



Íslenskir staðlar

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**Gluggar og útgöngudyr – Vörustaðall,  
eiginleikar í notkun – Hluti 1: Gluggar  
og útidyrasmstæður**

**Windows and doors - Product  
standard, performance  
characteristics - Part 1: Windows and  
external pedestrian doorsets without  
resistance to fire and/or smoke  
leakage characteristics**



Íslenskir staðlar

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English Version

## Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets

Fenêtres et portes - Norme produit, caractéristiques de performance - Partie 1 : Fenêtres et blocs portes extérieurs pour piétons

Fenster und Türen - Produktnorm, Leistungseigenschaften - Teil 1: Fenster und Außentüren

This European Standard was approved by CEN on 3 February 2006 and includes Amendment 1 approved by CEN on 31 January 2010 and Amendment 2 approved by CEN on 11 July 2016.

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## EN 14351-1:2006+A2:2016 (E)

### European foreword

This document (EN 14351-1:2006+A2:2016) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, 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of an identical text or by endorsement, at the latest by March 2017, and conflicting national standards shall be withdrawn at the latest by June 2018.

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 includes Amendment 1, approved by CEN on 2010-01-31 and Amendment 2, approved by CEN on 2016-07-11.

This document supersedes EN 14351-1:2006+A1:2010.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 and A2.

This European Standard is one of a series of standards for windows and pedestrian doorsets (see Figure 1).

