SLOVENSKI STANDARD
SIST EN ISO 16283-1:2014

01-junij-2014

Nadomešča:
SIST EN ISO 140-4:1999

Akustika - Terenska merjenja zvočne izolirnosti stavbnih elementov in v stavbah - 1. del: Izolirnost pred zvokom v zraku (ISO 16283-1:2014)

Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 16283-1:2014)

Akustik - Messung der Schalldämmung in Gebäuden und von Bauteilen - Teil 1: Luftschalldämmung (ISO 16283-1:2014)

Acoustique - Mesurage in situ de l'isolation acoustique des bâtiments et des éléments de construction - Partie 1: Isolation des bruits aériens (ISO 16283-1:2014)

Ta slovenski standard je istoveten z: EN ISO 16283-1:2014

ICS:

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91.120.20	Akustika v stavbah. Zvočna izolacija	Acoustics in building. Sound insulation

SIST EN ISO 16283-1:2014 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 16283-1

February 2014

ICS 91.120.20

Supersedes EN ISO 140-14:2004, EN ISO 140-4:1998, EN ISO 140-5:1998, EN ISO 140-7:1998

English Version

Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 16283-1:2014)

Acoustique - Mesurage in situ de l'isolation acoustique des bâtiments et des éléments de construction - Partie 1: Isolation des bruits aériens (ISO 16283-1:2014)

Akustik - Messung der Schalldämmung in Gebäuden und von Bauteilen am Bau - Teil 1: Luftschalldämmung (ISO 16283-1:2014)

This European Standard was approved by CEN on 4 January 2014.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN ISO 16283-1:2014) has been prepared by Technical Committee ISO/TC 43 “Acoustics” in collaboration with the Technical Committee CEN/TC 126 “Acoustic properties of building elements and of buildings” the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by August 2014, and conflicting national standards shall be withdrawn at the latest by August 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 140-7:1998, EN ISO 140-5:1998, EN ISO 140-4:1998, EN ISO 140-14:2004.

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Endorsement notice

The text of ISO 16283-1:2014 has been approved by CEN as EN ISO 16283-1:2014 without any modification.

INTERNATIONAL STANDARD

ISO 16283-1

First edition
2014-02-15

Acoustics — Field measurement of sound insulation in buildings and of building elements —

Part 1: Airborne sound insulation

Acoustique — Mesurage in situ de l'isolation acoustique des bâtiments et des éléments de construction —
Partie 1: Isolation des bruits aériens

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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 documents 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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This first edition of ISO 16283-1 cancels and replaces ISO 140-4:1998, ISO 140-5:1998, ISO 140-7:1998, and ISO 140-14:2004, which have been technically revised.

ISO 16283 consists of the following parts, under the general title *Acoustics — Field measurement of sound insulation in buildings and of building elements*:

— *Part 1: Airborne sound insulation*

— *Part 2: Impact sound insulation*[1)]

— *Part 3: Façade sound insulation*[2)]

1) To be published.

2) Under development.

Introduction

ISO 16283 (all parts) describes procedures for field measurements of sound insulation in buildings. Airborne, impact and façade sound insulation are described in ISO 16283-1, ISO 16283-2[3] and ISO 16283-3[4], respectively.

Field sound insulation measurements that were described previously in ISO 140-4, –5, and –7 were (a) primarily intended for measurements where the sound field could be considered to be diffuse, and (b) not explicit as to whether operators could be present in the rooms during the measurement. ISO 16283 differs from ISO 140-4, –5, and –7 in that (a) it applies to rooms in which the sound field may or may not approximate to a diffuse field, (b) it clarifies how operators can measure the sound field using a hand-held microphone or sound level meter and (c) it includes additional guidance that was previously contained in ISO 140-14.

NOTE Survey test methods for field measurements of airborne and impact sound insulation are dealt with in ISO 10052.

3) To be published.

4) Under development.

