

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16727-2-1:2018 sisaldab Euroopa standardi EN 16727-2-1:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 16727-2-1:2018 consists of the English text of the European standard EN 16727-2-1:2018.
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English Version

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

Applications ferroviaires - Voie - Écrans antibruit et dispositifs connexes influant sur la propagation aérienne du son - Performances non acoustiques - Partie 2-1 : Tenue mécanique sous charges dynamiques dues à la circulation ferroviaire - Résistance à la fatigue

Bahnanwendungen - Oberbau - Lärmschutzwände und verwandte Vorrichtungen zur Beeinflussung der Luftschallausbreitung - Nicht akustische Eigenschaften - Teil 2-1: Mechanische Eigenschaftsanforderungen unter dynamischen Belastungen aufgrund vorbeifahrender Züge - Prüfverfahren zum Ermüdungsverhalten

This European Standard was approved by CEN on 8 February 2018.

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Contents	Page
European foreword	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Symbols and abbreviations	6
5 Analytical verification	7
6 General requirements for testing	8
7 Test arrangement and evaluation of results	9
7.1 General	9
7.2 Verification procedure A	10
7.3 Verification procedure B	10
7.4 Verification procedure C	11
8 Test report	12
Annex A (informative) Determination of the fatigue-strength curve	14
Annex B (informative) Verification procedure C – Additional information	17
Bibliography	20

European foreword

This document (EN 16727-2-1:2018) 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of an identical text or by endorsement, at the latest by December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.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 document is one of the series EN 16727, *Railway applications — Track — Noise barriers and related devices acting on airborne sound propagation — Non-acoustic performance*, as listed below:

- *Part 1: Mechanical performance under static loadings — Calculation and test method;*
- *Part 2-1: Mechanical performance under dynamic loadings due to passing trains — Resistance to fatigue [this document];*
- *Part 2-2: Mechanical performance under dynamic loadings caused by passing trains — Calculation method;*
- *Part 3: General safety and environmental requirements.*

It is intended to be read in conjunction with:

- 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 16727-2-2, *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.*

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Introduction

Passing trains generate an air pressure wave, which impacts on noise barriers installed alongside the track. It is important that noise barriers withstand this impact without any part of them becoming detached or displaced in an unsafe manner; they should be designed for the specified requirements in ultimate, serviceability and fatigue limit states. Where no design rules or sufficient experience with components are available, the design should be based on calculation and/or tests carried out in a way that provides information on the properties of the component for design in ultimate and serviceability limit states and the resistance to fatigue. This document applies for noise barrier components or for noise barriers considered as a whole.

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1 Scope

This document describes the basic requirements for the verification of ultimate and serviceability limit states and the resistance to fatigue either of the noise barrier or its components by means of analytical methods and/or tests.

Analytical methods can be used for the determination of the characteristic values and design values.

Where sufficient information is not available, the analytical procedure can be combined with results from tests.

This document provides the following types of test procedures:

- test on small samples for defining detail categories, which may not be covered by Eurocodes (verification procedure A);
- test on a global element for defining the limit state against fatigue (verification procedure B);
- full scale tests under a given representative loading (verification procedure C) to determine fatigue resistance of the noise barrier components for defined loading conditions; verification procedure C is given as alternative to verification procedures A and B.

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 1990:2002¹, *Eurocode — Basis of structural design*

EN 1992 (all parts), *Eurocode 2: Design of concrete structures*

EN 1993 (all parts), *Eurocode 3 — Design of steel structures*

EN 1999 (all parts), *Eurocode 9: Design of aluminium structures*

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*

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

¹ This document is currently impacted by the amendment EN 1990:2002/A1:2005 and corrigendum EN 1990:2002/A1:2005/AC:2010.