SLOVENSKI STANDARD
SIST EN ISO 15667:2001

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Akustika - Smernice za varovanje pred hrupom z okrovi in kabinami (ISO 15667:2000)

Acoustics - Guidelines for noise control by enclosures and cabins (ISO 15667:2000)

Akustik - Leitfaden für den Schallschutz durch Kapseln und Kabinen (ISO 15667:2000)

Acoustique - Lignes directrices pour la réduction du bruit au moyen d'encoffrements et de cabines (ISO 15667:2000)

Ta slovenski standard je istoveten z: **EN ISO 15667:2000**

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17.140.99	Drugi standardi v zvezi z akustiko	Other standards related to acoustics

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English version

Acoustics - Guidelines for noise control by enclosures and cabins (ISO 15667:2000)

Acoustique - Lignes directrices pour la réduction du bruit au moyen d'encoffrements et de cabines (ISO 15667:2000)

Akustik - Leitfaden für den Schallschutz durch Kapseln und Kabinen (ISO 15667:2000)

This European Standard was approved by CEN on 1 May 2000.

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 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 Management Centre has the same status as the official versions.

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

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Foreword

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The text of the International Standard ISO 15667:2000 has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 211 "Acoustics", the secretariat of which is held by DS.

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of an identical text or by endorsement, at the latest by November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 15667:2000 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

Annex ZA (normative)
Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

Publication	Year	Title	EN	Year
ISO 140-3	1995	Acoustics - Measurement of sound insulation in buildings and of building elements - Part 3: Laboratory measurements of airborne sound insulation of building elements	EN ISO 140-3	1995
ISO 717-1	1996	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation	EN ISO 717-1	1996
ISO 11546-1	1995	Acoustics - Determination of sound insulation performances of enclosures - Part 1: Measurements under laboratory conditions (for declaration purposes)	EN ISO 11546-1	1995
ISO 11546-2	1995	Acoustics - Determination of sound insulation performances of enclosures - Part 2: Measurements in situ (for acceptance and verification purposes)	EN ISO 11546-2	1995
ISO 11957	1996	Acoustics - Determination of sound insulation performance of cabins - Laboratory and in situ measurements	EN ISO 11957	1996
ISO 14163	1998	Acoustics - Guidelines for noise control by silencers	EN ISO 14163	1998

INTERNATIONAL STANDARD

ISO 15667

First edition
2000-05-01

Acoustics — Guidelines for noise control by enclosures and cabins

Acoustique — Lignes directrices pour la réduction du bruit au moyen d'encoffrements et de cabines

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15667 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

Annexes A and B of this International Standard are for information only.

Introduction

Acoustic enclosures and cabins provide a reduction of airborne sound on the propagation path from the machine (or a set of machines) to nearby work stations or to the environment. This International Standard describes criteria which determine the acoustic performance of enclosures and cabins with consideration of operational aspects.

Acoustics — Guidelines for noise control by enclosures and cabins

1 Scope

This International Standard deals with the performance of enclosures and cabins designed for noise control. It outlines the acoustical and operational requirements which are to be agreed upon between the supplier or manufacturer and the user of such enclosures and cabins. This International Standard is applicable to two types of acoustic enclosures and cabins, as follows.

a) Cabins for noise protection of operators: free-standing cabins and cabins attached to machines (e.g. vehicles, cranes).

b) Free-standing enclosures covering or housing machines: enclosures with a fraction of acoustically untreated open area of less than 10 % of the total surface are the main subject of this International Standard.

In this International Standard, emphasis is put on lightweight constructions. However, thick, massive structures as, for example, brick walls, are not excluded.

Enclosures and cabins with more than 10 % open and untreated area belong to the category of partial enclosures. They are not the subject of this International Standard.

A third type of enclosure, integrated enclosures which form a part of the machine and are firmly attached to it, is not the subject of this International Standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 140-3, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurements of airborne sound insulation of building elements*.

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

ISO 3740 series, *Acoustics — Determination of sound power levels of noise sources using sound pressure*.

ISO 9614 (all parts), *Acoustics — Determination of sound power levels of noise sources using sound intensity*.

ISO 11200 series, *Acoustics — Noise emitted by machinery and equipment.*

ISO 11546-1:1995, *Acoustics — Determination of sound insulation performance of enclosures — Part 1: Measurements under laboratory conditions (for declaration purposes)*.

