



BSI Standards Publication

Building products — Treatment of acoustics in product technical specifications

National foreword

This Published Document is the UK implementation of CEN/TR 15226:2025. It supersedes PD CEN/TR 15226:2006, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/1/6, Building acoustics.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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dans les spécifications techniques produits

Bauprodukte - Behandlung der Akustik in technischen
Produktspezifikationen

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Contents

Page

European foreword	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 Guidance for the contents of a product standard.....	15
4.1 General.....	15
4.2 Declaration of acoustic properties	16
4.3 Mounting and operating conditions for laboratory testing.....	18
4.4 Mounting and operating conditions for field testing.....	19
4.5 Selection of acoustic standards.....	19
4.5.1 General.....	19
4.5.2 Standards used for the measurement of acoustic properties.....	19
4.5.3 Standards used for the estimation of acoustic properties	19
4.6 Recorded Information.....	20
4.7 Information included in the test report.....	20
4.8 Uncertainty of declared values	20
4.8.1 General.....	20
4.8.2 Standardized values.....	20
4.8.3 Laboratory values.....	20
4.8.4 Tabulated values	21
4.8.5 Estimated values	21
5 Extension rules for the declaration of acoustic properties	21
5.1 General.....	21
5.2 Direct field of application of test results	22
5.2.1 General.....	22
5.2.2 Application rules for different acoustic parameters	22
5.3 Extended field of application of test results.....	23
5.3.1 General.....	23
5.3.2 Interpolation rules	24
Annex A (informative) Standards related to acoustic properties	25
Annex B (informative) Choosing appropriate properties.....	28
Annex C (informative) Relevant measured acoustic properties for some common products..	30
Annex D (informative) Examples of rules for direct and extended application of test results	39
Bibliography	40

European foreword

This document (CEN/TR 15226:2025) 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.

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

This document supersedes CEN/TR 15226:2006.

In comparison with the previous version, this revision has mainly been focused on:

- updating the normative references (Clause 2) and adding an Annex listing the standards related to relevant acoustic properties;
- reviewing the acoustic terms and definitions (Clause 3);
- reviewing Annex on relevant measured acoustic properties for some common products.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

1 Scope

This document specifies the method for declaring the technical classification relating to acoustics for a Product Standard including DoP, or European assessment document (EAD) including European Technical Approval (ETA) for a specific building product or equipment, or a family of building products or equipment. In particular, it gives advice on how to write technical specifications in response to the mandated characteristics on acoustics under the Construction Products Regulation.

NOTE 1 In the remainder of this document, the terms used relate to CEN and product standards. The concepts are, however, equally applicable to the European Organisation for Technical Approvals (EOTA).

The purpose of this document is to assist the Technical Committees in preparing acoustic clauses to ensure that such product standards:

- are as homogeneous as possible, with each individual product standard having the same basic structure;
- are in full accordance with the standards for the measurement and declaration of acoustic properties;
- reflect the latest technical knowledge of methods of determining the acoustical properties from the specific family of building products or equipment under consideration.

NOTE 2 Annex A lists the European and International Standards to be used in the drafting of acoustic provisions standards. Annex B contains guidance on choosing appropriate properties. Annex C describes the relevant measured acoustic properties for common products.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 general terms

3.1.1 equivalent continuous sound pressure level, $L_{eq,T}$ (dB)

value of the sound pressure level in decibels of a continuous, steady sound, that within a specified time interval, T , has the same mean squared sound pressure as the sound under consideration that varies with time

3.1.2 octave band

band of frequencies in which the upper limit of the band is twice the frequency of the lower limit

3.1.3 one third octave band

band of frequencies in which the upper limit of the band is $2^{1/3}$ times the frequency of the lower limit

3.2

airborne sound insulation

ability of building elements or buildings to reduce sound transmission when the excitation is in the air, expressed in terms of several related quantities

[SOURCE: EN ISO 12354-1:2017, modified]

3.2.1

sound reduction index, R (dB)

ten times the common logarithm of the ratio of the sound power W_1 incident on a test specimen to the sound power W_2 transmitted through the specimen, representing a laboratory measurement

3.2.2

sound reduction improvement index, ΔR (dB)

difference in sound reduction index between a basic structural element with an additional layer (e.g. a resilient wall skin, a suspended ceiling, a floating floor) and the basic structural element without this layer, representing a laboratory measurement

3.2.3

apparent sound reduction index, R' (dB)

minus 10 times the common logarithm of the ratio of the total sound power W_{tot} transmitted into the receiving room to the sound power W_1 which is incident on a separating element, representing a field measurement

3.2.4

intensity sound reduction index, R_I (dB)

laboratory measurement of the sound reduction index using sound intensity measurements in a stated frequency band, representing a laboratory measurement

