

Irish Standard I.S. EN 16286-2:2023

Version 1.0

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

© NSAI 2023 — No copying without NSAI permission except as permitted by copyright law.

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

NSAI/... xxx: A National adoption of a Technical Regulation (TR), Technical Specification (TS), CEN and/or CENELEC Workshop Agreement (CWA).

I.S. EN 16286-2:2023 V1.0 was published under the authority of the NSAI and came into effect on: 2023-11-30						
Consisting of:	DAV	Version	Published	Withdrawn*		
I.S. EN 16286-2:2023	2023-11-29	1.0	2023-11-30			
Replaces:						
EN 16286-2:2013		All versions				
*Dates in the future are planned withdrawal dates DAV = Date of Availability of publication from CEN/CENELEC						
NOTE 1: Versions relate to the different elements assembled for any publication based on the edition issued by CEN/CENELEC. Publications prior to 2023-11-27 do not contain version history but if you need any more information please contact info@standards.ie.						
NOTE 2: The date of any NSAI previous adoptions may not match the date of its original CEN/CENELEC document.						

ICS number(s): 45.060.20

NSAI 1 Swift Square Northwood, Santry Dublin 9 D09 A0E4 +353 1 807 3800 standards@nsai.ie <u>NSAI.ie</u>

Sales +353 1 857 6730 Standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN 16286-2:2023 V1.0 is the version of the NSAI adopted European document EN 16286-2:2023, *Railway applications - Gangway systems between vehicles - Part 2: Acoustic measurements,* including any Corrections, Amendments etc. to EN 16286-2:2023 listed on page(s) II.

This normative document by CEN/CENELEC the elaboration of which includes a public enquiry, followed by a Formal Vote of CEN/CENELEC national members and final ratification. This European Standard is published as an identical national standard and every conflicting national standard will be withdrawn. The content of a European Standard does not conflict with the content of any other EN (and HD for CENELEC).

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Conformance with this document does not of its self confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This is a free page sample. Access the full version online.

I.S. EN 16286-2:2023 V1.0

This page intentionally left blank

EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN 16286-2

November 2023

ICS 45.060.20

Supersedes EN 16286-2:2013

English Version

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

Applications ferroviaires - Système d'intercirculations entre véhicules - Partie 2: Mesures acoustiques Bahnanwendungen - Übergangssysteme zwischen Fahrzeugen - Teil 2: Messung der Akustik

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2023 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 16286-2:2023 E

EN 16286-2:2023 (E)

Contents

Europ	ean foreword	3	
Introd	uction	4	
1	Scope	5	
2	Normative references	5	
3	Terms, definitions and symbols	6	
3.1	Terms and definitions	6	
3.2	Symbols	13	
4	Instrumentation and calibration	15	
4.1	Instrumentation	15	
4.2	Calibration	15	
5	Test setup	15	
5.1	General	15	
5.2	Test setup type 1	15	
5.3	Test setup type 2	16	
5.4	Test setup type 3	18	
6	Test procedure	19	
6.1	General	19	
6.2	Generation of sound field	19	
6.3	Sound pressure level in the source room	19	
6.4	Measurement of average sound intensity level on the measurement surface	20	
6.4.1	General	20	
6.4.2	Measurement surface	20	
6.4.3	Qualification of the measurement surface	20	
6.4.4	Scanning procedure	21	
6.4.5	Procedure using discrete positions	22	
6.4.6	Scanning procedure for one measurement area	22	
6.4.7	Scanning procedure for a partial measurement surface S _{mc}	22	
6.5	Background noise	23	
6.6	Frequency range of measurements	23	
7	Presentation of results	23	
8	Ouality of the measurements	23	
8.1	Deviations from the requirements	23	
8.2	Measurement uncertainties	23	
9	Test report	24	
Annov	A (normative) Method to qualify the sound field on the surface of the test specimen		
AIIICA	in the source room	25	
P !			
Figure	Figure A.1 — Possible setup to achieve a constant distance of 10 mm		
Table .	A.1 — Maximum acceptable deviation values $\Delta L_{m{c}}$	26	
Biblio	graphy	27	

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)



This is a free preview. Purchase the entire publication at the link below:

Product Page

S Looking for additional Standards? Visit Intertek Inform Infostore

> Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation