BS EN 12758:2011

BSI Standards Publication

Glass in building — Glazing and airborne sound insulation — Product descriptions and determination of properties

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National foreword

This British Standard is the UK implementation of EN 12758:2011. It supersedes BS EN 12758:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/520/4, Properties and glazing methods.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Glass in building - Glazing and airborne sound insulation - Product descriptions and determination of properties

Verre dans la construction - Vitrages et isolement acoustique - Descriptions de produits et détermination des propriétés

Glas im Bauwesen - Glas und Luftschalldämmung - Produktbeschreibungen und Bestimmung der Eigenschaften

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Foreword

This document (EN 12758:2011) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by July 2011, and conflicting national standards shall be withdrawn at the latest by July 2011.

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

This document replaces EN 12758:2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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1 Scope

This European Standard assigns sound insulation values to all transparent, translucent and opaque glass products, described in the European Standards for basic, special basic or processed glass products, when intended to be used in glazed assemblies in buildings, and which exhibit properties of acoustic protection, either as a prime intention or as a supplementary characteristic.

This document outlines the procedure, by which glass products may be rated, according to their acoustic performance which enables assessment of compliance with the acoustic requirements of buildings.

Rigorous technical analysis of measurement data remains an option, but this standard is intended to enable the derivation of simpler indices of performance, which can be adopted with confidence by non-specialists.

By adopting the principles of this standard the formulation of acoustic requirements in Building Codes and for product specification to satisfy particular needs for glazing is simplified.

It is recognised that the acoustic test procedures contained within EN ISO 10140 relate only to glass panes and their combinations. Although the same principles should be followed as closely as possible, it is inevitable that some compromises are necessary, because of the bulkier construction of other glazing types, e.g. glass blocks, paver units, channel-shaped glass, structural glazing and structural sealant glazing. Guidelines on how to adapt the test procedures for these glass products are offered in Clause 4.

All the considerations of this standard relate to panes of glass/glass products alone. Incorporation of them into windows may cause changes in acoustic performance as a result of other influences, e.g. frame design, frame material, glazing material/method, mounting method, air tightness, etc. Measurements of the sound insulation of complete windows (glass and frame) may be undertaken to resolve such issues.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 572-1, *Glass in building — Basic soda lime silicate glass products — Part 1: Definitions and general physical and mechanical properties*

EN 572-2, *Glass in Building — Basic soda lime slicate glass products — Part 2: Float glass*

EN 572-3, *Glass in Building — Basic soda lime silicate glass products — Part 3: Polished wired glass*

EN 572-4, *Glass in building — Basic soda lime silicate glass products — Part 4: Drawn sheet glass*

EN 572-5, *Glass in Building — Basic soda lime silicate glass products — Part 5: Patterned glass*

EN 572-6, *Glass in building — Basic soda lime silicate glass products — Part 6: Wired patterned glass*

EN 572-7, *Glass in Building — Basic soda lime silicate glass products — Part 7: Wired or unwired channel shaped glass*

EN 1051-1, *Glass in building — Glass blocks and glass pavers — Part 1: Definitions and description*

EN 1096-1, *Glass in building — Coated glass — Part 1: Definitions and classification*

EN 1279-1, *Glass in Building — Insulating glass units — Part 1: Generalities, dimensional tolerances and rules for the system description*

EN 1748-1-1, *Glass in building — Special basic products — Borosilicate glasses — Part 1-1: Definition and general physical and mechanical properties*

EN 1748-2-1, *Glass in building — Special basic products — Glass ceramics — Part 2-1: Definitions and general physical and mechanical properties*

EN 1863-1, *Glass in building — Heat strengthened soda lime silicate glass — Part 1: Definition and description*

EN 12150-1, *Glass in building — Thermally toughened soda lime silicate safety glass — Part 1: Definition and description*

EN 12337-1, *Glass in building — Chemically strengthened soda lime silicate glass — Part 1: Definition and description*

EN 13024-1, *Glass in building — Thermally toughened borosilicate safety glass — Part 1: Definition and description*

EN 14178-1, *Glass in building — Basic alkaline earth silicate glass products — Part 1: Float glass*

EN 14179-1, *Glass in building — Heat soaked thermally toughened soda lime silicate safety glass — Part 1: Definition and description*

