

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

EESTI STANDARDI EESSÕNA

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English Version

**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**

Applications ferroviaires - Voie - Dispositifs de réduction du
bruit - Méthode d'essai pour la détermination des
performances acoustiques - Partie 3-2 : Spectre de bruit
ferroviaire normalisé et indices uniques d'évaluation pour
des applications en champ direct

Bahnanwendungen - Oberbau - Lärmschutzwände und
verwandte Vorrichtungen zur Beeinflussung der
Luftschallausbreitung - Prüfverfahren zur Bestimmung der
akustischen Eigenschaften - Teil 3-2: Standardisiertes
Schienenverkehrslärmspektrum und Einzahl-Angaben für
gerichtete Schallfelder

This European Standard was approved by CEN on 30 April 2014.

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Contents

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Normalized railway noise spectrum.....	6
5 Single-number rating of sound reflection index DL_{RI}	7
6 Single-number ratings of sound insulation index DL_{SI}	8
6.1 General.....	8
6.2 Acoustic elements	8
6.3 Posts	8
6.4 Global.....	9
7 Single-number ratings of sound diffraction index difference $DL_{\Delta DI}$	9
7.1 General.....	9
7.2 Single-number rating of sound diffraction index difference $DL_{\Delta DI, refl}$	9
7.3 Single-number rating of sound diffraction index difference $DL_{\Delta DI, abs}$	10
7.4 Single-number rating of sound diffraction index difference $DL_{\Delta DI, situ}$	10
8 Expression of results	10
Annex A (informative) Guidance note on use of the single-number rating of sound reflection index DL_{RI}	12
Annex B (informative) Guidance note on use of the single-number rating of airborne sound insulation index DL_{SI}	13
Annex C (informative) Guidance note on use of the single-number rating of sound diffraction index difference $DL_{\Delta DI}$	14

Foreword

This document (EN 16272-3-2:2014) 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 January 2015 and conflicting national standards shall be withdrawn at the latest by January 2015.

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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* (the present document);
- *Part 5: Intrinsic characteristics — In situ values of sound reflection under direct sound field conditions* (Technical Specification);
- *Part 6: Intrinsic characteristics — In situ values of airborne sound insulation under direct sound field conditions.*

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

This document is to be read in conjunction with prEN 16272-4, CEN/TS 16272-5 and EN 16272-6 and will be applied only to situations as described in those documents (direct sound field).

As the two main intrinsic acoustic characteristics of noise barriers and related devices acting on airborne sound propagation in a direct sound field, the sound reflection index and the sound insulation index, are frequency dependent, there is a need to define a reference railway noise spectrum for test purposes.

Also the sound diffraction index difference, the main intrinsic acoustic characteristic of added devices, i.e. products which may be added on the top of noise barriers and intended to contribute to sound attenuation acting primarily on the diffracted sound field, is frequency dependent and there is an analogous 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 normalized railway noise spectrum which is needed to evaluate single-number ratings of noise barriers and related devices acting on airborne sound propagation, except those used in reverberant conditions, e.g. inside tunnels or deep trenches.

1 Scope

This European Standard 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 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.

prEN 16272-4:2014, *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*

CEN/TS 16272-5:2014, *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 16272-6:2014, *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*

3 Terms and definitions

For the purposes 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

Note 1 to entry: It may either span or overhang the railway.

Note 2 to entry: Noise barriers are generally made of acoustic and structural elements (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 (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