ICS 93.100 SLOVENSKÁ TECHNICKÁ NORMA Marec 2024

STN	**Železnice Infraštruktúra Protihlukové bariéry a súvisiace zariadenia proti šíreniu zvuku Skúšobná metóda určovania akustických vlastností Časť 3-1: Normalizované spektrum železničného hluku a jednočíselná hodnotiaca veličina pre aplikácie difúzneho zvukového poľa**	**STN EN 16272-3-1** 73 6381

Railway applications - Infrastructure - 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 sound field applications

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/24

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English Version

Railway applications - Infrastructure - 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 sound field applications

Applications ferroviaires - Infrastructure - Dispositifs de réduction du bruit - Méthode d'essai pour la détermination de la performance acoustique - Partie 3-1 : Spectre de bruit ferroviaire normalisé et indices uniques d'évaluation pour des applications en champ sonore diffus

Bahnanwendungen - Oberbau - Lärmschutzwände und verwandte Vorrichtungen zur Beeinflussung der Luftschallausbreitung - Prüfverfahren zur Bestimmung der akustischen Eigenschaften - Teil 3-1: Produktspezifische Merkmale - Standardisiertes Schienenverkehrslärmspektrum und Einzahl-Angaben für Anwendungen im diffusen Schallfeld

This European Standard was approved by CEN on 4 September 2023.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 16272-3-1:2023) has been prepared by Technical Committee CEN/TC 256 “Railway application”, 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of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

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 16272-3-1:2012.

The main changes compared to the previous edition are listed below:

— ISO/IEC Guide 98-3, ISO 12999-1 and ISO 12999-2 have been added to the References;

— The ‘Terms, definitions, symbols and abbreviations’ clause has been updated;

— In EN 16272-1, the method for determining sound absorption coefficients in each one-third octave band, as described in EN ISO 354, has been modified: the Sabine absorption coefficient α_S has been replaced by a new absorption coefficient α_{NRD} that is specific to noise barriers and related devices acting on airborne sound propagation and which takes account of the volume of the test sample (the new coefficient α_{NRD} might be derived from α_S);

— Consequently, in this document the new absorption coefficient α_{NRD} is used to calculate the single-number rating of sound absorption $DL\alpha_{NRD}$;

— An annex with the values of the standard deviation of reproducibility and repeatability of single-number ratings has been added; this makes possible the declaration of the measurement uncertainty and the related confidence level, which is now mandatory (Annex C);

— The Bibliography has been added.

EN 16272-3-1 is part of a series and is intended to be read in conjunction with the other parts. All parts are listed in the following:

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

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

— EN 16272-3-1, *Railway applications – Infrastructure — 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 sound field applications (the present document)*

— EN 16272-3-2, *Railway applications – Infrastructure — 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 sound field applications*

— EN 16272-4, *Railway applications – Track — Noise barriers and related devices acting on airborne sound propagation — Test method for determining the acoustic performance — Part 4: Intrinsic characteristics — In situ values of sound diffraction under direct sound field conditions*

— EN 16272-5, *Railway applications – Infrastructure — Noise barriers and related devices acting on airborne sound propagation — Test method for determining the acoustic performance — Part 5: Intrinsic characteristics —Sound absorption under direct sound field conditions*

— EN 16272-6, *Railway applications – Infrastructure — Noise barriers and related devices acting on airborne sound propagation — Test method for determining the acoustic performance — Part 6: Intrinsic characteristics — Airborne sound insulation under direct sound field conditions*

— CEN/TS 16272-7, *Railway applications – Track — Noise barriers and related devices acting on airborne sound propagation — Test method for determining the acoustic performance — Part 7: Extrinsic characteristics — In situ values of insertion loss*

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.

Introduction

This document is read in conjunction with EN 16272-1 and EN 16272-2 and is applied only to situations as described in those documents (diffuse sound field).

As the two main intrinsic acoustic characteristics of noise barriers and related devices acting on airborne sound propagation in a diffuse sound field, sound absorption and airborne sound insulation, are frequency dependent, there is a need to define a reference railway noise spectrum for test purposes. This document defines the basic properties of railway noise measured at the rail track side in terms of a characteristic normalized railway noise spectrum, which is needed to evaluate single-number ratings of noise barriers and related devices acting on airborne sound propagation in reverberant conditions, e.g. inside tunnels or deep trenches.

1 Scope

This document specifies a normalized railway noise spectrum for the evaluation and assessment of the acoustic performance of devices designed to reduce airborne railway noise near railways.

All noise reducing devices different from noise barriers and related devices acting on airborne sound propagation, e.g. devices for attenuation of ground borne vibration and on board devices are outside of the scope of this document.

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 16272-1, *Railway applications - Infrastructure - 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 - Infrastructure - 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*