EN 14321-1, *Glass in building — Thermally toughened alkaline earth silicate safety glass — Part 1: Definition and description*

prEN 15681-1, *Glass in building — Basic alumino silicate glass products — Part 1: Definitions and general physical and mechanical properties*

prEN 15682-1, *Glass in building — Heat soaked thermally toughened alkaline earth silicate safety glass — Part 1: Definition and description*

prEN 15683-1, *Glass in building — Thermally toughened soda lime silicate channel shaped safety glass — Part 1: Definition and description*

EN ISO 10140:2010 (all parts), *Acoustics — Laboratory measurement of sound insulation of building elements*

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

EN ISO 12543-1, *Glass in building — Laminated glass and laminated safety glass — Part 1: Definitions and description of component parts (ISO 12543-1:1998)*

EN ISO 12543-2, *Glass in building — Laminated glass and laminated safety glass — Part 2: Laminated safety glass (ISO 12543-2:1998)*

EN ISO 12543-3, *Glass in building — Laminated glass and laminated safety glass — Part 3: Laminated glass (ISO 12543-3:1998)*

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 16940, *Glass in building — Glazing and airborne sound insulation — Measurement of the mechanical impedance of laminated glass*

3 Terms and definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 10140:2010, ISO 140-2:1991 and EN ISO 717-1:1996 together with the following apply:

3.1.1
glass product
product manufactured from glass, i.e. basic glass, special basic glass, processed glass, for use in buildings/constructions

NOTE See Clause 4.

3.1.2
glazed assembly
combination of frame/support and glass product used for the determination of the acoustic performance

NOTE 1 The following are examples of such assemblies:

1) Glass block walls;

2) Paver unit panels;

3) Channel shaped glass panels, single or dual glazed;

4) Structural sealant glazing;

5) Structural assemblies.

NOTE 2 The dimensions of glass blocks, paver units and channel shaped glass do not allow them to be subjected to the standard test regime.

NOTE 3 Structural sealant glazing: is a ‘frameless’ glazing system that uses structural sealant to restrain the glazing. This method of restraint will influence the acoustic performance of the glass product.

NOTE 4 Structural assemblies consist of glass products that are connected by bolted metal fittings to one another and to structural supports, e.g. fin, etc.

3.1.3
single glazing
single pane of glass, that includes annealed, strengthened/toughened (by heat or chemical treatment), laminated/laminated safety and coated glasses, that is glazed into an opening

3.1.4
multiple glazing
two or more panes of glass that are separated by cavities either sealed or unsealed

NOTE 1 Multiple glazing incorporating hermetically sealed cavities, e.g. double glazing, triple glazing, etc., and are known as Insulating Glass Units.

NOTE 2 Multiple glazing with unsealed cavities when in an opening is known as coupled glazing, coupled or double windows. If in a proprietary frame it is known as secondary sash.

NOTE 3 When two panes of channel shaped glass are glazed flange to flange it is known as dual glazed.

3.1.5
insulating glass unit (IGU)
assembly consisting of at least two panes of glass, separated by one or more spacers, hermetically sealed along the periphery, mechanically stable and durable

NOTE 1 See EN 1279-1.

NOTE 2 Systems are available where the spacer and hermetic seal are included within a single edge sealing system.

NOTE 3 The hermetically sealed cavity may contain dry air or a number of other gas types, e.g. argon, xenon, krypton, etc.

3.1.6
laminated/laminated safety glass
assembly consisting of one sheet of glass with one or more sheets of glass and/or plastics glazing sheet material joined together with one or more interlayers

NOTE See EN ISO 12543-1.

3.1.7
interlayer
layer or material acting as an adhesive and separator between plies of glass and/or plastics glazing sheet material

NOTE 1 It can also give additional performance to the finished product e.g. impact resistance, resistance to fire, solar control, acoustic insulation.

NOTE 2 There are many types of interlayer. The most common ones are organic. However, for certain products, with resistance to fire performance, the interlayers are inorganic.

3.1.8
acoustic interlayer
interlayer that increases the Sound Reduction Index of the laminated glass

NOTE The interlayer may be evaluated in accordance to ISO 16940.

