

**Akusztika.**

**Épületek és épületelemek hangszigetelésének értékelése**

1. rész: Léghangszigetelés.

1. módosítás: Az egyadatos értékelés és az egyadatos mennyiségek kerekítésének szabályai (ISO 717-1:1996/AM 1:2006)

Az MSZ EN ISO 717-1:2000 módosítása.

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

Part 1: Airborne sound insulation.

Amendment 1: Rounding rules related to single number ratings and single number quantities (ISO 717-1:1996/AM 1:2006)

E nemzeti szabványt a Magyar Szabványügyi Testület a nemzeti szabványosításról szóló 1995. évi XXVIII. törvény alapján teszi közzé. A szabvány alkalmazása e törvény 6. §-ának (1) bekezdése alapján önkéntes. A törvény 6. §-ának (2) bekezdése értelmében műszaki tartalmú jogszabály hivatkozhat olyan nemzeti szabványra, amelynek alkalmazását úgy kell tekinteni, hogy azzal az adott jogszabály vonatkozó követelményei is teljesülnek. A szabvány alkalmazása előtt győződjön meg arról, hogy jelent-e meg módosítása, helyesbítése, nincs-e visszavonva, vagy műszaki tartalmú jogszabály hivatkozik-e rá.

**Jóváhagyó közlemény**

Az EN ISO 717-1:1996/A1:2006 európai szabvány-módosítást a Magyar Szabványügyi Testület a köz-zétértékelés napjától magyar nemzeti szabvány-módosítássá nyilvánítja. Magyar nemzeti szabvány-módosításként az európai szabványmódosítás angol nyelvű változatát kell alkalmazni.

**Endorsement notice**

The Amendment European Standard EN ISO 717-1:1996/A1:2006 is endorsed by the Hungarian Standards Institution as an Amendment Hungarian National Standard from the day of its publication. The English language version of the Amendment European Standard shall be considered as the Amendment Hungarian National Standard.

**Nemzeti előszó**

Az eredeti EN ISO 717-1:1996/A1:2006 európai szabványmódosítás terjedelme 2+4 oldal.

A szabványmódosítás megvásárolható vagy megrendelhető az MSZT Szabványboltban (1091 Budapest, Üllői út 25., levélcím: 1450 Budapest 9., Pf. 24., telefon: 456-6892, telefax: 456-6884), illetve elektronikus formában beszerezhető: a <http://www.mszt.hu/webaruhaz> címen.



ICS 91.120.20

English Version

Acoustics - Rating of sound insulation in buildings and of  
building elements - Part 1: Airborne sound insulation -  
Amendment 1: Rounding rules related to single number ratings  
and single number quantities (ISO 717-1:1996/AM 1:2006)

Acoustique - Évaluation de l'isolement acoustique des  
immeubles et des éléments de construction - Partie 1:  
Isolement aux bruits aériens - Amendement 1: Règles  
d'arrondissement associées aux évaluations de numéro  
simple et aux quantités de numéro simple (ISO 717-  
1:1996/AM 1:2006)

Akustik - Bewertung der Schalldämmung in Gebäuden und  
von Bauteilen - Teil 1: Luftschalldämmung - Änderung 1:  
Rundungsregeln für Einzahlbewertungen und  
Einzahlangaben (ISO 717-1:1996/AM 1:2006)

This amendment A1 modifies the European Standard EN ISO 717-1:1996; it was approved by CEN on 14 August 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 amendment 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, 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 and United Kingdom.



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

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## **Foreword**

This document (EN ISO 717-1:1996/A1:2006) has been prepared by Technical Committee CEN/TC 126 "Acoustic properties of building elements and of buildings", the secretariat of which is held by AFNOR, in collaboration with Technical Committee ISO/TC 43 "Acoustics".

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 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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 and United Kingdom.

## Introduction

The existing texts on rounding of data in ISO 717-1 and ISO 717-2 are not very precise and lead to different interpretations, especially when implemented numerically in computer software.

This amendment to ISO 717-1:1996 gives more precise instructions through the following:

- modification of the first paragraph of 4.4, Method of comparison, and the addition of footnote 3;
- modification of both paragraphs of 4.5, Calculation of spectrum adaptation terms, and the renumbering of existing footnotes;
- modification of Tables C.1 and C.2.
- addition of a Bibliography.

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

## Part 1: Airborne sound insulation

### AMENDMENT 1: Rounding rules related to single number ratings and single number quantities

*Page 1, Clause 2:*

Replace “ISO 140-4:—<sup>1</sup>” with “ISO 140-4:1998”. Delete footnote 1.

