SLOVENSKI STANDARD
SIST EN ISO 717-1:1997

01-april-1997

Akustika - Vrednotenje zvočne izolirnosti v zgradbah in zvočne izolirnosti gradbenih elementov - 1. del: Izolirnost pred zvokom v zraku (ISO 717-1:1996)

Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:1996)

Akustik - Bewertung der Schalldämmung in Gebäuden und von Bauteilen - Teil 1: Luftschalldämmung (ISO 717-1:1996)

Acoustique - Evaluation de l'isolement acoustique des immeubles et des éléments de construction - Partie 1: Isolement aux bruits aériens (ISO 717-1:1996)

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ICS:

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

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EUROPEAN STANDARD

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English version

Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:1996)

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This European Standard was approved by CEN on 1996-11-30. 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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

Foreword

The text of the International Standard ISO 717-1:1996 has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 126 "Acoustics 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of an identical text or by endorsement, at the latest by June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

ISO 717 consists of two parts under the general title

Acoustics - Rating of sound insulation in buildings and of building elements

Part 1: Airborne sound insulation
Part 2: Impact sound insulation

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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 717-1:1996 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 140-3	1995	Acoustics - Measurements 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 140-9	1985	Acoustics - Measurements of sound insulation in buildings and of building elements - Part 9: Laboratory measurements of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it	EN 20140-9	1993
ISO 140-10	1991	Acoustics - Measurements of sound insulation in buildings and of building elements - Part 10: Laboratory measurements of airborne sound insulation of small building elements	EN 20140-10	1992

INTERNATIONAL STANDARD

ISO 717-1

Second edition
1996-12-15

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

Part 1:
Airborne sound insulation

Acoustique — Évaluation de l'isolement acoustique des immeubles et des éléments de construction —
Partie 1: Isolement aux bruits aériens

Reference number
ISO 717-1:1996(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 717-1 was prepared by Technical Commitee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This second edition of ISO 717-1 cancels and replaces ISO 717-1:1982 and ISO 717-3:1982, which have been technically revised.

ISO 717 consists of the following parts, under the general title

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

— *Part 1: Airborne sound insulation*

— *Part 2: Impact sound insulation*

Annexes A, B and C of this part of ISO 717 are for information only.

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Introduction

Methods of measurement of airborne sound insulation of building elements and in buildings have been standardized in ISO 140-3, ISO 140-4, ISO 140-5, ISO 140-9 and ISO 140-10. The purpose of this part of ISO 717 is to standardize a method whereby the frequency-dependent values of airborne sound insulation can be converted into a single number characterizing the acoustical performance.

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

Part 1:
Airborne sound insulation

1 Scope

This part of ISO 717

a) defines single-number quantities for airborne sound insulation in buildings and of building elements such as walls, floors, doors and windows;

b) takes into consideration the different sound level spectra of various noise sources such as noise sources inside a building and traffic outside a building; and

c) gives rules for determining these quantities from the results of measurements carried out in one-third-octave or octave bands in accordance with ISO 140-3, ISO 140-4, ISO 140-5, ISO 140-9 and ISO 140-10.

The single-number quantities in accordance with this part of ISO 717 are intended for rating the airborne sound insulation and for simplifying the formulation of acoustical requirements in building codes. The required numerical values of the single-number quantities are specified according to varying needs. The single-number quantities are based on results of measurements in one-third-octave bands or octave bands.

For laboratory measurements made in accordance with ISO 140-3, ISO 140-9 and ISO 140-10, single-number quantities should be calculated using one-third-octave bands only.

The rating of results of measurements carried out over an enlarged frequency range is dealt with in annex B.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 717. 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 717 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 140-3:1995, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurements of airborne sound insulation of building elements.*

ISO 140-4:—[1], *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 4: Field measurements of airborne sound insulation between rooms.*

ISO 140-5:—[2], *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 5: Field measurements of airborne sound insulation of façade elements and façades.*

ISO 140-9:1985, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 9: Laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it.*

1) To be published. (Revision of ISO 140-4:1978)
2) To be published. (Revision of ISO 140-5:1978)

ISO 140-10:1991, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 10: Laboratory measurement of airborne sound insulation of small building elements.*

3 Definitions

For the purposes of this part of ISO 717, the following definitions apply.

3.1 single-number quantity for airborne sound insulation rating: Value, in decibels, of the reference curve at 500 Hz after shifting it in accordance with the method specified in this part of ISO 717.

NOTE 1 Terms and symbols for the single-number quantity used depend on the type of measurement. They are listed in table 1 for airborne sound insulation properties of building elements and in table 2 for airborne sound insulation in buildings. In general, new single-number quantities are derived in a similar way.

3.2 spectrum adaptation term: Value, in decibels, to be added to the single-number rating (e.g. R_w) to take account of the characteristics of particular sound spectra.

NOTES

2 Two sound spectra are defined (in one-third-octave bands and in octave bands) in this part of ISO 717.

3 Annex A gives information on the purpose of introducing these two spectrum adaptation terms.

Table 1 — Single-number quantities of airborne sound insulation properties of building elements

Derived from one-third-octave band values		Defined in	
Single-number quantity	Term and symbol		
Weighted sound reduction index, R_w	Sound reduction index, R	ISO 140-3:1995	equation (4)
Weighted suspended-ceiling normalized level difference, $D_{n,c,w}$	Suspended-ceiling normalized level difference, $D_{n,c}$	ISO 140-9:1985	equation (3)
Weighted element-normalized level difference, $D_{n,e,w}$	Element-normalized level difference, $D_{n,e}$	ISO 140-10:1991	equation (1)

Table 2 — Single-number quantities of airborne sound insulation in buildings

Derived from one-third-octave or octave-band values		Defined in	
Single-number quantity	Term and symbol		
Weighted apparent sound reduction index, R'_w	Apparent sound reduction index, R'	ISO 140-4:—	equation (5)
Weighted apparent sound reduction index, $R'_{45°,w}$	Apparent sound reduction index, $R'_{45°}$	ISO 140-5:—	equation (3)
Weighted apparent sound reduction index, $R'_{tr,s,w}$	Apparent sound reduction index, $R'_{tr,s}$	ISO 140-5:—	equation (4)
Weighted normalized level difference, $D_{n,w}$	Normalized level difference, D_n	ISO 140-4:—	equation (3)
Weighted standardized level difference, $D_{nT,w}$	Standardized level difference, D_{nT}	ISO 140-4:—	equation (4)
Weighted standardized level difference, $D_{ls,2m,nT,w}$ or $D_{tr,2m,nT,w}$	Standardized level difference, $D_{ls,2m,nT}$ or $D_{tr,2m,nT}$	ISO 140-5:—	equation (7)