3.1.9
acoustic interlayer for reference glazing
acoustic interlayer with a measured loss factor of the 1st mode of the beam above or equal to 0,25 when evaluated in accordance to ISO 16940

3.2 Symbols

R Sound Reduction Index

R_w Weighted Sound Reduction Index

R_{tr} Sound Reduction Index for Traffic Noise

C Spectrum Adaption Term

C_{tr} Spectrum Adaption Term for Traffic Noise

4 Glass products

4.1 Basic glasses

These are glass products manufactured from soda lime silicate glass in accordance with EN 572-1 and consist of the following:

- Float glass EN 572-2

- Polished wired glass EN 572-3
- Drawn sheet glass EN 572-4
- Patterned glass EN 572-5
- Wired patterned glass EN 572-6
- Wired and unwired channel shaped glass EN 572-7
- Glass blocks and paver units EN 1051-1

4.2 Special basic glasses

These are glass products manufactured from a variety of compositions, which are in accordance with appropriate European standards, and consist of the following:

- Borosilicate glass EN 1748-1-1
- Glass ceramics EN 1748-2-1
- Alkaline earth silicate glass EN 14178-1
- Alumino silicate glass prEN 15681-1

4.3 Processed glasses

4.3.1 Strengthened glasses

These are soda lime silicate glasses that have been strengthened by thermal or chemical means and are as follows:

- Heat strengthened EN 1863-1
- Chemically strengthened EN 12337-1

4.3.2 Thermally toughened safety glasses

These are glasses that have been toughened by thermal treatment and are as follows:

- Thermally toughened soda lime silicate safety glass EN 12150-1
- Thermally toughened borosilicate safety glass EN 13024-1
- Heat soaked thermally toughened soda lime silicate safety glass EN 14179-1
- Thermally toughened alkaline earth silicate safety glass EN 14321-1
- Heat soaked thermally toughened alkaline earth silicate safety glass prEN 15682-1
- Thermally toughened soda lime silicate channel shaped safety glass prEN 15683-1

4.3.3 Laminated glasses

These are glasses that are in accordance with EN ISO 12543-1 and consist of the following:

- Laminated glass EN ISO 12543-3
- Laminated safety glass EN ISO 12543-2

4.3.4 Coated glasses

These are glass panes that have been coated and are in accordance with EN 1096-1.

NOTE Coated glass may be manufactured from any of the glass types referred to in 4.1, 4.2, 4.3.1, 4.3.2 or 4.3.3.

4.3.5 Insulating glass units (IGU)

These are hermetically sealed insulating glass units, containing air or other gas, that are in accordance with EN 1279-1.

NOTE An IGU may be manufactured from any of the glass types or combination of the glass types referred to in 4.1, 4.2, 4.3.1, 4.3.2, 4.3.3 or 4.3.4.

5 Test methods

5.1 General

Acoustic performance data shall be obtained under the conditions specified by EN ISO 10140 and EN ISO 717-1. For laminated glasses, owing to temperature dependency, the specimen temperature shall be (21 ± 2)°C.

NOTE 1 For best reproducibility it is recommended that the test opening for glass panes, as described in EN ISO 10140, be adopted.

Some variation in panel size, etc., to those in EN ISO 10140, may be necessary for the testing of glazed assemblies, i.e. glass blocks, paver units, channel shaped glass, structural sealant glazing and structural assemblies in order to include a valid representation of all their features. Acoustic measurements of the performance of these products shall be made on assemblies or arrays of them, and not on individual elements. Factors which influence testing are size, jointing, etc.

NOTE 2 For large mixed components it may be more appropriate to employ intensity measurement techniques, according to the advice of a specialist.

Test reports on the sound insulation of glazing shall be obtained from measurements made under the conditions specified in EN ISO 10140 or, as closely as possible, for some unconventional glass products or assemblies, as acknowledged above. In all cases, constructional details shall be included, with statements, where appropriate, of:

a) type of glass;

b) glass thickness(es);

c) airspace(s)/cavity width(s);

d) gas filling - type and concentration;

e) for laminated glass, glass / plastics glazing sheet materials / interlayer build up - type, thickness(es) and number;

f) for laminated glass, the specimen temperature;

g) description of the particular mounting conditions employed for assemblies of glass blocks, pavers units, channel-shaped glass, structural sealant glazing, and structural assemblies due to the necessary deviation from the prescribed conditions of EN ISO 10140.

