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

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NATIONAL FOREWORD

See Eesti standard EVS-EN 16272-3-1:2012 sisaldab Euroopa standardi EN 16272-3-1:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 16272-3-1:2012 consists of the English text of the European standard EN 16272-3-1:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 31.10.2012.	Date of Availability of the European standard is 31.10.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Applications ferroviaires - Voie - Dispositifs de réduction du bruit - Méthode d'essai pour la détermination des performances acoustiques - Partie 3-1: Spectre de bruit ferroviaire normalisé et indices uniques d'évaluation pour des applications en champs diffus

Bahnanwendungen - Oberbau - Lärmschutzwände und verwandte Vorrichtungen zur Beeinflussung der Luftschallausbreitung - Prüfverfahren zur Bestimmung der akustischen Eigenschaften - Teil 3-1: Standardisiertes Schienenverkehrslärmspektrum und Einzahl-Angaben für diffuse Schallfelder

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 16272-3-1:2012) 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of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This European Standard is one of the series EN 16272 "*Railway applications — Track — Noise barriers and related devices acting on airborne sound propagation — Test method for determining the acoustic performance*" as listed below:

— *Part 1: Intrinsic characteristics — Sound absorption in the laboratory under diffuse sound field conditions*

— *Part 2: Intrinsic characteristics — Airborne sound insulation in the laboratory under diffuse sound field conditions*

— *Part 3-1: Normalized railway noise spectrum and single number ratings for diffuse field applications*

— *Part 3-2: Normalized railway noise spectrum and single number ratings for direct field applications* [1)]

— *Part 4: Intrinsic characteristics — In situ values of sound diffraction under direct sound field conditions* [1)]

— *Part 5: Intrinsic characteristics — In situ values of sound reflection under direct sound field conditions* [2)]

— *Part 6: Intrinsic characteristics — In situ values of airborne sound insulation under direct sound field conditions* [1)]

— *Part 7: Extrinsic characteristics — In situ values of insertion loss* [2)]

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1) In preparation.

2) This document has been prepared as a CEN Technical Specification and is in preparation.

Introduction

This document is to be read in conjunction with EN 16272-1 and EN 16272-2 and should be 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; and there is a need to define a reference railway noise spectrum for test purposes. This European Standard defines the basic properties of railway noise measured at the rail track side in terms of a characteristic normalised 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.

This European Standard 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*.

1 Scope

This European Standard specifies a normalised 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 that differ 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 out of the scope of this European Standard.

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 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*

3 Terms and definitions

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

3.1
normalised railway noise spectrum
spectrum that is used for the calculation of the acoustic performance of noise barriers and related devices acting on airborne sound propagation near railways, in terms of single-number ratings of sound absorption and airborne sound insulation

Note 1 to entry: The spectrum is expressed in terms of relative A-weighted sound pressure levels in decibels, for one-third octave bands, L_i, in the frequency range from 100 Hz to 5 kHz.

3.2
one-third octave bands level L_i
relative A-weighted sound pressure levels in decibels, of a normalised railway noise spectrum for one-third octave bands with centre frequency f_i

4 Normalised railway noise spectrum

The normalised railway noise spectrum shown in Table 1 shall be used to assess the acoustic performance of noise barriers and related devices acting on airborne sound propagation near railways.