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Railway applications - Gangway systems between vehicles - Part 2: Acoustic measurements

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This standard includes the English version of the European Standard.

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English Version

Railway applications - Gangway systems between vehicles - Part 2: Acoustic measurements

Applications ferroviaires - Système d'intercirculations
entre véhicules - Partie 2: Mesures acoustiques

Bahnwendungen - Übergangssysteme zwischen
Fahrzeugen - Teil 2: Messung der Akustik

This European Standard was approved by CEN on 22 October 2023.

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EN 16286-2:2023 (E)

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European foreword

This document (EN 16286-2:2023) 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of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

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 16286-2:2013.

In comparison with the previous edition, the following technical modifications have been made:

- a) normative references have been updated;
- b) terms and definitions have been revised;
- c) requirements on measurement setup (now “test setup”) have been revised;
- d) requirements on test procedure have been revised;
- e) requirements on measurement tolerances (now “measurement uncertainties”) have been revised;
- f) requirements on test report have been revised;
- g) Annex A has been revised.

The EN 16286 series of European Standards, *Railway applications — Gangway systems between vehicles*, consists of the following parts:

- *Part 1: Main applications;*
- *Part 2: Acoustic measurements.*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

EN 16286-2:2023 (E)**Introduction**

This document presents a measurement method to collect information about the noise insulation of rail bound vehicle gangway systems. These components need their own measurement procedure as the geometrical sound distribution situation is not in line with the basic assumptions of general standards about noise insulation measurements as provided for building elements, etc.

In this document, a number of different setups are described, which represent possible approaches to the ideal test situation. As the approaches can contradict the ideal sound fields, the document includes methods to assess the influence of reflections and other difficulties in order to reduce the uncertainties of these test methods to an acceptable amount in Annex A.

1 Scope

This document specifies a measurement method and conditions to obtain reproducible and comparable sound reduction indices of all kinds of rail bound vehicles' gangway systems as specified in EN 16286-1. The setup includes all components of the system mounted like this is done between two adjacent car bodies within the train, so that a person will be able to use the gangway system, consisting of e.g.:

- the bridge system (footplate);
- side panels;
- flexible components (bellows);
- mounting systems;
- elements to couple parts in the case of separable gangway systems.

The method is applicable to type testing of gangways.

This method is not applicable to:

- interior noise measurements in vehicles;
- structure borne noise measurements.

The type testing procedures specified in this document are of engineering grade (grade 2) in the frequency range from 100 Hz up to 5 000 Hz.

NOTE This is the preferred range for noise declaration purposes, as specified in EN ISO 12001. If test conditions are relaxed, the results are no longer of engineering grade (grade 2).

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

EN 61672-2, *Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests*

EN IEC 60942, *Electroacoustics - Sound calibrators*

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

EN ISO 3741, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for reverberation test rooms (ISO 3741)*

EN ISO 9614-1:2009, *Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 1: Measurement at discrete points (ISO 9614-1:1993)*

EN ISO 10140 (all parts), *Acoustics - Laboratory measurement of sound insulation of building elements*

EN ISO 12999-1, *Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 1: Sound insulation (ISO 12999-1)*

EN ISO 15186-1, *Acoustics - Measurement of sound insulation in buildings and of building elements using sound intensity - Part 1: Laboratory measurements (ISO 15186-1)*

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