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Railway applications - Acoustics - Rail and wheel roughness measurement related to noise generation

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

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English Version

Railway applications - Acoustics - Rail and wheel roughness measurement related to noise generation

Applications ferroviaires - Acoustique - Mesurage de la rugosité des rails et des roues relative à la génération du bruit de roulement

Bahnanwendungen - Akustik - Messung der Schienen- und Radrauheit im Hinblick auf die Entstehung von Rollgeräuschen

This European Standard was approved by CEN on 21 January 2019 and includes Amendment 1 approved by CEN on 20 January 2025.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

European foreword

This document (EN 15610:2019+A1:2025) 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of an identical text or by endorsement, at the latest by December 2025, and conflicting national standards shall be withdrawn at the latest by December 2025.

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This document includes Amendment 1 approved by CEN on 20 January 2025.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟦A1⟩ ⟨A1⟧.

This document supersedes ⟦A1⟩ EN 15610:2019 ⟨A1⟧.

⟦A1⟩ *deleted paragraphs* ⟨A1⟧

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

1 Scope

1.1 This document specifies a direct measurement method for characterizing the surface roughness of the rail and wheel associated with rolling noise ("acoustic roughness"), in the form of a one-third octave band spectrum.

This document describes a method for:

a) selecting measuring positions along a track or selecting wheels of a vehicle;

b) selecting lateral positions for measurements;

c) the data acquisition procedure;

d) measurement data processing in order to estimate a set of one-third octave band roughness spectra;

e) presentation of this estimate for comparison with limits of acoustic roughness;

f) comparison with a given upper limit in terms of a one-third octave band wavelength spectrum;

g) the measuring system requirements.

1.2 It is applicable to the:

a) compliance testing of reference track sections in relation to the acceptance test for noise emitted by railway vehicles;

b) performance testing of track sections in relation to noise emitted by railway vehicles;

c) acceptance of the running surface condition only in the case where the acoustic roughness is the acceptance criterion;

d) assessment of the wheel surface condition as an input for the acoustic acceptance of brake blocks;

e) assessment of the wheel and rail roughness as input to the calculation of combined wheel rail roughness;

f) diagnosis of wheel-rail noise issues for specific tracks or wheels;

g) assessment of the wheel and rail roughness as input to rolling noise modelling;

h) assessment of the wheel and rail roughness as input to noise source separation methods.

1.3 It is not applicable to the:

a) measurement of roughness (rail roughness, wheel roughness or combined roughness) using an indirect method;

b) analysis of the effect of wheel-rail interaction, such as a "contact filter";

c) approval of rail and wheel reprofiling, including rail grinding operations, except for those where the acoustic roughness is specifically the approval criterion (and not the grinding quality criteria as provided in e.g. EN 13231-3);

d) characterization of track and wheel geometry except where associated with noise generation.

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 61260-1:2014, *Electroacoustics - Octave-band and fractional-octave-band filters - Part 1: Specifications (IEC 61260-1:2014)*

〚A1〉 EN 16452:2015+A1:2019, *Railway applications - Braking - Brake blocks* 〈A1〛

EN ISO 266:1997, *Acoustics - Preferred frequencies (ISO 266:1997)*