5.2 Reference curves

5.2.1 General

These shall be determined by measuring two reference Insulating Glass Units (IGU), as defined in 5.2.2 and 5.2.3. Reference curves shall be determined when the test equipment is set up and then checked at least once a year or before each new glazing measurement.

In case of doubt concerning the results obtained using the reference IGUs then a specimen of single glass , i.e. 10 mm float glass in accordance with EN 572-1 and -2, shall be measured to check repeatability.

5.2.2 Reference IGU 6(16)6

The Sound Transmission Loss (STL) of a reference 6(16)6 IGU as described in Annex A; Figure A.1 shall be in the range as given in Table 1:

Table 1 — Sound transmission loss of the reference IGU 6(16)6

frequency (Hz)	min value (dB)	max value (dB)
100	20,0	25,3
125	15,9	21,5
160	17,9	21,1
200	17,3	19,7
250	19,7	22,9
315	23,5	26,4
400	27,2	29,3
500	30,4	32,7
630	33,5	35,6
800	36,9	38,6
1 000	38,4	39,9
1 250	37,8	39,7
1 600	36,6	38,4
2 000	31,7	33,7
2 500	31,5	33,0
3 150	34,9	37,4

When the absolute deviations between the numbers in Table 1 and the measured values are summed then the total deviation cannot exceed 4,0 dB. All calculations shall be undertaken with an accuracy of 0,1.

5.2.3 Reference IGU 10 (16) 44-2 laminated glass with acoustic interlayer *S*

The STL of a reference IGU made up of 44-2(16)10 shall be in the range as given in Table 2.

The laminated glass being manufactured with an acoustic interlayer *S*. The IGU is described in Annex A; Figure A.2

NOTE 1 A laminated glass make up designated 44-2 means 2 x 4 mm glass and a 0,76 mm interlayer.

Table 2 — Sound transmission loss of the reference IGU 10 (16) 44-2 laminated glass with acoustic interlayer *S*

frequency (Hz)	min value (dB)	max value (dB)
100	25,4	31,5
125	21,2	27,9
160	25,7	29,4
200	27,5	30,4
250	32,4	36,4
315	32,6	35,8
400	37,3	40,4
500	39,7	42,8
630	42,3	45,0
800	43,9	46,4
1 000	43,6	45,8
1 250	43,3	46,2
1 600	45,7	48,1
2 000	47,9	51,0
2 500	48,9	51,9
3 150	49,4	52,0

When the absolute deviations between the numbers in Table 2 and the measured values are summed then the total deviation cannot exceed 4,0 dB. All calculations shall be undertaken with an accuracy of 0,1.

External reproducibility of R_w, R_w+C *and* R_w+C_{tr} of measurements done following the above rules will be ± 1 dB.

NOTE 2 This data results from a round robin covering 22 laboratories. The values have been obtained by taking the average value ± one standard deviation.

5.2.4 Maximum standard deviation of repeatability

Maximum repeatability shall be in accordance with ISO 140-2 1991, as reproduced in Table 3.

Table 3 — Maximum standard deviation of repeatability

frequency	$\sigma_{max.}$
100	1,61
125	1,43
160	1,25
200	1,25
250	0,89
315	0,89
400	0,71
500	0,71
630	0,54
800	0,54
1 000	0,54
1 250	0,54
1 600	0,54
2 000	0,54
2 500	0,54
3 150	0,54

5.3 Extension rules

5.3.1 General

The measured acoustic performance of glass products may be assumed to be unaffected when subjected to specific changes. Application of the following rules removes the necessity of further/extra testing in accordance with EN ISO 10140.

NOTE The use of these rules will ensure that the data used will always be conservative. If more accurate data is required, then the glass product should be measured.

5.3.2 Basic and special basic glasses

- No difference between soda lime silicate glass and other glass compositions;
- No difference between clear, white or body tinted glasses;
- Processing, i.e. heat strengthening, chemical strengthening, thermal toughening, has no effect;
- Surface treatment, i.e. sand blasting, acid etching, has no effect as long as the thickness stays within the allowable tolerance for the specific product;
- Patterned/cast glass can be assumed to be equivalent to the next lowest thickness, i.e. 6 mm patterned glass is described acoustically by the data for 5 mm single glass;
- Wired glass (polished or patterned) is treated as a single glass.

