SLOVENSKI STANDARD

SIST EN 16951-1:2018

01-september-2018

Železniške naprave - Zgornji ustroj - Protihrupne ovire in pripadajoče naprave, ki vplivajo na širjenje zvoka v zraku - Postopki za ocenjevanje dolgoročne učinkovitosti - 1. del: Akustične karakteristike

Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Procedures for assessing long term performance - Part 1: Acoustic characteristics

Bahnanwendungen - Oberbau - Lärmschutzwände und verwandte Vorrichtungen zur Beeinflussung der Luftschallausbreitung - Bewertungsverfahren für das Langzeitverhalten - Teil 1: Akustische Merkmale

Applications ferroviaires - Voie - Murs anti-bruit et dispositifs connexes agissant sur la propagation du son dans l'air - Procédures d'évaluation de la performance à long terme - Partie 1 : caractéristiques acoustiques

Ta slovenski standard je istoveten z: EN 16951-1:2018

ICS:

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93.100	Gradnja železnic	Construction of railways

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Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Procedures for assessing long term performance - Part 1: Acoustic characteristics

Applications ferroviaires - Voie - Écrans antibruit et dispositifs connexes influant sur la propagation aérienne du son - Méthodes d'évaluation des performances à long terme - Partie 1 : Caractéristiques acoustiques

Bahnanwendungen - Oberbau - Lärmschutzwände und verwandte Vorrichtungen zur Beeinflussung der Luftschallausbreitung - Bewertungsverfahren für das Langzeitverhalten - Teil 1: Akustische Merkmale

This European Standard was approved by CEN on 2 February 2018.

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European foreword

This document (EN 16951-1:2018) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2018, and conflicting national standards shall be withdrawn at the latest by November 2018.

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 European Standard is one of the series EN 16951, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Procedures for assessing long term performance*, as listed below:

— *Part 1: Acoustic characteristics* [this document];

— *Part 2: Non-acoustic characteristics*.

This part of EN 16951 is concerned with long-term durability. It should be read in conjunction with:

— EN 16272-1, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 1: Intrinsic characteristics - Sound absorption in the laboratory under diffuse sound field conditions*;

— EN 16272-2, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 2: Intrinsic characteristics - Airborne sound insulation in the laboratory under diffuse sound field conditions*;

— EN 16272-3-1, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 3-1: Normalized railway noise spectrum and single number ratings for diffuse field applications*;

— EN 16272-3-2, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 3-2: Normalized railway noise spectrum and single number ratings for direct field applications*;

— CEN/TS 16272-5, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 5: Intrinsic characteristics - In situ values of sound reflection under direct sound field conditions*;

— EN 16272-6, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 6: Intrinsic characteristics - In situ values of airborne sound insulation under direct sound field conditions*;

— EN 16727-1, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Non-acoustic performance - Part 1: Mechanical performance under static loadings - Calculation and test method*;

— EN 16727-2-1, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Non-acoustic performance - Part 2-1: Mechanical performance under dynamic loadings due to passing trains - Resistance to fatigue*;

— EN 16727-2-2, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Non-acoustic performance - Part 2-2: Mechanical performance under dynamic loadings caused by passing trains - Calculation method*;

— EN 16727-3, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Non-acoustic performance - Part 3: General safety and environmental requirements*;

— EN 16951-2, *Railway applications - Track - Noise barriers and related devices acting on airborne sound propagation - Procedures for assessing long term performance - Part 2: Non-acoustic 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-weatherprotected locations (IEC 60721-3-4)*.

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

Noise barriers and related devices acting on sound propagation alongside railways 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 need to resist the actions of agents within the line side environment that could significantly degrade their performance.

The acoustic characteristics of noise barriers and related devices acting on sound propagation can deteriorate significantly over the duration of their working life if they are not installed or maintained in accordance with the manufacturer's recommendations, or if the materials are not appropriate for the line side environment.

All elements in the construction of noise barriers and related devices acting on sound propagation 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 Combinations of different materials are worth a special attention, 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 purpose of this document, the following terms and definitions apply.

3.1
noise barrier
noise reducing device, which obstructs the direct transmission of airborne sound emanating from railways, and which will typically span between posts and also may overhang the railway

Note 1 to entry: Noise barriers are generally made of acoustic and structural elements (see 3.3 and 3.4).

3.2
cladding
noise reducing device, which is attached to a wall or other structure and reduces the amount of sound reflected

Note 1 to entry: Claddings are generally made of acoustic and structural elements (see 3.3 and 3.4).

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

Note 1 to entry: In some noise barriers, the acoustic function and the structural function cannot be clearly separated and attributed to different components.

3.5
added device
added component that influences the acoustic performance of the original noise-reducing device (acting primarily on the diffracted energy)

Note 1 to entry: In some noise barriers, the acoustic function and the structural function cannot be clearly separated and attributed to different components.

3.6
line side exposure
use of the product as a noise barrier installed alongside railways

3.7
acoustic working life
period of time during which the declared acoustic performance(s) [DL_α (from EN 16272-3-1) and/or DL_R (from EN 16272-3-1) and/or DL_{RI} (from EN 16272-3-2) and/or DL_{SI} (from EN 16272-3-2)] of the device will be maintained

4 Requirements

Standard environmental categories selected for rail noise barriers and related devices acting on sound propagation with possible variations are given in Annex A of this document.

The manufacturer shall provide the relevant acoustic performance characteristic (DL_α and/or DL_R and/or DL_{RI} 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 barrier or related device acting on sound propagation. 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 shall be assessed under the same exposure conditions when installed on the same site.