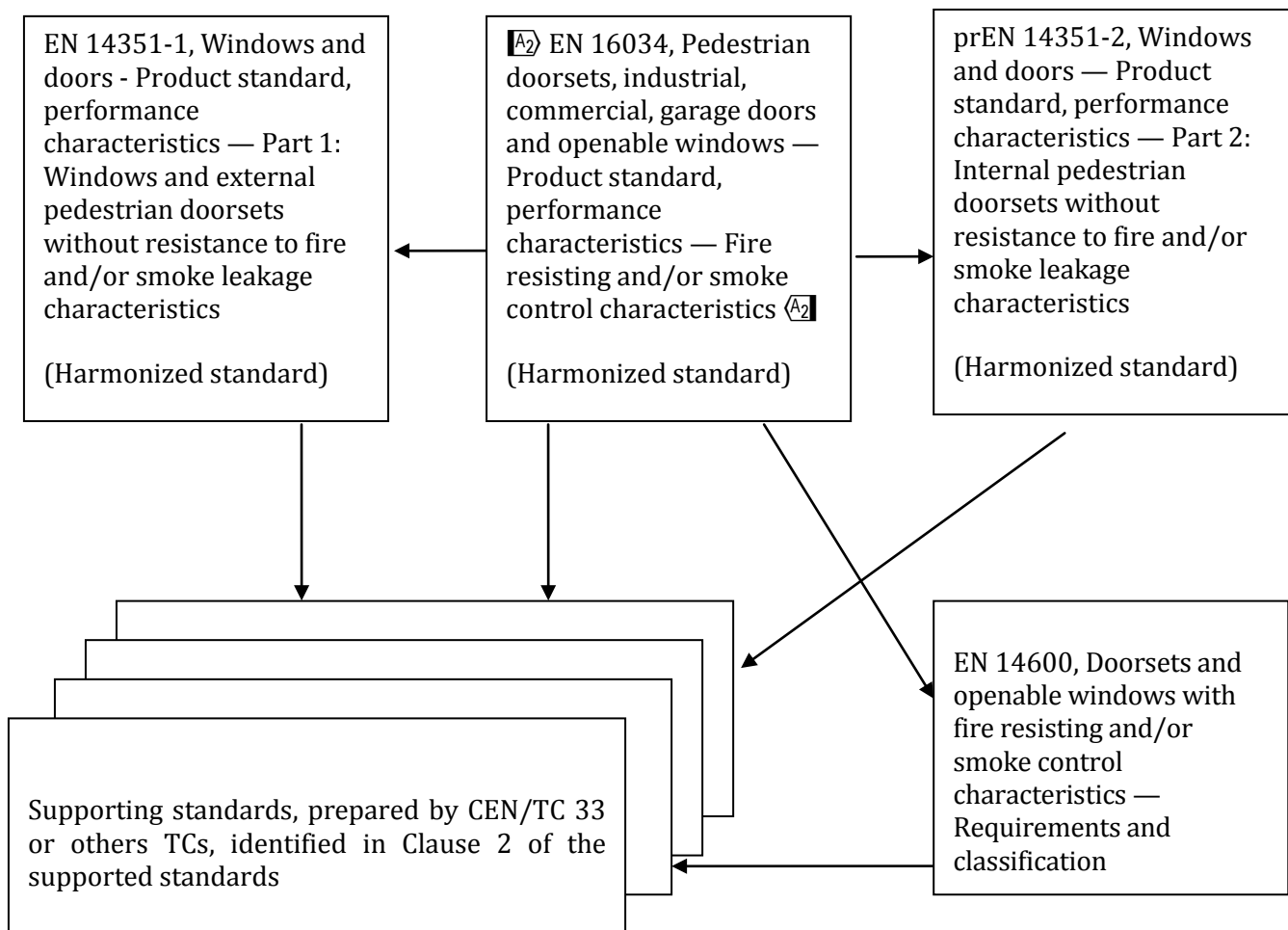


Figure 1 — Relationship between various standards

**A1)** 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).

For relationship with EU Directive(s), see informative Annexes ZA, ZB, ZC and ZD which are integral parts of this document. **A1)**

**A1)**

NOTE Annex ZB was applicable until December 28<sup>th</sup>, 2009 and Annex ZD is applicable since December 29<sup>th</sup>, 2009. **A1)**

**A2)** The main changes introduced by the 2<sup>nd</sup> Amendment to this new edition of EN 14351-1 concern the title and the scope according to the EC's request and the decisions of CEN/TC 33 D1010 (April 2014), D1065 and D1089 (April 2015). **A2)**

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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### **A1** Introduction

The 1<sup>st</sup> amendment primarily adds details to previous clauses dealing with evaluation of conformity but without making any fundamental changes. The intention is to facilitate consistent interpretation particularly when addressing the possibilities of cascading ITT. The concept of shared ITT results is not excluded, but will be clarified later.

Furthermore, due to lack of updated supporting standards for powered pedestrian doors, these products have been excluded from the scope.

The opportunity has also been taken in this amendment to amend several technical issues that were under query. **A1**

## 1 Scope

**A2** This European Standard identifies material independent performance characteristics, except resistance to fire and smoke control characteristics, that are applicable to windows (including roof windows, roof windows with external fire resistance and door height windows), external pedestrian doorsets (and their assemblies, including unframed glass doorsets, escape route doorsets) and screens.

Fire resisting and/or smoke control characteristics for pedestrian doorsets and openable windows are covered by EN 16034.

This European Standard applies to:

a) fixed windows or fixed lights, manually or power operated windows and door height windows, and screens for installation in vertical wall apertures and roof windows for installation in roofs, complete with:

- 1) related hardware, if any;
- 2) weather stripping, if any;
- 3) glazed apertures when intended to have glazed apertures;
- 4) with or without incorporated shutters and/or shutter boxes and/or blinds;

and manually or power operated windows, roof windows, door height windows and screens that are:

- 5) fully or partially glazed including any non-transparent infill;
- 6) fixed or partly fixed or openable with one or more casements/sashes (e.g. hinged, projecting, pivoted, sliding);

b) manually operated external pedestrian doorsets with flush or panelled leaves, complete with:

- 1) integral fanlights, if any;
- 2) adjacent parts that are contained within a single frame for inclusion in a single aperture, if any.

The windows covered by this standard are not assessed regarding their ability to release (to open).

The products covered by this European Standard are not assessed for structural applications.