3.2.5

level difference, D (dB)

difference in the space and time average sound pressure levels produced in two rooms by one or more sound source in one of them

3.2.6

normalized level difference, D_n (dB)

difference in the space and time average sound pressure levels produced in two rooms by one or more sound sources in one of them, corresponding to the reference equivalent sound absorption area in the receiving room, representing a field measurement

3.2.7

element-normalized level difference, $D_{n,e}$ (dB)

difference in the space and time average sound pressure level produced in two rooms by a source in one room, where sound transmission is only due to a small technical element (e.g. transfer air devices, electrical cable ducts, transit sealing systems), representing a laboratory measurement

3.2.8

standardized level difference, D_{nT} (dB)

difference in the space and time average sound pressure levels produced in two rooms by one or more sound sources in one of them, corresponding to a reference value of the reverberation time of 0,5 s in the receiving room level, representing a field measurement

3.2.9

normalized flanking level difference $D_{n,f}$ (dB)

difference in the space and time average sound pressure level produced in two rooms by a source in one of them, for transmission via a specified flanking path, representing a laboratory measurement

3.3

rating of airborne sound insulation

single number quantity rating of the airborne sound insulation, expressed in terms of several related quantities

[SOURCE: EN ISO 717-1:2020, modified]

3.3.1

C (dB)

spectrum adaptation term to be added to the single-number quantity to take account of spectrum No.1

3.3.2

C_{tr} (dB)

spectrum adaptation term to be added to the single-number quantity to take account of spectrum No.2

3.3.3

weighted sound reduction index, R_w (dB)

single-number quantity that characterizes the airborne sound insulation of a product or building element, representing a laboratory measurement

3.3.4

weighted sound reduction improvement index, ΔR_w (dB)

single-number quantity that characterizes the improvement in the sound reduction index, representing a laboratory measurement

3.3.5

weighted intensity sound reduction index, $R_{I,w}$ (dB)

single-number quantity that characterizes the airborne sound insulation of a product or building element over a range of frequencies using an intensity technique, representing a laboratory measurement

3.3.6

weighted apparent sound reduction index, R'_w (dB)

single-number quantity that characterizes the airborne sound insulation between rooms in a building, representing a field measurement

3.3.7

weighted element-normalized level difference, $D_{n,e,w}$ (dB)

single-number quantity that characterizes the airborne sound insulation of a small technical building element, representing a laboratory measurement

3.3.8

weighted standardized level difference, $D_{nT,w}$ (dB)

single-number quantity that characterizes the airborne sound insulation between rooms in a building, representing a field measurement

3.3.9

weighted normalized flanking level difference, $D_{n,f,w}$ (dB)

single-number quantity that characterizes the airborne sound insulation for sound transmission via a specified flanking path over a range of frequencies, representing a laboratory measurement

3.4**impact sound insulation**

ability of building elements or buildings to reduce impact sound transmission in terms of several related quantities

[SOURCE: EN ISO 12354-2:2017, modified]

3.4.1**impact sound pressure level, L_i (dB)**

average sound pressure level in a room below a floor, when it is excited by the standard tapping machine

3.4.2**normalized impact sound pressure level L_n (dB)**

impact sound pressure level corresponding to the reference equivalent sound absorption area in the receiving room, representing a laboratory measurement

3.4.3**reduction of impact sound pressure level, ΔL (dB)**

reduction in normalized impact sound pressure level resulting from installation of, for example, a test floor covering, representing a laboratory measurement

3.4.4**standardized impact sound pressure level, L'_{nT} (dB)**

impact sound pressure level corresponding to a reference value of the reverberation time of 0,5 s in the receiving room, representing a field measurement

3.4.5**normalized flanking impact sound pressure level $L_{n,f}$ (dB)**

space and time average sound pressure level in the receiving room produced by a standardized tapping machine operating at different positions on the element in the source room, normalized to the reference equivalent sound absorption area of 10 m² in the receiving room, for transmission via a specified flanking path, representing a laboratory measurement

3.5**rating of impact sound insulation**

single number quantity rating of the impact sound insulation, expressed in terms of several related quantities

[SOURCE: EN ISO 717-2:2020, modified]

3.5.1 **C_i (dB)**

spectrum adaptation term to be added to the single-number quantity to take account of the un-weighted impact sound level

3.5.2**weighted normalized impact sound pressure level, $L_{n,w}$ (dB)**

single-number quantity used to characterize the impact sound insulation of floors, representing a laboratory measurement

3.5.3**weighted reduction in impact sound pressure level, ΔL_w (dB)**

single-number quantity used to characterize the reduction in the impact sound pressure level, representing a laboratory measurement

