécifications

Lärmschutzvorrichtungen an Straßen - Vorschriften

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.

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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.

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

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European foreword

This document (prEN 14388:2017) 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 supersedes EN 14388:2015.

The main changes compared to the previous edition are:

- an improved definition of a Noise Reducing Device;
- two standards EN 1793-1 and EN 1793-5 are now specified for the measurement of sound absorption / sound reflection, each with a specific field of application;
- this version integrates the revised version of EN 1794-1;
- revision of Annex ZA according to Regulation EU 305/2011, following TF N 687rev1 (2015-06-02).

For information, the main changes between EN 14388:2015 and hEN 14388:2005 were:

- two standards EN 1793-2 and EN 1793-6 were specified for the measurement of airborne sound insulation, each with a specific field of application;
- revision of Annex ZA according to Regulation EU 305/2011.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of the EU Construction Products Regulation.

For relationship with the EU Construction Products Regulation, see informative Annex ZA, which is an integral part of this document.

prEN 14388:2017 (E)**1 Scope**

This European Standard specifies requirements for the following road traffic noise reducing devices (as defined in 3.1):

- noise barriers (as defined in 3.4),
- claddings (as defined in 3.5),
- covers (as defined in 3.6), and
- added devices (as defined in 3.7).

These devices may include both acoustic and structural elements, where:

- an acoustic element is an element whose primary function is to provide a noise reducing device with sound insulation, diffraction and/or sound absorption, it is a part of noise reducing device to be used along roads, and
- a structural element is an element whose primary function is to support or hold in place acoustic elements, it is a part of noise reducing device to be used along roads. Depending upon the design of the noise reducing device, structural elements may potentially be tested separately from acoustic elements.

They may be made of different materials for which specific standards are to be applied in accordance with the specifications prescribed hereafter. Some of the materials may contain dangerous substances, the reason why all the materials are declared.

This European Standard identifies the relevant characteristics of road traffic noise reducing devices, the corresponding methods of evaluation and specifies the provisions on evaluation of conformity and marking.

This European Standard covers acoustic, non-acoustic and long-term performance, but not aspects such as resistance to vandalism or requirements of visual appearance.

This European Standard provides Annex ZA for the declaration of performance of all types of Noise Reducing Devices and for their elements. When prepared for an element, the declaration of performance has to be included through a cascading process in the declaration of performance of the final / installed Noise Reducing Device.

This European Standard does not cover road surfaces or the airborne sound insulation of houses.

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.

EN 1317-2:2010, *Road restraint systems — Part 2: Performance classes, impact test acceptance criteria and test methods for safety barriers including vehicle parapets*

EN 1793-1:2017, *Road traffic noise reducing devices — Test method for determining the acoustic performance — Part 1: Intrinsic characteristics of sound absorption under diffuse sound field conditions*

EN 1793-2:2012, *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*

EN 1793-4:2015, *Road traffic noise reducing devices — Test method for determining the acoustic performance — Part 4: Intrinsic characteristics — In situ values of sound diffraction*

EN 1793-5:2016, *Road traffic noise reducing devices — Test method for determining the acoustic performance — Part 5: Intrinsic characteristics — In situ values of sound reflection under direct sound field conditions*

EN 1793-6:2012, *Road traffic noise reducing devices — Test method for determining the acoustic performance - Part 6: Intrinsic characteristics — In situ values of airborne sound insulation under direct sound field conditions*

EN 1794-1:2017, *Road traffic noise reducing devices — Non-acoustic performance — Part 1: Mechanical performance and stability requirements*

EN 1794-2:2011, *Road traffic noise reducing devices — Non-acoustic performance — Part 2: General safety and environmental requirements*

EN 1794-3:2016, *Road traffic noise reducing devices — Non-acoustic performance — Part 3: Reaction to fire - Burning behaviour of noise reducing devices and classification*

EN 14389-1:2015, *Road traffic noise reducing devices — Procedures for assessing long term performance — Part 1: Acoustical characteristics*

EN 14389-2:2015, *Road traffic noise reducing devices — Procedures for assessing long term performance — Part 2: Non-acoustical characteristics*

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3 Terms and definitions

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

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3.1

noise reducing device (NRD)

system designed to reduce the propagation of traffic noise away from the road environment

Note 1 to entry: The NRD may comprise acoustic elements only or both structural and acoustic elements.

Note 2 to entry: Applications of NRD include noise barriers, claddings, covers and added devices.

3.2

acoustic element

element whose primary function is to provide the acoustic performance of the device

3.3

structural element

element whose primary function is to support or hold in place acoustic elements

3.4

noise barrier

noise reducing device which obstructs the direct transmission of airborne sound emanating from road traffic

3.5

cladding

noise-reducing device which is attached to a wall or other structure and reduces the amount of sound reflected

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3.6 cover

noise-reducing device which either spans or overhangs the road

3.7 added device

additional component that influences the acoustic performance of the original noise-reducing device (acting primarily on the diffracted energy)

4 Requirements

4.1 General

Products covered by the standard, when required, shall be assessed in accordance with the supporting standards indicated in Table 1.

The test methods or calculation methods referred to in Table 1 generate declared performance only. On this basis, compliance criteria are not relevant.

The manufacturer shall be responsible for describing the application(s) of the NRD, including installation details. (see installation instructions manual in 4.3).