NOTE The wire mesh within wired glass has no influence on the acoustic performance.

5.3.3 Laminated/laminated safety glass

Laminated glass using an inorganic interlayer can be described acoustically by the data for a single glass of the same overall thickness.

NOTE 1 If data for a single glass of the same thickness is not available, then use the data for the next available lower thickness.

- Data for a glass product including laminated glass using organic acoustic interlayer may be adopted for a glass product including laminated glass using another acoustic interlayer as long as the measured loss factor of the 1st mode of the beam of both interlayers are equal to or greater than 0,20, when measured in accordance with ISO 16940.

- Data for a glass product including laminated glass using an interlayer may be taken for a glass product including laminated glass using another interlayer as long as the measured loss factor of the 1st mode of the beam is equal to or greater than that of the initial interlayer measured in accordance with ISO 16940.

- Thicknesses of laminated/laminated safety glasses are given in accordance with EN ISO 12543-5.

NOTE 2 The construction of a laminated glass should be known.

5.3.4 Coated glasses

- The application of a coating, in accordance with EN 1096-1, or thin film, will have no effect on the acoustic description of the glass substrate from which it was manufactured.

- A paint, silver (mirrors) or enamel coating can be treated as any other coating.

5.3.5 Insulating glass units

- The measured data for an air-filled or argon-filled IGU can apply to all IGUs, irrespective of being air-filled or argon-filled, for the same glass composition.

- The data for IGUs including organic sealants can be adopted for any other organic sealants.

- The same rule applies for spacers of the same width.

6 Sound insulation rating and classification

6.1 Sound insulation rating

The octave band values may be derived from third-octave-band data.

The procedures for deriving the values of R, R_w, C and C_{tr} are specified in EN ISO 717-1 and EN ISO 10140.

Proper evaluation of these parameters depends on the corresponding basic sound insulation data, i.e. SRI values, being obtained from measurements, in accordance with EN ISO 10140.

6.2 Statement of acoustic performance of glass

The R_w Index and corresponding spectrum adaptation terms, C and C_{tr} shall be stated, in accordance with EN ISO 717-1. Both spectrum adaptation terms shall be stated in brackets after the basic R_w Index and they shall be separated by a semi-colon as shown below:

R_w *(C ; C_{tr})*

As an example: the acoustic performance of 12 mm single glass as given in Table 4 is:

34 (0 ; -2) .

6.3 Specification of glazing requirements

Performance requirements may be either in terms, of the R_w Index alone, or as the sum of the R_w and the relevant spectrum adaptation term, the latter specification resulting in a closer indication of the required acoustic performance for particular applications:

- for urban road traffic noise, i.e. $R_{A,tr,} = R_W + C_{tr}$.

For example, the $R_{A,tr}$ for 12 mm single glass determined from the data in Table 4 is:

34 + (-2) = 32 .

7 Typical performance data

In the absence of specific measured performance data from which to calculate R_W, C and C_{tr} generally accepted values are given.

Table 4 states the generally accepted values of R_W, C and C_{tr} for a range of glass products.

These tabulated values are derived from the mean value minus one standard deviation of typical measured data. As such, they represent conservative values which may be adopted in the absence of specific measured data, in accordance with Clause 5.

When using this table, it is essential to understand the following:

a) These data refer to float glass or glass products made with float glass

b) The data for the double glazing units can be adopted for air-, or argon-filled cavities.

c) Over the cavity width range (6 - 16) mm, the corresponding acoustic data for a given glass combination are regarded as constant.

d) For patterned glasses, whose thickness varies, the acoustic data, corresponding to the next lower thickness from its nominally assigned thickness, shall be adopted e.g. 6 mm patterned glass is described acoustically by the data for 5 mm single glass.

e) For laminated glass with a non-plastic interlayer, the acoustic data corresponding to single glass of the same overall thickness shall be adopted. If such a product does not exist, the data corresponding to the next lower thickness is appropriate.

f) The octave band values have been derived from third-octave-band data.

g) The laminated glass data relates only to that with plastic interlayers.