This European Standard does not apply to:

- rooflights according to EN 1873 and EN 14963;
- curtain walling according to EN 13830;
- industrial, commercial and garage doors and gates according to EN 13241;
- internal pedestrian doorsets according to prEN 14351-2;
- revolving doorsets;
- power operated pedestrian doorsets according to EN 16361;

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— windows intended to be part of internal partition. <sup>A2</sup>

## 2 Normative references

<sup>A2</sup> The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. <sup>A2</sup>

### 2.1 Classification standards

EN 1192, *Doors — Classification of strength requirements*

EN 1522, *Windows, doors, shutters and blinds — Bullet resistance — Requirements and classification*

ENV 1627, *Windows, doors, shutters — Burglar resistance — Requirements and classification*

EN 12207:1999, *Windows and doors — Air permeability — Classification*

EN 12208, *Windows and doors — Watertightness — Classification*

EN 12210, *Windows and doors — Resistance to wind load — Classification*

EN 12217, *Doors — Operating forces — Requirements and classification*

EN 12219, *Doors — Climatic influences — Requirements and classification*

EN 12400, *Windows and pedestrian doors — Mechanical durability — Requirements and classification*

EN 13049, *Windows — Soft and heavy body impact — Test method, safety requirements and classification*

EN 13115, *Windows — Classification of mechanical properties — Racking, torsion and operating forces*

EN 13123-1, *Windows, doors and shutters — Explosion resistance — Requirements and classification — Part 1: Shock tube*

EN 13123-2, *Windows, doors, and shutters — Explosion resistance — Requirements and classification — Part 2: Range test*

### 2.2 Test and calculation standards

EN 179, *Building hardware — Emergency exit devices operated by a lever handle or push pad — Requirements and test methods*

EN 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 947, *Hinged or pivoted doors — Determination of the resistance to vertical load*

EN 948, *Hinged or pivoted doors — Determination of the resistance to static torsion*

EN 949, *Windows and curtain walling, doors, blinds and shutters — Determination of the resistance to soft and heavy body impact for doors*

EN 950, *Door leaves — Determination of the resistance to hard body impact*

- EN 1026, *Windows and doors — Air permeability — Test method*
- EN 1027, *Windows and doors — Water tightness — Test method*
- EN 1121, *Doors — Behaviour between two different climates — Test method*
- EN 1125, *Building hardware — Panic exit devices operated by a horizontal bar — Requirements and test methods*
- ENV 1187, *Test methods for external fire exposure to roofs*
- EN 1191, *Windows and doors — Resistance to repeated opening and closing — Test method*
- EN 1523, *Windows, doors, shutters and blinds — Bullet resistance — Test method*
- ENV 1628, *Windows, doors, shutters — Burglar resistance — Test method for the determination of resistance under static loading*
- ENV 1629, *Windows, doors, shutters — Burglar resistance — Test method for the determination of resistance under dynamic loading*
- ENV 1630, *Windows, doors, shutters — Burglar resistance — Test method for the determination of resistance to manual burglary attempts*
- EN 12046-1, *Operating forces — Test method — Part 1: Windows*
- EN 12046-2, *Operating forces — Test method — Part 2: Doors*
- EN 12211, *Windows and doors — Resistance to wind load — Test method*
- EN 12354-3, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 3: Airborne sound insulation against outdoor sound*
- EN 12758:2002, *Glass in building — Glazing and airborne sound insulation — Product descriptions and determination of properties*
- EN 13124-1, *Windows, doors and shutters — Explosion resistance — Test method — Part 1: Shock tube*
- EN 13124-2, *Windows, doors and shutters — Explosion resistance — Test method — Part 2: Range test*
- EN 13141-1:2004, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 1: Externally and internally mounted air transfer devices*
- EN 13238, *Reaction to fire tests for building products — Conditioning procedures and general rules for selection of substrates* **A1**
- EN 13363-1, *Solar protection devices combined with glazing — Calculation of solar and light transmittance — Part 1: Simplified method*
- EN 13363-2, *Solar protection devices combined with glazing — Calculation of total solar energy transmittance and light transmittance — Part 2: Detailed calculation method*
- ENV 13420, *Windows — Behaviour between different climates — Test method*
- EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item* **A1**

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EN 14608, *Windows — Determination of the resistance to racking*

EN 14609, *Windows — Determination of the resistance to static torsion*

EN ISO 140-3, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995)*

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

**A1** EN ISO 10077-1:2006, *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance — Part 1: General (ISO 10077-1:2006)* **A1**

