

# SVENSK STANDARD

## SS-EN 14389-1:2015



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### **Vägutrustning – Bullerskydd – Metoder för bedömning av långsiktiga egenskaper – Del 1: Akustiska parametrar**

### **Road traffic noise reducing devices – Procedures for assessing long term performance – Part 1: Acoustical characteristics**

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Denna standard ersätter SS-EN 14389-1:2007, utgåva 1.

The European Standard EN 14389-1:2015 has the status of a Swedish Standard. This document contains the official English version of EN 14389-1:2015.

This standard supersedes the Swedish Standard SS-EN 14389-1:2007, edition 1.

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EUROPEAN STANDARD

**EN 14389-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2015

ICS 93.080.30

Supersedes EN 14389-1:2007

English Version

## Road traffic noise reducing devices - Procedures for assessing long term performance - Part 1: Acoustical characteristics

Dispositifs de réduction du bruit du trafic routier - Méthodes d'évaluation des performances à long terme - Partie 1: Caractéristiques acoustiques

Lärmschutzvorrichtungen an Straßen - Verfahren zur Bewertung der Langzeitwirksamkeit - Teil 1: Akustische Eigenschaften

This European Standard was approved by CEN on 16 April 2015.

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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.

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 14389-1:2015) 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of an identical text or by endorsement, at the latest by November 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

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

This document supersedes EN 14389-1:2007.

The main change compared to the previous edition is a new presentation of the requirements in order to be coherent with the new EN 14389-2. In the new version, the manufacturer has to declare in Table 1 the working life of the acoustic performance as a function of environmental class.

This part is concerned with long-term durability. It should be read in conjunction with:

EN 1793, *Road traffic noise reducing devices – Test method for determining the acoustical performance,*

- *Part 1: Intrinsic characteristics of sound absorption*
- *Part 2: Intrinsic characteristics of airborne sound insulation under diffuse sound field conditions*
- *Part 6: Intrinsic characteristics – In situ values of airborne sound insulation under direct sound field conditions*

CEN/TS 1793-5, *Road traffic noise reducing devices – Test method for determining the acoustical performance,*

- *Part 5: Intrinsic characteristics – In situ values of sound reflection and airborne sound insulation*

EN 1794, *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 based on assessment of their components*

EN 14389, *Road traffic noise reducing devices - Procedures for assessing long-term performance,*

- *Part 2: Non-acoustical characteristics*

EN 60721-3-4, *Classification of environmental conditions,*

- *Part 3: Classification of groups of environmental parameters and their severities – Section 4: Stationary use at non-weather protected locations*

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



## **Introduction**

Noise Reducing Devices alongside roads should not only fulfil their acoustic function and structural design requirements in accordance with appropriate documents, but also maintain their performance during the required working life. The acoustic elements have to resist the actions of agents within the roadside environment that could significantly degrade their performance.

The acoustic characteristics of a Road Traffic Noise Reducing Device can deteriorate significantly over the duration of its working life if it is not installed or maintained in accordance with the manufacturer's recommendations, or if the materials are not appropriate for the roadside environment.

All elements in the construction of noise reducing devices should be resistant to electrolytic or/and chemical corrosion and embrittlement, be dimensionally stable and have generally a high ageing resistance in many differing conditions.

## 1 Scope

This European Standard specifies requirements for assessing the working life and provides the relevant exposure conditions.

Standards of construction and any material tests conducted should provide evidence of resistance to specified conditions selected from the following:

I.	Chemical Agents	Location dependent
II.	De-icing salt	Location/climate dependent
III.	Dirty water/dust	Location/climate dependent
IV.	Dew	Climate dependent
V.	Freeze/thaw	Climate dependent
VI.	Cold	Climate dependent
VII.	Heat	Climate dependent
VIII.	UV Radiation	Climate dependent
IX.	Traffic Vibration	Location dependent
X.	Biological Process	Climate dependent
XI.	Ozone	Location dependent
XII.	Water	Climate dependent
XIII.	Water spray (Wet/dry)	Location dependent

NOTE Special care is taken for combinations of different materials, whether inside a single device or in combination with other devices (for example: a combination of different acoustic elements or another combination of acoustic and structural elements)

## 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 60721-3-4, *Classification of environmental conditions — Part 3: Classification of groups of environmental parameters and their severities — Section 4: Stationary use at non-weatherprotected locations (IEC 60721-3-4)*

## 3 Terms and definitions

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

### 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

### 3.4

#### **structural element**

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

### 3.5

#### **cladding**

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

### 3.6

#### **cover**

noise reducing device, which either spans or overhangs the highway

### 3.7

#### **added device**

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

### 3.8

#### **working life**

period of time during which the declared acoustic performance(s)  $DL_{\alpha}$  (from EN 1793-1) and/or  $DL_R$  (from EN 1793-2) and/or  $DL_{SI}$  (from EN 1793-6) of the device will be maintained

### 3.9

#### **roadside exposure**

conditions experienced by the noise reducing device installed alongside a road

## 4 Requirements

Standard environmental categories selected for road traffic noise reducing devices with possible variations are given in Annex A of this document.

The manufacturer shall provide the relevant acoustic performance characteristic ( $DL_{\alpha}$  and/or  $DL_R$  and/or  $DL_{SI}$ ) at the end of the working lifetime of the product and define the corresponding working life under the exposure classes, listed in the Table 1, adapted to the intended use of the noise reducing device. Where material standards exist, durability shall be assessed using them (see Annex B).

Adverse effects on long-term performance of contact with the ground shall be taken into account.

If retention of water is likely to degrade the working life, the design shall ensure that water is not retained.

The working life of structural and acoustic elements may be different, therefore they have to be assessed under the same exposure conditions when installed on the same site.

If a change in humidity and/or temperature and/or UV affects the dimensional stability of materials used in the construction, then the design shall allow for such changes and ensure that the performance continues to fulfil the performance characteristics.