For products not covered by Table 4, relevant test data shall be made available from which the corresponding values of R_w, C and C_{tr} may be derived.

Table 4 — Table of standard acoustic performance data

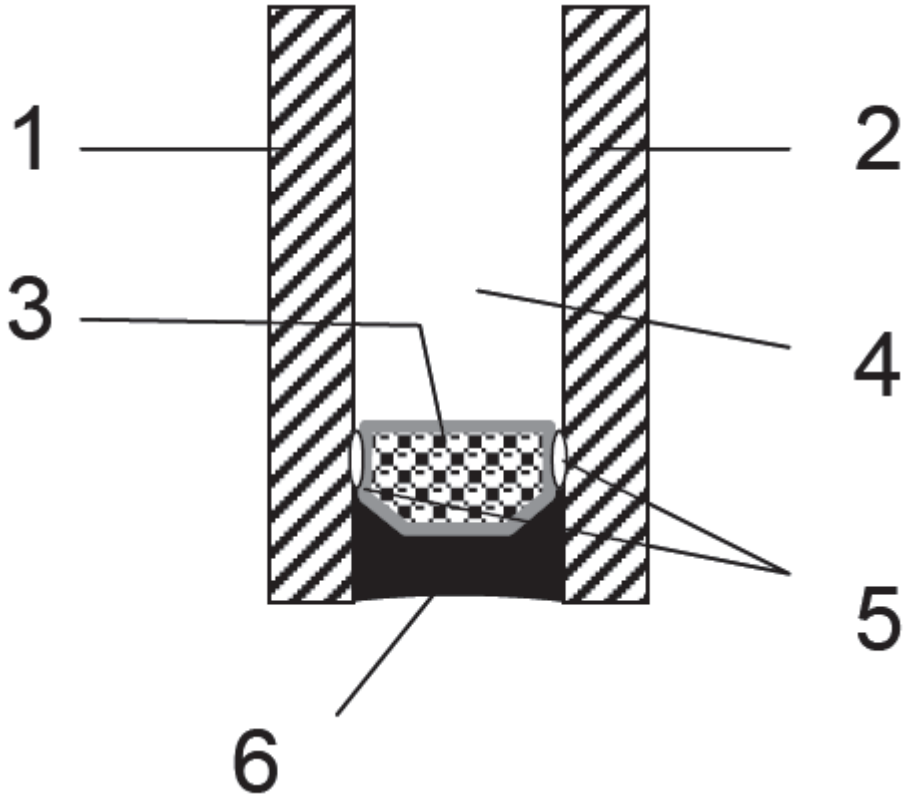
Glass Type and Thickness (mm)	Sound Reduction Index R(dB), at octave-band centre frequency (Hz)						Indices and adaptation terms		
	125	250	500	1 000	2 000	4 000	R_w	C	C_{tr}
Single glass:									
3	14	19	25	29	33	25	28	-1	-4
4	17	20	26	32	33	26	29	-2	-3
5	19	22	29	33	29	31	30	-1	-2
6	18	23	30	35	27	32	31	-2	-3
8	20	24	29	34	29	37	32	-2	-3
10	23	26	32	31	32	39	33	-2	-3
12	27	29	31	32	38	47	34	0	-2
Laminated glass [a]:									
6	20	23	29	34	32	38	32	-1	-3
8	20	25	32	35	34	42	33	-1	-3
10	24	26	33	33	35	44	34	-1	-3
12	24	27	33	32	37	46	35	-1	-3
16	26	31	30	35	43	51	36	-1	-3
20	30	32	31	35	46	56	37	-1	-3
24	31	31	31	38	49	56	38	-1	-3
Insulating glass units [b]:									
4/(6-16)/4	21	17	25	35	37	31	29	-1	-4
6/(6-16)/4	21	20	26	38	37	39	32	-2	-4
6/(6-16)/6	20	18	28	38	34	38	31	-1	-4
8/(6-16)/4	22	21	28	38	40	47	33	-1	-4
8/(6-16)/6	20	21	33	40	36	48	35	-2	-6
10/(6-16)/4	24	21	32	37	42	43	35	-2	-5
10/(6-16)/6	24	24	32	37	37	44	35	-1	-3
6/(6-16)/6 Laminated	20	19	30	39	37	46	33	-2	-5
6/(6-16)/10 Laminated	24	25	33	39	40	49	37	-1	-5

[a] The data for laminated glasses is for one with an organic interlayer excluding acoustic interlayer.

