BS EN 1794-2:2024

BSI Standards Publication

# Road traffic noise reducing devices — Non-acoustic performance

Part 2: Methods of determination of the general safety and environmental characteristics

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This British Standard is the UK implementation of EN 1794-2:2024. It supersedes BS EN 1794-2:2020, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/509/6, Fences for the attenuation of noise.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

# Road traffic noise reducing devices - Non-acoustic performance - Part 2: Methods of determination of the general safety and environmental characteristics

Dispositifs de réduction du bruit du trafic routier - Performances non acoustiques - Partie 2 : Méthodes de détermination des caractéristiques générales de sécurité et des caractéristiques environnementales

Lärmschutzvorrichtungen an Straßen - Nichtakustische Eigenschaften - Teil 2: Methoden zur Bestimmung der allgemeinen Sicherheits- und Umweltmerkmale

This European Standard was approved by CEN on 12 August 2024.

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## European foreword

This document (EN 1794-2:2024) 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of an identical text or by endorsement, at the latest by April 2025, and conflicting national standards shall be withdrawn at the latest by April 2025.

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 1794-2:2020.

EN 1794-2:2024 includes the following significant technical changes with respect to EN 1794-2:2020:

— The annexes were renumbered. Annex A now includes the safety in case of brushwood fire.

This document is part of the EN 1794 series, which consists of the following parts under the general title *"Road traffic noise reducing devices — Non-acoustic performance"*:

— *Part 1: Methods of determination of the mechanical and stability characteristics*;

— *Part 2: Methods of determination of the general safety and environmental characteristics*.

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.



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# Introduction

While performing their primary function, road traffic noise reducing devices should not pose hazards to road users or other people in the vicinity or to the environment at large. Noise reducing devices should not reflect light in such a way as to prejudice road safety. They should be made from materials which do not emit noxious fumes or leachates as the result of natural or industrial processes, or as the result of fire. Noise reducing devices should allow a means of escape by road users and access by operatives in the event of an emergency or for maintenance.



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# 1 Scope

This document specifies methods and criteria for assessing the general safety and environmental performance of road traffic noise reducing devices under typical roadside conditions. Appropriate test methods are provided where these are necessary. The treatment of each topic is covered separately in Annexes A to F.

# 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 1794-1:2024, *Road traffic noise reducing devices — Non-acoustic performance — Part 1: Mechanical performance and stability characteristics*

EN ISO 2813:2014, *Paints and varnishes - Determination of gloss value at 20°, 60° and 85° (ISO 2813:2014)*

# 3 Terms, definitions and symbols

## 3.1 Terms and definitions

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

**3.1.1**
**road traffic noise reducing device**
**RTNRD**
device designed to reduce the propagation of traffic noise away from the road environment

Note 1 to entry: RTNRDs can comprise *acoustic elements* (3.1.2) only, or both *structural* (3.1.3) and *acoustic elements*.

Note 2 to entry: Applications of RTNRDs include *noise barriers* (3.1.5), *claddings* (3.1.6), *covers* (3.1.7) and *added devices* (3.1.8).

**3.1.2**
**acoustic element**
element whose primary function is to provide the acoustic performance of the device

**3.1.3**
**structural element**
element whose primary function is to support or hold in place the parts of the RTNRD

**3.1.4**
**self-supporting acoustic element**
acoustic element including its own structural element to support itself

**3.1.5**
**noise barrier**
noise-reducing device which obstructs the direct transmission of airborne sound emanating from road traffic



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**3.1.6**
**cladding**
noise-reducing device which is attached to a wall or other structure and reduces the amount of sound reflected

**3.1.7**
**cover**
noise-reducing device which either spans or overhangs the road

**3.1.8**
**added device**
additional component that influences the acoustic performance of the original noise-reducing device

Note 1 to entry: The added device is acting primarily on the diffracted energy.

## 3.2 Symbols

For the purposes of this document, the following symbols apply:

| | |
|---|---|
| $\phi_m$ | angle at which reflections from the surface of the transparent material obscure the view through the material, in degrees |
| $\phi_0$ | angle between the visual axis and the normal to the noise reducing device (see Figure F.2) in degrees |
| $\theta$ | angle of incidence |
| $\alpha_n$ | angle of transparency (see Figure F.2) in degrees |
| $\alpha$ | angle (see Figure B.1) |
| $\beta_n$ | angle of opacity (see Figure F.2) in degrees |
| $\eta$ | angle of the transparent Elements |
| $\mu$ | terms of refractive index |
| $t_\theta$ | function of the angle of incidence |
| $K_A$ | visual acuity factor (see Figure F.1) in degrees |
| $k$ | Parameter |
| $L_T$ | light transmission index (as determined in accordance with EN 410 or EN 2155-5), in percent |
| $L_T'$ | overall transparency for different material thickness t' |
| $L_T/100$ | coefficient |
| $r$ | radius (see Figure B.1) |
| $S_O$ | area of opaque features within transparent elements, in square millimetres |
| $S_T$ | total area of transparent elements, including horizontal features, in square millimetres |
| $t/t'$ | material thickness/ different material thickness |
| $T$ | transparency, in percent |
| $T_r$ | transparency looking right, in percent |
| $T_l$ | transparency looking left, in percent |



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| | |
|---|---|
| $T_D$ | dynamic transparency, in percent |
| $T_S$ | static transparency, in percent |
| $u_i$ | estimated uncertainties |
| $u_T$ | sum of the estimated combined uncertainties |
| $u_T^2$ | the square of the uncertainty in $T$ |
| $w_i$ | weights |

# 4 Characteristics

## 4.1 Safety in case of brushwood fire

The safety in case of brushfire shall be determined in accordance with Annex A.

## 4.2 Resistance to dynamic loads: risk of falling debris

When secondary safety has to be determined, this shall be done in accordance with Annex B.

## 4.3 Environmental protection

The constituent materials and their breakdown products shall be identified in accordance with Annex C.

## 4.4 Access for maintenance and emergency exits

The acoustic and mechanical performances of doors or other means of escape shall be determined in accordance with Annex D.

## 4.5 Light reflection

The results of a standard test of reflectivity shall be determined in accordance with Annex E.

## 4.6 Transparency

The results of a standard test of transparency should be determined in accordance with Annex F.

# 5 Test report

Every test report shall include the following information:

a) number and year of this document, i.e. EN 1794-2:2024;

b) full description of the element or system tested, including manufacturer(s), part numbers, place and date of origin;

c) description of the method of sampling, description of the sampling procedure, if the performance is determined by parts of manufactured elements;

d) place and date of determination, and the name of the responsible person(s);

e) sufficient description of any tests carried out, any results measured, and the conclusions drawn about the product together with any illustrations or photographs, all as specified in the appropriate annex;



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f) A summary of information shall be produced, identifying the aspects and the level of performance assessed, where appropriate.

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