3.5.4

weighted standardized impact sound pressure level, $L'_{nT,w}$ (dB)

single-number-quantity used to characterize the impact sound insulation of floors in buildings, representing a field measurement

3.5.5

weighted normalized flanking impact sound pressure level $L_{n,f,w}$ (dB)

single-number quantity used to characterize the impact sound insulation of floors for transmission via a specified flanking path, representing a laboratory measurement

3.5.6

A-weighted walking sound pressure level $L_{n,walk,A}$ (dB)

single-number quantity used to characterize the sound level of floors radiated in the same room, representing a laboratory measurement

[SOURCE: EN 16205:2020, modified]

3.6

rainfall sound

ability of building elements to radiate sound due to rain drops impact of several related quantities

[SOURCE: EN ISO 10140-1:2021, Annex K]

3.6.1

rainfall sound intensity level, L_I (dB)

radiated sound intensity level in a room below a roof, roof/ceiling systems, roof windows/skylights or rooflights, when it is excited by standard rainfall type, representing a laboratory measurement

3.6.2

A-weighted rainfall sound intensity level, L_{IA} (dB)

single-number quantity used to characterize the rainfall sound intensity level radiated below a roof, roof/ceiling systems, roof windows/skylights or rooflights, when it is excited by standard rainfall type, representing a laboratory measurement

3.7

flanking transmission

ability of junction between building elements to reduce vibrational transmission in terms of several related quantities

[SOURCE: EN ISO 12354-1:2017]

3.7.1

vibration reduction index, K_{ij} (dB)

quantity related to the vibrational power transmission over a junction between structural elements, normalized in order to make it an invariant quantity, which is determined by normalizing the direction averaged velocity level difference over the junction, to the junction length and the equivalent sound absorption length, if relevant, of both elements, representing a laboratory measurement.

3.7.2

normalized direction-averaged vibration level difference, $\overline{D_{v,ij,n}}$ (dB)

difference in velocity level between elements i and j, averaged over the excitation from i and excitation from j, and normalized to the junction length and the measurement areas on both elements, representing a laboratory measurement

3.8

rating of flanking transmission

single number quantity rating of flanking transmission in terms of several related quantities

[SOURCE: EN ISO 10848-1:2017]

3.8.1

vibration reduction index, $\overline{K}_{ij}$ (dB)

single-number quantity that characterizes the vibration reduction index and calculated as the arithmetic average of K_{ij} within the frequency range 200 Hz to 1 250 Hz (one-third octave bands), representing a laboratory measurement

3.8.2

normalized direction-averaged vibration level difference, $\overline{\overline{D}}_{v,ij,n}$ (dB)

single-number quantity that characterizes normalized direction-averaged vibration level difference and calculated as the arithmetic average of $\overline{D}_{v,ij,n}$ within the frequency range 200 Hz to 1 250 Hz (one-third octave bands), representing a laboratory measurement

3.9

sound absorption

ability of building elements to absorb sound in terms of several related quantities

[SOURCE: EN ISO 354:2003, modified]

3.9.1

equivalent sound absorption area of a room, A (m²)

hypothetical area of a totally absorbing surface without diffraction effects which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration

3.9.2

sound absorption area of an object A_{obj} (m²)

difference between the equivalent sound absorption area of the reverberation room with and without the test object, representing a laboratory measurement

3.9.3

sound absorption coefficient, α_s

ratio of the equivalent sound absorption area of a test specimen divided by the area in m² of the test specimen; it is only defined for a plane test specimen, representing a laboratory measurement

3.9.4

sound absorption coefficient at normal incidence, α

ratio of non-reflected-to-incident sound energy if a plane wave strikes a plane wall at normal incidence, representing a laboratory measurement

[SOURCE: EN ISO 10534-2:2023, modified]

3.10

rating of sound absorption

single number quantity rating of sound absorption in terms of several related quantities

[SOURCE: EN ISO 11654:1997, modified]

3.10.1

weighted sound absorption coefficient, α_w

single-number frequency-independent value used to characterize the sound absorption coefficient, representing a laboratory measurement

3.10.2

practical sound absorption coefficient, α_p

frequency-dependent value of the sound absorption coefficient which is based on measurements on one-third octave bands, and which is calculated in octave bands, representing a laboratory measurement

3.11

acoustic performance of screens, enclosures and cabins

ability of an acoustic protection device to reduce noise

Note 1 to entry: EN ISO 11821 for moveable screens, EN ISO 11546-1 and EN ISO 11546-2 for small machine enclosures, EN ISO 11957 for sound-protecting cabins, and in ISO 23351 for speech attenuation.