[b] The construction of IGUs is given by Glass thickness/ Cavity width/ Glass type and thickness, when applicable.

Annex A
(normative)

Description of Reference Insulating Glass Units

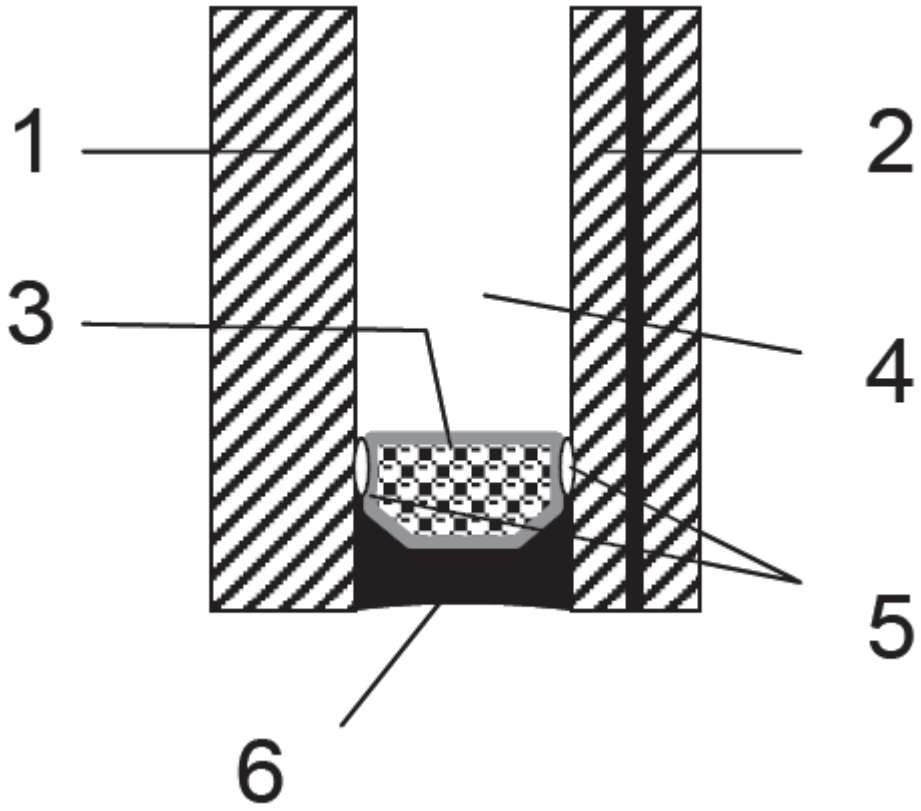


Key

Type 6 – 16 – 6, air filled

1 glass pane: float of nominal thickness of 6 mm
2 glass pane: float of nominal thickness of 6 mm
3 spacer bar: aluminium of nominal thickness of 16 mm
4 air space of nominal thickness of 16 mm
5 inner seals: butyl
6 outer seal: polysulfide

Figure A.1 — Description of reference IGU 6(16)6



Key

Type 10 – 16 –8 laminated with acoustic interlayer *S*, air filled

1 glass pane: float of nominal thickness of 10 mm
2 laminated glass pane: nominal thickness of 2 × 4 mm float assembled with acoustic interlayer *S*, nominal thickness of 0,76 mm
3 spacer bar: aluminium of nominal thickness of 16 mm
4 air space of nominal thickness of 16 mm
5 inner seals: butyl
6 outer seal: polysulfide

Figure A.2 — Description of reference IGU 10 (16) 44-2 laminated glass with acoustic interlayer *S*

Annex B
(informative)

Glazing recommendations

To maximise acoustic benefits, the laminated component of an insulating glass unit is normally glazed to the warmer side, i.e. usually to the inside of a building.

With insulating glass units incorporating monolithic glass of differing thicknesses there is no preferred way round, i.e. acoustic benefit is not dependent on which glass is outermost.

Bibliography

[1] EN ISO 12543-5, *Glass in building — Laminated glass and laminated safety glass — Part 5: Dimensions and edge finishing (ISO 12543-5:1998)*

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