ISO 11546-2:1995, *Acoustics — Determination of sound insulation performance of enclosures — Part 2: Measurements* in situ *(for acceptance and verification purposes)*.

ISO 11957:1996, *Acoustics — Determination of sound insulation performance of sound protecting cabins — Laboratory and* in situ *measurements*.

ISO 14163, *Acoustics — Guidelines for noise control by silencers*.

3 Terms and definitions

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

3.1
enclosure
structure covering or housing a sound source (machine) for protection of the environment from this sound source (machine)

NOTE The shape may be box-like or follow the contour of machine parts. Box-shaped enclosures consist of walls and a roof. The enclosure may have openings for doors, windows, ventilation, material flow, etc.; see Figure 4.

3.2
cabin
construction specially designed for the protection of human beings (e.g. machine operators) from environmental noise, consisting of a fully enveloping structure

NOTE 1 Adapted from ISO 11957:1996.

NOTE 2 A floor is not always a component of the cabin.

3.3
sound power insulation of the enclosure
insertion loss of the enclosure
D_W
difference between the levels of the sound powers emitted from the sound source (machine) with and without the enclosure, in one-third-octave bands or octave bands, measured according to ISO 11546-1 or ISO 11546-2

NOTE 1 The sound power insulation (or insertion loss) is expressed in decibels, dB.

NOTE 2 This spectrum of values is useful for general planning of environmental noise control for locations at some distance from the source, e.g. in the reverberant field of an industrial hall or in the neighbourhood of a plant.

3.4
weighted sound power insulation of the enclosure
$D_{W,\mathrm{w}}$
single-number value determined in accordance with the method stated in ISO 717-1, except that the sound reduction index (or transmission loss) is replaced by the insertion loss, D_W

NOTE 1 The weighted sound power insulation is expressed in decibels, dB.

NOTE 2 The single-number value is useful for a rough comparison of different enclosures and for general acoustical planning inside buildings without detailed knowledge of the source spectrum.

NOTE 3 Adapted from ISO 11546-2:1995.

3.5
panel transmission loss
R
sound reduction index (or transmission loss) of individual panels from which the enclosure is made, in accordance with ISO 140-3

NOTE 1 The panel transmission loss is expressed in decibels, dB.

NOTE 2 In a limited range of medium frequencies (typically 250 Hz to 1 000 Hz), the insertion loss, D_W, of a completely sealed enclosure is approximately related to the panel transmission loss, R, by

$$D_W \approx R + 10\lg(\alpha)\ \text{dB} \qquad (1)$$

where α denotes the average absorption coefficient of the internal side of the panels. While spectral information on R and α is often provided, the relation (1) primarily gives an upper limit and is not a reliable foundation for predicting the actual insertion loss, D_W. Leakages, insufficiently acoustically treated openings, and flanking transmission of structure-borne sound result in smaller values of the actual insertion loss.

NOTE 3 For measurements of the airborne sound insulation of small building elements with openings, see ISO 140-10 [11].

3.6 Sound pressure insulation, D_p

3.6.1
sound pressure insulation for enclosures
D_p
difference between the levels of the sound pressures at a specified position with and without an enclosure, in one-third-octave bands or octave bands

NOTE 1 The sound pressure insulation is expressed in decibels, dB.

NOTE 2 This spectrum of values is useful for the detailed analysis of the acoustic performance of an enclosure in different directions.

NOTE 3 For measurements of the sound pressure insulation of an enclosure, see ISO 11546-1 and ISO 11546-2.

3.6.2
sound pressure insulation for cabins
D_p
difference between the levels of the sound pressures in an external diffuse sound field and in a cabin located in this field, in one-third-octave bands or octave bands

NOTE 1 The sound pressure insulation is expressed in decibels, dB.

NOTE 2 For measurements of the sound pressure insulation of a cabin see ISO 11957.

NOTE 3 Adapted from ISO 11957:1996.

3.7
apparent sound pressure insulation of a cabin
D'_p
difference between the levels of the sound pressures in a room with arbitrary sound field distribution and in a cabin located in the room, in one-third-octave bands or octave bands

NOTE 1 The apparent sound pressure insulation of a cabin is expressed in decibels, dB.

NOTE 2 The sound field in the room may not necessarily be diffuse.

NOTE 3 For measurements of the apparent sound pressure insulation of an enclosure, see ISO 11957.

NOTE 4 Adapted from ISO 11957:1996.