EN ISO 10077-2, *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance — Part 2: Numerical method for frames (ISO 10077-2:2003)*

**A1** EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)* **A1**

EN ISO 12567-1, *Thermal performance of windows and doors — Determination of thermal transmittance by hot box method — Part 1: Complete windows and doors (ISO 12567-1:2000)*

EN ISO 12567-2, *Thermal performance of windows and doors — Determination of thermal transmittance by hot box method — Part 2: Roof windows and other projecting windows (ISO 12567-2:2005)*

## 2.3 Other standards

EN 1863-2, *Glass in building — Heat strengthened soda lime silicate glass — Part 2: Evaluation of conformity/Product standard*

**A1** EN 1935, *Building hardware — Single-axis hinges — Requirements and test methods* **A1**

EN 12150-2, *Glass in building — Thermally toughened soda lime silicate safety glass — Part 2: Evaluation of conformity/Product standard*

EN 12453:2000, *Industrial, commercial and garage doors and gates — Safety in use of power operated doors — Requirements*

EN 12519:2004, *Windows and pedestrian doors — Terminology*

**A1** *deleted text* **A1**

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using test data from external fire exposure to roof tests*

prEN 13633, *Building hardware — Electrically controlled panic exit systems for use on escape routes — Requirements and test methods*

prEN 13637, *Building hardware — Electrically controlled emergency exit systems for use on escape routes — Requirements and test methods*

EN 14179-2, *Glass in building — Heat soaked thermally toughened soda lime silicate safety glass — Part 2: Evaluation of conformity/Product standard*

EN 14321-2, *Glass in building — Thermally toughened alkaline earth silicate safety glass — Part 2: Evaluation of conformity/Product standard*

EN 60335-2-103, *Household and similar electrical appliances — Safety — Part 2-103: Particular requirements for drives for gates, doors and windows (IEC 60335-2-103:2002)*

EN 61000-6-1, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards; Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005)  $\langle A_1 \rangle$*

EN 61000-6-3, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards; Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006)  $\langle A_1 \rangle$*

EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2008)  $\langle A_1 \rangle$*

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

ISO 1000:1992, *SI units and recommendations for the use of their multiples and of certain other units*

### 3 Terms and definitions

For the purposes of this European Standard, units and symbols given in ISO 1000:1992, terms and definitions given in EN 12519:2004 and the following apply.

#### 3.1

##### **external pedestrian doorset**

doorset which separates the internal climate from the external climate of a construction for which the main intended use is the passage of pedestrians. External pedestrian door assemblies fulfilling the provisions of this European Standard under the responsibility of one identified manufacturer are considered to be external pedestrian doorsets

#### 3.2

##### **overall area**

frame width x frame height

(see EN 12519:2004, 3.4)

#### 3.3

##### **screen**

assembly of two or more windows and/or external pedestrian doorsets in one plane with or without separate frames

#### 3.4

##### **similar design**

modification by the replacement of components (e.g. glazing, hardware, weather stripping), and/or a change of material specification and/or dimensional change of profile section and/or methods and means of assembly which will not change the classification and/or declared value of a performance characteristic

Note 1 to entry: Certain modifications might cause more favourable values for one or more characteristics, but also more unfavourable values for other characteristics (see Annex A).

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### 3.5

#### **unframed glass doorset**

doorset where the leaf (leaves) and any adjacent part(s) are made of glass (e.g. single or insulating glass unit) and without any load bearing or load transferring framework

### 3.6

#### **adjacent part**

any part of a doorset, other than the door leaf (leaves), including outer frame, side panels, and overpanels

### **A1** 3.7

#### **conventionally accepted performance (CAP)**

provisions presented or referred to in the technical specification that allows manufacturers to declare product performances without the need to perform initial type tests, calculations etc.

Note 1 to entry: Such provisions can be tabulated values, descriptive solutions and alike.

