SLOVENSKI STANDARD
SIST EN ISO 140-4:1999

01-november-1999

Akustika - Merjenje zvočne izolirnosti v stavbah in zvočne izolirnosti stavbnih elementov - 4. del: Terenska merjenja izolirnosti med prostori pred zvokom v zraku (ISO 140-4:1998)

Acoustics - Measurement of sound insulation in buildings and of building elements - Part 4: Field measurements of airborne sound insulation between rooms (ISO 140-4:1998)

Akustik - Messung der Schalldämmung in Gebäuden und von Bauteilen - Teil 4: Messung der Luftschalldämmung zwischen Räumen in Gebäuden (ISO 140-4:1998)

Acoustique - Mesurage de l'isolation acoustique des immeubles et des éléments de construction - Partie 4: Mesurage in situ de l'isolement aux bruits aériens entre les pieces (ISO 140-4:1998)

Ta slovenski standard je istoveten z: **EN ISO 140-4:1998**

ICS:

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

SIST EN ISO 140-4:1999 **en**

EUROPEAN STANDARD
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English version

Acoustics - Measurement of sound insulation in buildings and of building elements - Part 4: Field measurements of airborne sound insulation between rooms (ISO 140-4:1998)

Acoustique - Mesurage de l'isolation acoustique des immeubles et des éléments de construction - Partie 4: Mesurage in situ de l'isolement aux bruits aériens entre les pièces (ISO 140-4:1998)

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This European Standard was approved by CEN on 14 August 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN ISO 140-4:1998 E

Foreword

The text of the International Standard ISO 140-4:1998 has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 126 "Acoustic properties of building products 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 February 1999, and conflicting national standards shall be withdrawn at the latest by February 1999.

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 140-4:1998 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.

Publication	Year	Title	EN	Year
ISO 140-2	1991	Acoustics - Measurement of sound insulation in buildings and of building elements - Part 2: Determination, verification and application of precision data	EN 20140-2	1993
ISO 140-3	1985	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 354	1985	Acoustics - Measurement of sound absorption in a reverberation room	EN ISO 354	1993
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

INTERNATIONAL STANDARD

ISO 140-4

Second edition
1998-08-15

Acoustics — Measurement of sound insulation in buildings and of building elements —

Part 4:
Field measurements of airborne sound insulation between rooms

Acoustique — Mesurage de l'isolation acoustique des immeubles et des éléments de construction —

Partie 4: Mesurage in situ de l'isolement aux bruits aériens entre les pièces

Reference number
ISO 140-4:1998(E)

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.

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.

International Standard ISO 140-4 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This second edition cancels and replaces the first edition (ISO 140-4:1978) which has been technically revised.

ISO 140 consists of the following parts, under the general title *Acoustics — Measurement of sound insulation in buildings and of building elements*:

— *Part 1: Requirements of laboratory test facilities with suppressed flanking transmission*

— *Part 2: Determination, verification and application of precision data*

— *Part 3: Laboratory measurement of airborne sound insulation of building elements*

— *Part 4: Field measurements of airborne sound insulation between rooms*

— *Part 5: Field measurements of airborne sound insulation of façade elements and façades*

— *Part 6: Laboratory measurements of impact sound insulation of floors*

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— *Part 7: Field measurements of impact sound insulation of floors*

— *Part 8: Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor*

— *Part 9: Laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it*

— *Part 10: Laboratory measurement of airborne sound insulation of small building elements*

Annexes A and B form an integral part of this part of ISO 140. Annexes C to F are for information only.

Acoustics — Measurement of sound insulation in buildings and of building elements —

Part 4:
Field measurements of airborne sound insulation between rooms

1 Scope

This part of ISO 140 specifies field methods for measuring the airborne sound insulation properties of interior walls, floors and doors between two rooms under diffuse sound field conditions in both rooms, and for determining the protection afforded to the occupants of the building.

The methods give values for airborne sound insulation which are frequency dependent. They can be converted into a single number, characterizing the acoustic performance, by application of ISO 717-1.

The results obtained can be used to compare sound insulation between rooms and to compare actual sound insulation with specified requirements.

NOTE 1 Laboratory measurements of airborne sound insulation of building elements are dealt with in ISO 140-3.

NOTE 2 Field measurements of airborne sound insulation of façade elements and façades are dealt with in ISO 140-5.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 140. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 140 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 140-2:1991, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 2: Determination, verification and application of precision data.*

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.*

ISO 354:1985, *Acoustics — Measurement of sound absorption in a reverberation room.*

ISO 717-1:1996, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation.*

IEC 60651:1979, *Sound level meters.*

IEC 60804:1985, *Integrating-averaging sound level meters.*

IEC 60942: 1988, *Sound calibrators.*

IEC 61260:1995, *Electroacoustics — Octave band filters and fractional-octave band filters.*

3 Definitions

For the purposes of this part of ISO 140, the definitions given in ISO 140-3 and following definitions apply.

3.1 average sound pressure level in a room, L**:** Ten times the logarithm to the base 10 of the ratio of the space and time average of the sound pressure squared to the square of the reference sound pressure, the space average being taken over the entire room with the exception of those parts where the direct radiation of a sound source or the near field of the boundaries (wall, etc.) is of significant influence; it is expressed in decibels.

In practice, usually the sound pressure levels L_j are measured. In this case L is determined by

$$L = 10 \lg \left(\frac{1}{n} \sum_{j=1}^{n} 10^{L_j/10} \right) \text{ dB} \qquad \text{. . . (1)}$$

where L_j are the sound pressure levels L_1 to L_n at n different positions in the room.

3.2 level difference, D**:** Difference, in decibels, in the space and time average sound pressure levels produced in two rooms by one or more sound sources in one of them:

$$D = L_1 - L_2 \qquad \text{. . . (2)}$$

where

L_1 is the average sound pressure level in the source room;

L_2 is the average sound pressure level in the receiving room.

3.3 normalized level difference, D_n**:** Level difference, in decibels, corresponding to the reference absorption area in the receiving room:

$$D_n = D - 10 \lg \frac{A}{A_0} \text{ dB} \qquad \text{. . . (3)}$$

where

D is the level difference, in decibels;

A is the equivalent sound absorption area of the receiving room, in square metres;

A_0 is the reference absorption area, in square metres (for rooms in dwellings or rooms of comparable size: $A_0 = 10 \text{ m}^2$).

3.4 standardized level difference, D_{nT}**:** Level difference, in decibels, corresponding to a reference value of the reverberation time in the receiving room:

$$D_{nT} = D + 10 \lg \frac{T}{T_0} \text{ dB} \qquad \text{. . . (4)}$$

where

D is the level difference;