3.11.1

sound attenuation, D_p (dB)

<without and with measurement> reduction in sound pressure level at a specified position due to an enclosure or a screen, representing either a laboratory or field measurement

3.11.2

sound attenuation, D_p (dB)

<in and out measurement> difference between the sound pressure level of an external reverberant sound field and the sound pressure level inside a cabin located in the field, representing a field measurement

3.11.3

A-weighted in situ sound attenuation, D_{pA} (dB)

reduction in A-weighted sound pressure level at a specified position due to an enclosure or a screen, representing a laboratory or field measurement

3.11.4

sound power insulation, D_w (dB)

reduction in sound power level obtained due to an enclosure, representing a laboratory or field measurement

3.11.5

A-weighted sound power insulation, D_{wA} (dB)

reduction in A-weighted sound power level obtained due to an enclosure, representing a laboratory or field measurement

3.11.6

apparent A-weighted sound pressure insulation, D'_{pA} (dB)

difference in A-weighted sound pressure levels measured in the room and in the cabin, respectively when the actual environmental noise is used as the sound source, representing a field measurement

3.11.7

apparent weighted sound pressure insulation, $D'_{p,w}$ (dB)

single-number value for the sound insulation of a cabin determined in accordance with the method stated in EN ISO 717-1, representing a field measurement

3.11.8**weighted sound pressure insulation, $D_{p,w}$ (dB)**

single-number value for the sound insulation of a cabin determined in accordance with the method stated in EN ISO 717-1, representing a laboratory or field measurement

3.11.9**speech level reduction, $D_{S,A}$ (dB)**

reduction of A-weighted sound power level of speech caused by the test specimen, representing a laboratory measurement

3.12**noise emission from appliances and service equipment**

ability of building appliances and service equipment elements to produce sound in terms of several related quantities

[SOURCE: EN 15657:2017 and EN 14366-1:2023, modified]

3.12.1**airborne sound power level, L_{Wa} (dB)**

airborne sound power level contribution, representing a laboratory measurement

3.12.2**A-weighted airborne sound power level, $L_{Wa,A}$ (dB)**

A-weighted airborne sound power level contribution, representing a laboratory measurement

3.12.3**single equivalent free velocity level, $L_{vf,eq}$ (dB)**

expression of the source activity, in terms of free RMS velocity level at contact points, with the source either freely suspended or connected to a much higher mobility receiver, representing a laboratory measurement

3.12.4**single equivalent blocked force level, $L_{fb,eq}$ (dB)**

expression of the source activity, in terms of RMS blocked force level at contact points, with the source connected to a much lower mobility receiver, representing a laboratory measurement

3.12.5**single equivalent mobility magnitude, $|Y_{s,eq}|$ (m/sN)**

source single equivalent mobility, representing a laboratory measurement

3.12.6**single equivalent mobility magnitude, $|Y_{r,eq}|$ (m/sN)**

receiving element single equivalent mobility, representing a laboratory or field measurement

3.12.7**installed power level, L_{Winst} (dB)**

structural power level injected to each building element to which the equipment is connected, calculated for laboratory or field situations

3.13**material and product properties**

physical properties of material and products related to their acoustic behaviour in terms of several related quantities

3.13.1

airflow resistivity, σ (Pa·s/m²)

specific airflow resistance divided by the thickness of the test specimen (for homogeneous materials), representing a laboratory measurement

[SOURCE: EN ISO 9053-1:2018 and EN ISO 9053-2:2020]

3.13.2

density, ρ (kg/m³)

mass per unit volume

Note 1 to entry: Some building products are formed with voids or slots, the density of such products can be quoted as either the density or the solid density, depending on what volume has been used (i.e. with or without the void).

3.13.3

dynamic stiffness per unit area, s' (MN/m³)

ratio of dynamic force to dynamic displacement, representing a laboratory measurement

[SOURCE: EN 29052-1:1992]

3.13.4

longitudinal wavespeed, c_L (m/s)

speed of propagation of longitudinal waves (i.e. particle motion in the same direction as wave propagation)

3.13.5

specific airflow resistance, R_s (Pa·s/m)

product of the airflow resistance and the cross-sectional area of the test specimen, representing a laboratory measurement

3.13.6

Young's modulus, E (N/m²)

ratio of stress to strain, representing a laboratory measurement

3.13.7

bending stiffness, B (Nm)

product of the Young's modulus and the moment of inertia, representing a laboratory measurement

3.14

declared values

3.14.1

derived laboratory value

value derived from the laboratory value or from the reference laboratory value using a calculation procedure prescribed by the product standard for the situation where a product differs in its product parameters or end use parameters from the tested product

3.14.2

calculated field value

calculated value that the product or element will have in the field