



**SLOVENSKI STANDARD**  
**oSIST prEN 14389:2022**

**01-februar-2022**

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**Protihrupne ovire za cestni promet - Postopki za ocenjevanje dolgoročne učinkovitosti**

Road traffic noise reducing devices - Procedures for assessing long term performance

Lärmschutzvorrichtungen an Straßen - Verfahren zur Bewertung der Langzeitwirksamkeit

Dispositifs de réduction du bruit du trafic routier - Méthodes d'évaluation des performances à long terme

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**Ta slovenski standard je istoveten z: prEN 14389**

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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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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 14389**

December 2021

ICS 93.080.30

Will supersede EN 14389-1:2015, EN 14389-2:2015

English Version

## Road traffic noise reducing devices - Procedures for assessing long term performance

Dispositifs de réduction du bruit du trafic routier -  
Méthodes d'évaluation des performances à long terme

Lärmschutzvorrichtungen an Straßen - Verfahren zur  
Bewertung der Langzeitwirksamkeit

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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<b>Contents</b>	<b>Page</b>
European foreword.....	3
Introduction .....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions .....	5
4 Determination of the characteristics .....	6
5 Report.....	8
Annex A (normative) Roadside exposure – Classification of environmental conditions.....	9
Annex B (informative) Material standards .....	11
Bibliography.....	14

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## European foreword

This document (prEN 14389:2021) 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 will supersede EN 14389-1:2015 and EN 14389-2:2015.

The main change compared to the previous edition is the inclusion of the method for assessing long term performance regarding “non acoustic” characteristics.

This document should be read in conjunction with:

- EN 1793, *Road traffic noise reducing devices – Test method for determining the acoustical performance*:
  - *Part 1: Intrinsic characteristics - Sound absorption under diffuse sound field*;
  - *Part 2: Intrinsic characteristics – Airborne sound insulation under diffuse sound field*;
  - *Part 5: Intrinsic characteristics – Sound absorption under direct sound field*;
  - *Part 6: Intrinsic characteristics – Airborne sound insulation under direct sound field*;
- EN 1794, *Road traffic noise reducing devices - Non-acoustic performance*:
  - *Part 1: Methods of determination of the mechanical performance and stability characteristics*;
  - *Part 2: Methods of determination of the general safety and environmental characteristics*;
- prEN 17383, *Road traffic noise reducing devices —Sustainability: Key Performance Indicators (KPIs) Declaration*.

## Introduction

Road Traffic Noise Reducing Devices alongside roads will maintain their characteristics during the declared working life.

Resistance to electrolytic or/and chemical corrosion and embrittlement, dimensional stability and ageing resistance are considered by the manufacturer for different environmental conditions.

A change of acoustic characteristics can be foreseen depending on the material used and the environmental exposure conditions. Significant deterioration of the acoustic characteristics is avoided when appropriate materials for the roadside environment are used and manufacturer's recommendations for installation and maintenance are respected.

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## 1 Scope

This document specifies a method for evaluating the working life of Noise Reducing Devices used alongside roads according to the relevant exposure conditions.

It also specifies a method for determining the acoustic characteristic at the end of the working life.

## 2 Normative references

There are no normative references in this document.

## 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 <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1

#### **road traffic noise reducing device RTNRD**

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

Note 1 to entry: The RTNRD may comprise acoustic elements (3.2) only or both structural (3.3) and acoustic elements.

Note 2 to entry: Applications of RTNRD include noise barriers (3.4), claddings (3.5), covers (3.6) and added devices (3.7).

### 3.2

#### **acoustic element**

element whose primary function is to provide the acoustic characteristic 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

### 3.6

#### **cover**

noise reducing device, which either spans or overhangs the highway

**prEN 14389:2021 (E)****3.7****added device**

added component that influences the acoustic characteristic of the original noise-reducing device

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

**3.8****working life**

period of time during which the declared performance(s) of the product will be maintained

**3.9****roadside exposure**

conditions experienced by the noise reducing device installed alongside a road

**4 Determination of the characteristics**

The determination of the working life of RTNRDs shall be based on the behaviour of the materials RTNRDs are made of with reference to different environmental categories with possible variations as given in Annex A of this document.

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).

Adverse effects on long-term performance of contact with the ground shall be considered.

As water retention is likely to degrade the working life, evaluation shall be made of the extent to which the RTNRD is retaining water.



If a change in humidity and/or temperature and/or UV affects the dimensional stability of materials used in the construction, then evaluation shall be made how RTNRD shall allow for such changes and ensure characteristics remain fulfilled along the whole working life.

Where different materials are used in the construction, evaluation shall be made of the appropriate measures taken to avoid electrolytic and chemical corrosion or interaction that could adversely affect working life.

The working life of structural and acoustic elements may be different; therefore, it shall be assessed under the same exposure conditions.

Evaluation shall be made of the relevant acoustic characteristics ( $DL_{\alpha,NRD}$  and/or  $DL_{RI}$  and/or  $DL_{SI,E}$  and/or  $DL_{SI,P}$ ) at the end of the working lifetime of the RTNRD.

The evaluation for the characteristic  $DL_R$  shall be omitted, as the measurement method according to the corresponding technical standard cannot be applied to check the performance of the product at the end of the working life.

The corresponding working life in years shall be defined under the exposure classes, listed in Table 1, together with the value expressed in decibel of the acoustic performances at the end of the working life.

Where material standards exist, long term performance shall be assessed using them (see Annex B).

The evaluation may be omitted for any exposure classes not covered by the intended use of the RTNRD.

**Table 1 — Working life and acoustic performance at the end of the working life as a function of exposure classes**

Environmental class of exposure	Working life expressed in years		Acoustic performance at the end of the working life expressed in dB			
	Acoustic element	Structural element	$DL_{\alpha,NRD}$	$DL_{RI}$	$DL_{SI,E}$	$DL_{SI,P}$
4B1						
4B2						
4C2						
4C3						
4C4						
4K2						
4K3						
4M3						
4M4						
4S2						
4Z6						
4Z7						

Evaluation shall be made for both structural and acoustic elements. The evaluation shall include:

- a) the list of measures taken to limit the effects of ageing on the product;
- b) the working life corresponding to the specific environmental exposure classes;

**prEN 14389:2021 (E)**

- c) evidence of evaluation of working life;
- d) evidence of the acoustic performances at the end of the working life.

Installation instructions shall describe how the product (acoustic element, full noise barrier, etc.) shall be installed to achieve the working life.

A maintenance manual shall specify measures which are necessary, or to be avoided, to achieve the working life.

**5 Report**

The report shall include a full description of the geometry of the product evaluated, including details of procedures required by all appropriate material documents.

It shall also include:

- a) reference to this document;
- b) name and address of the approved independent evaluating body with a dated signature of the person responsible;
- c) exact identification of evaluated product, name and address of the manufacturer;
- d) full description of the materials, their thickness' and densities of sound absorptive elements;
- e) drawing showing the cross-section of the evaluated element with permitted manufacturing tolerances;
- f) the list of measures taken to limit the effects of ageing on the product with reference to the installation manual;
- g) the list of measures taken to limit the effects of ageing on the product with reference to the maintenance manual;
- h) the working life of the acoustic element expressed with reference to the exposure classes according to Table 1;
- i) the working life of the structural element expressed with reference to the exposure classes according to Table 1;
- l) the list of acoustic indicators expressed with reference to the working life and exposure classes according to Table 1;
- m) installation and maintenance manuals for the achieving of the working life.

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