Replace “ISO 140-5:—<sup>2</sup>” with “ISO 140-5:1998”. Delete footnote 2.

*Page 7, 4.4, first sentence:*

Replace the first sentence with the following:

To evaluate the results of a measurement made in accordance with ISO 140-3, ISO 140-4, ISO 140-5, ISO 140-9 and ISO 140-10 in one-third-octave bands (or octave bands), the measurement data shall be given to one decimal place<sup>1</sup>). Shift the relevant reference curve in increments of 1 dB towards the measured curve until the sum of unfavourable deviations is as large as possible but not more than 32,0 dB (measurement in 16 one-third-octave bands) or 10,0 dB (measurement in 5 octave bands).

Insert new footnote 1 as follows:

1) The different parts of ISO 140 state that the results shall be reported “to one decimal place”. However, if the octave or one-third-octave values have been reported with more than one decimal digit, the values shall be reduced to one decimal place before use in the calculation of the single number rating. This is done by taking the value in tenths of dB closest to the reported values:  $XX.XYZZZ\dots$  is rounded to  $XX.X$  if  $Y$  is less than 5 and to  $XX.X + 0,1$  if  $Y$  is equal to or greater than 5. Software developers should ensure that this reduction applies to the true input values and not only to the displayed precision (as shown on the screen or printed on paper). Generally this can be implemented by the following sequence of instructions: multiply the (positive) number  $XX.XYZZZ\dots$  by 10 and add 0,5, take the integer part and then divide the result by 10. For further details see ISO 31-0.

*Page 7, 4.5, following the equation:*

Replace the definition of  $X_i$  with the following:

$X_i$  the sound reduction index,  $R_i$ , or apparent sound reduction index,  $R'_i$ , or normalized sound level difference,  $D_{n,i}$ , or standardized sound level difference,  $D_{nT,i}$ , at the measuring frequency,  $i$ , given to one decimal place.

*Page 8, 4.5, second paragraph:*

Replace first sentence and the first part of the second sentence of the second paragraph with the following:

Calculate the quantity,  $X_{A,i}$ , with sufficient accuracy and round the result to an integer <sup>2</sup>). The resulting spectrum adaptation term is an integer by definition and shall be identified in accordance with the spectrum used, as follows:

In the first sentence of the second paragraph, renumber footnote 3) as footnote 2) and replace the text of the original footnote 3 with the following:

2)  $XX, YZZZ\dots$  is rounded to  $XX$  if  $Y$  is less than 5 and to  $XX + 1$  if  $Y$  is greater than or equal to 5. For further details see ISO 31-0. Software implementers should be aware that calculation of the spectrum adaptation terms involves floating-point calculations that are never exact and may incur rounding errors. In some rare cases this may lead to a difference of + 1 dB or – 1 dB in the final result. In order to avoid rounding errors, it is strongly recommended to use the highest possible machine accuracy available for floating-point representation and mathematical operations.

Page 14, Annex C:

Replace Table C.1 with the following:

**Table C.1 — Measurements in the specified frequency range 100 Hz to 3 150 Hz**

Frequency Hz	$R_i$ dB	Reference values shifted by – 22 dB dB	Unfavourable deviation dB	Spectrum No. 1 dB	$L_{i1} - R_i$ dB	$10^{(L_{i1} - R_i)/10}$ $\times 10^{-5}$	Spectrum No. 2 dB	$L_{i2} - R_i$ dB	$10^{(L_{i2} - R_i)/10}$ $\times 10^{-5}$
100	20,4	11	—	– 29	– 49,4	1,148...	– 20	– 40,4	9,120...
125	16,3	14	—	– 26	– 42,3	5,888...	– 20	– 36,3	23,442...
160	17,7	17	—	– 23	– 40,7	8,511...	– 18	– 35,7	26,915...
200	22,6	20	—	– 21	– 43,6	4,365...	– 16	– 38,6	13,803...
250	22,4	23	0,6	– 19	– 41,4	7,244...	– 15	– 37,4	18,197...
315	22,7	26	3,3	– 17	– 39,7	10,715...	– 14	– 36,7	21,379...
400	24,8	29	4,2	– 15	– 39,8	10,471...	– 13	– 37,8	16,595...
500	26,6	30	3,4	– 13	– 39,6	10,964...	– 12	– 38,6	13,803...
630	28,0	31	3,0	– 12	– 40,0	10,000	– 11	– 39,0	12,589...
800	30,5	32	1,5	– 11	– 41,5	7,079...	– 9	– 39,5	11,220...
1 000	31,8	33	1,2	– 10	– 41,8	6,606...	– 8	– 39,8	10,471...
1 250	32,5	34	1,5	– 9	– 41,5	7,079...	– 9	– 41,5	7,079...
1 600	33,4	34	0,6	– 9	– 42,4	5,754...	– 10	– 43,4	4,570...
2 000	33,0	34	1,0	– 9	– 42,0	6,309...	– 11	– 44,0	3,981...
2 500	31,0	34	3,0	– 9	– 40,0	10,000	– 13	– 44,0	3,981...
3 150	25,5	34	8,5	– 9	– 34,5	35,481...	– 15	– 40,5	8,912...
	sum = 31,8 < 32 $R_w = 52 - 22 \text{ dB} = 30 \text{ dB}$			sum = 147,6199... $\times 10^{-5}$ – 10 lg sum = 28,308... $C = 28 - 30 \text{ dB} = -2 \text{ dB}$			sum = 206,0636... $\times 10^{-5}$ – 10 lg sum = 26,859... $C_{tr} = 27 - 30 \text{ dB} = -3 \text{ dB}$		

