

Road traffic noise reducing devices - Non-acoustic performance - Part 1: Mechanical performance and stability requirements (Corrected version 12.2018)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1794-1:2018 sisaldab Euroopa standardi EN 1794-1:2018+AC:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 1794-1:2018 consists of the English text of the European standard EN 1794-1:2018+AC:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 21.02.2018, parandusega konsolideeritud väljaanne 19.12.2018.	Date of Availability of the European standard is 21.02.2018, for consolidated version 19.12.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 93.080.30

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Road traffic noise reducing devices - Non-acoustic performance - Part 1: Mechanical performance and stability requirements

Dispositifs de réduction du bruit du trafic routier -
Performances non acoustiques - Partie 1 :
Performances mécaniques et exigences en matière de
stabilité

Lärmschutzvorrichtungen an Straßen - Nichtakustische
Eigenschaften - Teil 1: Mechanische Eigenschaften und
Anforderungen an die Standsicherheit

This European Standard was approved by CEN on 13 November 2017 and includes the Corrigendum issued by CEN on 19 December 2018.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

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

Contents	Page
European foreword.....	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 Symbols and abbreviations	8
5 Performances	8
5.1 General.....	8
5.2 Wind load and load due to passing vehicles.....	8
5.3 Self-weight.....	9
5.4 Impact of stones.....	9
5.5 Safety in collision	9
5.6 Dynamic actions from snow clearance: equivalent static load.....	9
6 Test report.....	9
Annex A (normative) Resistance against wind load and load from passing vehicles	11
A.1 General.....	11
A.2 Assessment of the performance.....	11
A.2.1 Structural elements.....	11
A.2.2 Acoustic elements	11
A.2.2.1 General.....	11
A.2.2.2 Assessment by testing	12
A.2.3 Test report.....	14
A.2.4 Assessment of performance by calculation	15
A.3 Performance of structural elements.....	15
A.4 Performance of acoustic elements.....	16
A.5 Self-supporting elements	17
A.6 NOTE to Annex A – examples of protocol of measurement (informative).....	18
Annex B (normative) Self-weight	20
B.1 General.....	20
B.2 Determination of self-weight.....	20
B.2.1 Dry weight of acoustic elements.....	20
B.2.2 Wet weight of acoustic elements	20
B.2.3 Reduced wet weight	20
B.3 Mechanical requirements	20
B.3.1 Structural elements.....	20
B.3.2 Acoustic elements under their own weight.....	21

B.3.3	Combined weight, wind and other static loads	21
B.3.4	Fixing devices	21
B.4	Calculation and test reports	21
B.4.1	Assessment of performance by calculation	21
B.4.2	Assessment of performance by testing	22
Annex C	(normative) Impact of stones	23
C.1	General	23
C.2	Requirements	23
C.3	Test method	23
C.4	Test report	24
Annex D	(informative) Safety in collision	26
D.1	General	26
D.2	Testing and calculations	26
Annex E	(normative) Substitute load due to dynamic actions from snow clearance	27
E.1	General	27
E.2	Requirements	27
E.2.1	Magnitude and height of the load	27
E.2.2	Mechanical requirements	27
E.3	Methods of assessment	28
E.3.1	Calculations	28
E.3.2	Load test	28
E.4	Test report	28
Bibliography	30

European foreword

This document (EN 1794-1:2018+AC:2018) 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 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 1794-1:2018.

This document includes Corrigendum 1 to correct two symbols in A.4 a) 3) and A.4 b) 2).

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags **[AC]** and **<AC>**.

The main change compared to the previous edition concerns:

- the Annex A, i.e.: the way to consider the resistance of the Noise Reducing Devices (NRD) to loads. The first version of this standard was written before the Eurocodes were published and, then, was specifying performances. This revised version of the standard now only states the methods of assessment of the maximum load the NRD can withstand without damage. Essentially the manufacturer now has the responsibility to declare the maximum load guarantee representative of its product performances, and to demonstrate those performances. On the other hand, facing previous problems with wrongly calculated performances of some acoustic elements, this new version of the standard requires that the assessment of the performances is now done mainly by testing.
- the Annex D: the acceptance criteria given in the previous version of this standard have been deleted and this revised version of the standard now only refers to EN 1317-1 and EN 1317-2.

This European Standard consists of the following parts under the general title "*Road traffic noise reducing devices — Non-acoustic performance*":

- *Part 1: Mechanical performance and stability requirements*
- *Part 2: General safety and environmental requirements*
- *Part 3: Reaction to fire — Burning behaviour of noise reducing devices and classification*

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

While performing their primary function, road traffic noise reducing devices are exposed to a range of forces due to wind, dynamic air pressure caused by passing traffic, and the self-weight of its component parts. They can also be subjected to shocks caused by stones or other debris thrown up by vehicle tyres and, in some countries, the dynamic force of snow ejected by equipment used to clear roads in winter. The deflections of a noise reducing device under such loads during its design life should not reduce its effectiveness.

This document is a preview generated by EVS

1 Scope

This European Standard specifies criteria to categorize road traffic noise reducing devices according to basic mechanical performance under standard conditions of exposure, irrespective of the materials used. A range of conditions and optional requirements is provided in order to take into account the wide diversity of practice in Europe. Individual aspects of performance are covered separately in the annexes. Safety considerations in the event of damage to noise reducing devices are covered in EN 1794-2.

This European Standard covers the current behaviour of the product. In order to assess its long term performances, EN 14389-2 should be used.

NOTE The test procedure described in Annex A doesn't consider the fatigue effect.

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 1317-1, *Road restraint systems — Part 1: Terminology and general criteria for test methods*

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

EN 1990, *Eurocode — Basis of structural design*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

noise reducing device

NRD

device that is designed to reduce the propagation of traffic noise away from the road environment

Note 1 to entry: This may be a noise barrier, cladding, a road cover or an added device. These devices may include both acoustic and structural elements.

3.2

noise barrier

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

3.3

acoustic element

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