Table 1 — Noise Reducing Devices (NRD): Required test methods and declared values

Characteristic	Test method or calculation	Declared value	Amount of samples	Notes
Sound absorption / Sound reflection	$DL_{\alpha, \text{NRD}}$ ^a under diffuse sound field conditions ^b	EN 1793-1 (test)	1	Added devices not concerned
	DL_{RI} ^a under direct sound field conditions ^c	EN 1793-5 (test)	1	
Airborne sound insulation	DL_{R} under diffuse sound field conditions ^b	EN 1793-2 (test)	1	Added devices and cladding not concerned
	$DL_{\text{SI,E}}$ and $DL_{\text{SI,P}}$ under direct sound field conditions ^c	EN 1793-6 (test)	1	

Characteristic	Test method or calculation	Declared value	Amount of samples	Notes
Intrinsic sound diffraction DL_{ADI}	EN 1793-4 (test)	dB	1	Only added devices concerned
Dry and wet (or reduced wet) self-weight of an acoustic element: Self-weight of an acoustic element: wet, reduced wet or dry as defined in EN 1794-1:2017, B.2:	EN 1794-1:2017, Annex B (calculation ⁱ)	kN/element for specified condition: wet, reduced wet or dry	1 if tested	
Resistance to loads of structural elements: Maximum normal (90°) load a structural element can withstand in order to fulfil EN 1794-1:2017, A.3 and B.3.3: (wind, static load and self-weight) Maximum bending moment a structural element can withstand in order to fulfil EN 1794-1:2017, E.2: (dynamic load from snow clearance)	EN 1794-1:2017, Annex A and B (calculation) EN 1794-1:2017, Annex E (calculation ⁱ)	kN/m along the structural element, for specified barrier heights (h) kNm at ground level	Not applicable 1 if tested	
Resistance to loads of acoustic elements: Maximum vertical load an element can withstand in order to fulfil EN 1794-1:2017, B.3.2: (load from upper elements) Normal (90°) load, F_{safe} or F_{d50} , an acoustic element can withstand with a maximum deflection of d_{safe} or 50 mm in	EN 1794-1:2017, Annex B (calculation ⁱ) EN 1794-1:2017, Annex A (test ^j)	kN/m along the acoustic element kN/m ² , mm ^e	1 if tested 1	

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Characteristic	Test method or calculation	Declared value	Amount of samples	Notes
order to fulfil EN 1794-1:2017, A.4. When the load is F_{safe} , d_{safe} has to be declared				
Maximum deflection d_{max} , an acoustic element can withstand under the load $F_{safe} \cdot SF$ or $F_{d50} \cdot SF^d$ in order to fulfil EN 1794-1:2017, A.4	EN 1794-1:2017, Annex A (test j)	mm	1	
Maximum normal (90°) load an acoustic element can withstand in order to fulfil EN 1794-1:2017, E.2: (dynamic load from snow clearance)	EN 1794-1:2017, Annex E (calculation i)	kN on a 2 m x 2 m reference surface on the acoustic element	1 if tested	
Resistance to brush fire	EN 1794-3:2016, 5.1 (test)	Class 1 to 3	1	
Reaction to fire				
Smoke density $D_{s,max10total}$	EN 1794-3:2016, 5.2.3.1 (test)		1	
Toxic fumes: CO, HCN, HCL, NO _x	EN 1794-3:2016, 5.2.3.2 (test)	µg/g	1	
Danger of falling debris	EN 1794-2:2011, Annex A (test)	Class 1 to 4	1	
Light reflection				
The value of reflectivity measured in accordance with EN 1794-2:2011, D.3:	EN 1794-2:2011, Annex D (test)	Class 1 to 3	1	
Release of dangerous substances	4.2 of this standard and EN 1794-2:2011, Annex B	As relevant, in accordance with 4.2	As relevant, in accordance with 4.2	
Durability				
Acoustic parameters, $DL_{\alpha,NRD}$, DL_R , DL_{RI} , DL_{SI} and DL_{ADI} (as appropriate): working life and acoustic performance at the	EN 14389-1	Declared working life (years) and dB after working life	Not applicable	

Characteristic	Test method or calculation	Declared value	Amount of samples	Notes
end of working life (when subject to specific environmental conditions) Non acoustic parameters (working life when subject to specific environmental conditions)	EN 14389-2	Declared working life (years)	Not applicable	
Impact of stones^f Damage caused by controlled impacts	EN 1794-1:2017, Annex C (test)	Succeed or fail	1	
Safety in collision^g Behaviour under impacts specified in EN 1317-2	EN 1794-1:2017, Annex D (test)	Succeed or fail	1	
Environmental protection Identification of constituent materials and breakdown products	EN 1794-2:2011 Annex B	Material details	Not applicable	
Transparency^h Assessment in accordance with supporting standard:	EN 1794-2:2011, Annex E	Static and/or dynamic	1	

- a Only applicable if the device is described as sound absorptive.
- b Applicable if the device is intended to be used under diffuse sound field conditions.
- c Applicable if the device is intended to be used under direct sound field conditions.
- d F_{safe} when the sample under test cannot be charged up to a deflection of $d = 50$ mm or F_{d50} when the sample under test can be charged up to a deflection of $d = 50$ mm.
- e Declaration of d_{safe} , in mm when the sample under test cannot be charged up to a deflection of $d = 50$ mm.
- f Optional.
- g Optional except if combined safety and noise barrier.
- h Optional.
- i when calculation is not reliable, the assessment shall be done by test.
- j when test is not possible, the assessment shall be done by calculation.