Acoustics — Field measurement of sound insulation in buildings and of building elements —

Part 1: Airborne sound insulation

1 Scope

This part of ISO 16283 specifies procedures to determine the airborne sound insulation between two rooms in a building using sound pressure measurements. These procedures are intended for room volumes in the range from 10 m^3 to 250 m^3 in the frequency range from 50 Hz to 5 000 Hz. The test results can be used to quantify, assess and compare the airborne sound insulation in unfurnished or furnished rooms where the sound field may or may not approximate to a diffuse field. The measured airborne sound insulation is frequency-dependent and can be converted into a single number quantity to characterize the acoustic performance using the rating procedures in ISO 717-1.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation*

ISO 3382-2, *Acoustics — Measurement of room acoustic parameters — Part 2: Reverberation time in ordinary rooms*

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

ISO 18233, *Acoustics — Application of new measurement methods in building and room acoustics*

IEC 60942, *Electroacoustics — Sound calibrators*

IEC 61183, *Electroacoustics — Random-incidence and diffuse-field calibration of sound level meters*

IEC 61260, *Electroacoustics — Octave-band and fractional-octave-band filters*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

1) To be published.

3.1
energy-average sound pressure level in a room
L
ten times the common logarithm of the ratio of the space and time average of the squared sound pressure to the square of the reference sound pressure, with the space average taken over the central zone of the room where the direct radiation from any loudspeaker or the nearfield radiation from the room boundaries has negligible influence

Note 1 to entry: L is expressed in decibels.

3.2
corner sound pressure level in a room
L_{Corner}
ten times the common logarithm of the ratio of the highest time average squared sound pressure from the set of corner measurements to the square of the reference sound pressure, for the low-frequency range (50, 63, and 80 Hz one-third octave bands)

Note 1 to entry: L_{Corner} is expressed in decibels.

3.3
low-frequency energy-average sound pressure level in a room
L_{LF}
ten times the common logarithm of the ratio of the space and time average of the squared sound pressure to the square of the reference sound pressure in the low-frequency range (50, 63, and 80 Hz one-third octave bands) where the space average is a weighted average that is calculated using the room corners where the sound pressure levels are highest and the central zone of the room where the direct radiation from any loudspeaker or the nearfield radiation from the room boundaries has negligible influence

Note 1 to entry: L_{LF} is expressed in decibels.

Note 2 to entry: L_{LF} is an estimate of the energy-average sound pressure level for the entire room volume.

3.4
reverberation time
T
time required for the sound pressure level in a room to decrease by 60 dB after the sound source has stopped

Note 1 to entry: T is expressed in seconds.

3.5
background noise level
measured sound pressure level in the receiving room from all sources except the loudspeaker in the source room

3.6
fixed microphone
microphone that is fixed in space by using a device such as a tripod so that it is stationary

3.7
mechanized continuously-moving microphone
microphone that is mechanically moved with approximately constant angular speed in a circle, or is mechanically swept along a circular path where the angle of rotation about a fixed axis is between 270° and 360°

3.8
manually-scanned microphone
microphone attached to a hand-held sound level meter or an extension rod that is moved by a human operator along a prescribed path

3.9
manually-held microphone
microphone attached to a hand-held sound level meter or a rod that is hand-held at a fixed position by a human operator at a distance at least an arm's length from the trunk of the operator's body

3.10
partition
total surface of the separating partition between the source and receiving rooms

Note 1 to entry: For two rooms which are staggered vertically or horizontally, the total surface of the separating partition is not visible from both sides of the partition; hence it is necessary to define the partition as the total surface.

3.11
common partition
part of the partition that is common to both the source and receiving rooms

3.12
level difference
D
difference in the energy-average sound pressure levels between the source and receiving rooms with one or more loudspeakers in the source room which is calculated using Formula (1)

$$D = L_1 - L_2 \tag{1}$$

where

L_1 is the energy-average sound pressure level in the source room when its volume is larger than or equal to 25 m^3 or the low-frequency energy-average sound pressure level (50 Hz, 63 Hz and 80 Hz bands only) in the source room when its volume is smaller than 25 m^3;

L_2 is the energy-average sound pressure level in the receiving room when its volume is larger than or equal to 25 m^3 or the low-frequency energy-average sound pressure level (50 Hz, 63 Hz and 80 Hz bands only) in the receiving room when its volume is smaller than 25 m^3

Note 1 to entry: D is expressed in decibels.

3.13
standardized level difference
D_{nT}
level difference that is standardized to a reference value of the reverberation time in the receiving room and calculated using Formula (2)

$$D_{nT} = D + 10\lg\frac{T}{T_0} \tag{2}$$

where

T is the reverberation time in the receiving room;

T_0 is the reference reverberation time; for dwellings, T_0 = 0,5 s.

Note 1 to entry: D_{nT} is expressed in decibels.