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Railway applications - Acoustics - Measurement of noise emitted by railbound vehicles (ISO 3095:2025)

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. 12/25

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ICS 17.140.30; 45.060.01 Supersedes EN ISO 3095:2013

English Version

Railway applications - Acoustics - Measurement of noise emitted by railbound vehicles (ISO 3095:2025)

Applications ferroviaires - Acoustique - Mesurage du bruit émis par les véhicules circulant sur rails (ISO 3095:2025)

Akustik - Bahnanwendungen - Messung der Geräuschemission von spurgebundenen Fahrzeugen (ISO 3095:2025)

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European foreword

This document (EN ISO 3095:2025) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with 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of an identical text or by endorsement, at the latest by March 2026, and conflicting national standards shall be withdrawn at the latest by March 2026.

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 ISO 3095:2013.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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Endorsement notice

The text of ISO 3095:2025 has been approved by CEN as EN ISO 3095:2025 without any modification.

International Standard

ISO 3095

Railway applications — Acoustics — Measurement of noise emitted by railbound vehicles

Applications ferroviaires — Acoustique — Mesurage du bruit émis par les véhicules circulant sur rails

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*,in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 256, *Railway applications*,in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 3095:2013), which has been technically revised.

The main changes are as follows:

— the alignment of measurement conditions with ISO 3381:2021[6];

— an improvement of the tonality assessment;

— the introduction of specific measurement conditions for hybrid vehicles;

— a new informative Annex C providing guidance information on the track influence on pass-by test results;

— an improved specification for additional noise measurements on bridges and other elevated structures in concrete bridge sections (see Annex F);

— a new informative Annex H specifying the measurement method for noise from parked trains to support a potential regulation aiming at taking into account annoyance produced in that situation;

— a new informative Annex I outlining a procedure for assessing tonal noise using a narrow band analysis at standstill.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Railway exterior noise is encountered both along open tracks and in and around depots, stops, stations and other holding locations. It includes a number of different physical sources such as rolling noise,[20][28][29][30] impact noise, traction noise, aerodynamic noise, curving noise, braking noise, horn noise and noise from auxiliary equipment and other components. The noise for any given train type strongly depends on the rolling stock design, operating conditions and the track type and condition.

Rolling noise is one of the main sources from vehicle running on open tracks. It contains a significant and sometimes dominant noise contribution from the track. This document is intended to characterize the noise emission from the unit, minimizing the influence of the track.

These conditions are relevant for type testing of rollingstock, enabling comparisons of rolling stock noise emission levels for train operating and test conditions to comply with regulatory or contractual sound level limits. Where measurements are undertaken on other track designs or with different rolling stock operating conditions, noise levels can differ from the type test conditions described herein.

When project proponents are specifying project noise limits for rolling stock, they should include consideration of what is appropriate to their network/environment, temperature ranges, track type (ballast/slab/tunnel, light rail, etc.), and note that the limit values will be dependent on the network conditions, track decay rates, wheel/rail maintenance expectations, speed range, curves, and so on.

Railway environments carry particular safety risks. The measurement procedures specified in this document need to take into account relevant safe work methods applicable to each network.

International Standard **ISO 3095:2025(en)**

Railway applications — Acoustics — Measurement of noise emitted by railbound vehicles

1 Scope

This document specifies measurement methods and conditions to obtain reproducible and comparable exterior noise emission levels and spectra for all kinds of vehicles operating on rails or other types of fixed track, hereinafter conventionally called “unit”.

This document is applicable to type testing of units.

It provides measurement procedures for vehicle exterior noise (in general, a vehicle type test is carried out using only a selected subset of these tests):

— when the vehicle is moving at constant speed;

— when the vehicle is accelerating or decelerating;

— when the vehicle is stationary in different operating conditions.

It does not include all the instructions to characterize the noise emission of the infrastructure related sources (bridges, crossings, switching, impact noise, curving noise, etc.).

This document does not apply to

— the noise emission of track maintenance units while working,

— environmental impact assessment (collection of data to be used in a prediction method for environmental assessment),

— noise immission assessment,

— guided buses, and

— warning signal noise.

The results can be used, for example

— to characterize the exterior noise emitted by units,

— to compare the noise emission of various units on a particular track section, and

— to collect basic source data for units.

NOTE Additional guidance is provided in Annex E for measurements in the specific case of urban rail vehicles.

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.

IEC 60942:2017, *Electroacoustics — Sound calibrators*

IEC 61094-4:1995, *Measurement microphones — Part 4: Specifications for working standard microphones*

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

IEC 61260-3:2016, *Electroacoustics — Octave-band and fractional-octave-band filters — Part 3: Periodic tests*

IEC 61672-1:2013, *Electroacoustics — Sound level meters — Part 1: Specifications*

IEC 61672-3:2013, *Electroacoustics — Sound level meters — Part 3: Periodic tests*

ISO 1996-2:2017, *Acoustics — Description, measurement and assessment of environmental noise — Part 2: Determination of sound pressure levels*

EN 15461:2008+A1:2010, *Railway applications — Noise emission — Characterisation of the dynamic properties of track sections for pass by noise measurements*

EN 15610:2019+A1:2025, *Railway applications — Acoustics — Rail and wheel roughness measurement related to rolling noise generation*

EN 17343:2023, *Railway applications — General terms and definitions*