Page 15, Annex C:

Replace Table C.2 with the following:

**Table C.2 — Measurements in the enlarged frequency range 50 Hz to 5 000 Hz**

Frequency	$R_i$	Reference values shifted by - 22 dB	Unfavourable deviation	Spectrum No. 1	$L_{i1} - R_i$	$10^{(L_{i1} - R_i)/10}$	Spectrum No. 2	$L_{i2} - R_i$	$10^{(L_{i2} - R_i)/10}$
Hz	dB	dB	dB	dB	dB	$10^{-5}$	dB	dB	$10^{-5}$
50	18,7			- 41	- 59,7	0,107...	- 25	- 43,7	4,265...
63	19,2			- 37	- 56,2	0,239...	- 23	- 42,2	6,025...
80	20,0			- 34	- 54,0	0,398...	- 21	- 41,0	7,943...
100	20,4	11		- 30	- 50,4	0,912...	- 20	- 40,4	9,120...
125	16,3	14		- 27	- 43,3	4,677...	- 20	- 36,3	23,442...
160	17,7	17		- 24	- 41,7	6,760...	- 18	- 35,7	26,915...
200	22,6	20		- 22	- 44,6	3,467...	- 16	- 38,6	13,803...
250	22,4	23	0,6	- 20	- 42,4	5,754...	- 15	- 37,4	18,197...
315	22,7	26	3,3	- 18	- 40,7	8,511...	- 14	- 36,7	21,379...
400	24,8	29	4,2	- 16	- 40,8	8,317...	- 13	- 37,8	16,595...
500	26,6	30	3,4	- 14	- 40,6	8,709...	- 12	- 38,6	13,803...
630	28,0	31	3,0	- 13	- 41,0	7,943...	- 11	- 39,0	12,589...
800	30,5	32	1,5	- 12	- 42,5	5,623...	- 9	- 39,5	11,220...
1 000	31,8	33	1,2	- 11	- 42,8	5,248...	- 8	- 39,8	10,471...
1 250	32,5	34	1,5	- 10	- 42,5	5,623...	- 9	- 41,5	7,079...
1 600	33,4	34	0,6	- 10	- 43,4	4,570...	- 10	- 43,4	4,570...
2 000	33,0	34	1,0	- 10	- 43,0	5,011...	- 11	- 44,0	3,981...
2 500	31,0	34	3,0	- 10	- 41,0	7,943...	- 13	- 44,0	3,981...
3 150	25,5	34	8,5	- 10	- 35,5	28,183...	- 15	- 40,5	8,912...
4 000	26,8			- 10	- 36,8	20,893...	- 16	- 42,8	5,248...
5 000	29,2			- 10	- 39,2	12,022...	- 18	- 47,2	1,905...
	sum = 31,8 < 32 $R_w = 52 - 22 \text{ dB} = 30 \text{ dB}$			sum = 150,9194... $\times 10^{-5}$ - 10 lg sum = 28,212... $C = 28 - 30 \text{ dB} = - 2 \text{ dB}$			sum = 231,4518... $\times 10^{-5}$ - 10 lg sum = 26,355... $C_{tr} = 26 - 30 \text{ dB} = - 4 \text{ dB}$		

Page 16, on a new page after Annex C:

Add a Bibliography and the following reference:

### Bibliography

- [1] ISO 31-0, *Quantities and units — Part 0: General principles*