SLOVENSKI STANDARD
oSIST prEN ISO 16283-1:2012

01-junij-2012

Akustika - Terenska merjenja zvočne izolirnosti v stavbah in stavbnih elementih - 1. del: Izolirnost pred zvokom v zraku (ISO/DIS 16283-1:2012)

Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO/DIS 16283-1:2012)

Akustik - Messung der Schalldämmung in Gebäuden und von Bauteilen - Teil 1: Luftschalldämmung (ISO/DIS 16283-1:2012)

Acoustique - Mesurage in situ de l'isolation acoustique des bâtiments et des éléments de construction - Partie 1: Isolation des bruits aériens (ISO/DIS 16283-1:2012)

Ta slovenski standard je istoveten z: **prEN ISO 16283-1 rev**

ICS:

17.140.01	Akustična merjenja in blaženje hrupa na splošno	Acoustic measurements and noise abatement in general
91.060.01	Stavbni elementi na splošno	Elements of buildings in general
91.120.20	Akustika v stavbah. Zvočna izolacija	Acoustics in building. Sound insulation

oSIST prEN ISO 16283-1:2012 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN ISO 16283-1 rev

April 2012

ICS 91.120.20

Will supersede 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/DIS 16283-1:2012)

Acoustique - Mesurage in situ de l'isolation acoustique des bâtiments et des éléments de construction - Partie 1: Isolation des bruits aériens (ISO/DIS 16283-1:2012)

Akustik - Messung der Schalldämmung in Gebäuden und von Bauteilen - Teil 1: Luftschalldämmung (ISO/DIS 16283-1:2012)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 126.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword

This document (prEN ISO 16283-1:2012) 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 document is currently submitted to the parallel Enquiry.

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

Endorsement notice

The text of ISO/DIS 16283-1:2012 has been approved by CEN as a prEN ISO 16283-1:2012 without any modification.

DRAFT INTERNATIONAL STANDARD ISO/DIS 16283-1

ISO/TC **43**/SC **2** Secretariat: **DIN**

Voting begins on **2012-04-12** Voting terminates on **2012-09-12**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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

(Revision of ISO 140-4:1998, ISO 140-5:1998, ISO 140-7:1998 and ISO 140-14:2004)

ICS 91.120.20

ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 16283-1 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This edition cancels and replaces ISO 140-4:1998, ISO 140-5:1998, ISO 140-7:1998, 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*

— *Part 3: Façade sound insulation*

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 and ISO 16283-3, respectively.

Field sound insulation measurements that were previously described 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.

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. It is intended for room volumes in the range from 10 to 250 m^3 in the frequency range from 50 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 to characterise the acoustic performance using the rating procedures in ISO 717-1.

2 Normative references

The following referenced documents are indispensable for the application 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.

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 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*

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

3 Terms and definitions

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

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, the space average is taken over the central zone of the room

1) under development

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
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), 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 Equation (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 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 smaller than 25 m^3

L_2 is the energy-average sound pressure level in the receiving room when its volume is larger than 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 Equation (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.

NOTE 2 TO ENTRY The level difference is referenced to a reverberation time of 0,5 s because in dwellings with furniture the reverberation time has been found to be reasonably independent of volume and frequency and to be approximately equal to 0,5 s. With this standardization, D_{nT} is dependent on the direction of the sound transmission if the