### 3.8

#### **classified without the need for further testing (CWFT)**

procedure by which the specific performance of a product is initially demonstrated by testing, in such a way that manufacturers may refer to that performance without the need of further tests (other parameters e.g. density, can require testing and controlling)

Note 1 to entry: It needs to be taken into account in the harmonised product specifications successful CWFT applications require an EC Decision. **A1**

## 4 Performance characteristics and special requirements

### 4.1 General

The performance characteristics for windows and external pedestrian doorsets shall be determined and expressed in accordance with 4.2 to 4.23.

NOTE 1 Not all these characteristics are applicable to every product or every intended end use situation. Where characteristics are required this European Standard identifies the means of determination and the ways to express the results as well as the evaluation of conformity.

NOTE 2 The order in which the performance characteristics are identified does not imply an order of priority or a test sequence.

NOTE 3 Special requirements for certain products, see 4.24.

### 4.2 Resistance to wind load

Tests on windows and external pedestrian doorsets shall be carried out in accordance with EN 12211. The deflection of frame elements (e.g. transoms and mullions) shall be determined by calculation or by test (reference method).

The results shall be expressed in accordance with EN 12210. The air permeability tests and classification referred to in EN 12210 shall be in accordance with 4.14.

The manufacturer shall provide sufficient information on the infill to enable the determination of the load-bearing capacity of the infill, e.g. information on the thickness and type of glass.

NOTE When appropriate European Standards are in place, the determination of the load-bearing capacity should be carried out as prescribed in those European Standards.

### 4.3 Resistance to snow and permanent load

The manufacturer shall provide sufficient information on the infill to enable the determination of the load-bearing capacity of the infill, e.g. information on the thickness and type of glass.

NOTE When appropriate European Standards are in place, the determination of the load-bearing capacity should be carried out as prescribed in those European Standards.

### 4.4 Fire characteristics

#### 4.4.1 Reaction to fire

The (materials used in) roof windows shall be tested and classified in accordance with EN 13501-1 **A<sub>1</sub>** and Annex H for the selection, preparation, mounting and fixing and field of direct application of the roof windows **A<sub>1</sub>**.

#### 4.4.2 External fire performance

Roof windows shall be tested and classified in accordance with EN 13501-5.

### 4.5 Watertightness

A watertightness test shall be carried out in accordance with EN 1027.

The results shall be expressed in accordance with EN 12208.

The test for watertightness of screens shall be carried out on the screen or on its individual parts. In the latter case the designation of the screen shall be determined by the part(s) with the most unfavourable performance.

### 4.6 Dangerous substances

In so far as the state of the art permits, the manufacturer shall establish those materials in the product which are liable to emission or migration during normal intended use and for which emission or migration into the environment is potentially dangerous to hygiene, health or the environment. The manufacturer shall establish and make the appropriate declaration of content according to the legal requirements in the intended country of destination.

NOTE An informative database of European and national provisions on dangerous substances is identified in Annex ZA.

### 4.7 Impact resistance

Windows and external pedestrian doorsets fitted with glass or other fragmental material shall be tested and the results shall be expressed in accordance with EN 13049. Where relevant, the test shall be carried out from both sides.

### 4.8 Load-bearing capacity of safety devices

Safety devices (e.g. retaining and reversing catches, restrictors, and fixing devices for cleaning procedures), if provided and engaged in accordance with the manufacturer's published instructions, shall be able to hold the leaf, casement or sash in place for 60 s when 350 N are applied to the leaf, casement or sash in the most unfavourable way (i.e. position, direction). This threshold strength shall be demonstrated by means of tests carried out as described in EN 14609 or EN 948 (reference methods), or by calculation.



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### 4.9 Height and width of doorsets and French windows

The clear opening height and width of external pedestrian doorsets and French windows (see EN 12519:2004, 3.1) shall be expressed in mm.

Where the threshold and the head/transom are not parallel, the maximum and minimum height shall be stated.

NOTE The height and width can be diminished due to projecting hardware and angle of opening.

### 4.10 Ability to release

Emergency exit devices  $\boxed{A_1}$ , hinges  $\boxed{A_1}$  and panic devices installed on external pedestrian doorsets in escape routes shall comply with EN 179, EN 1125  $\boxed{A_1}$ , EN 1935  $\boxed{A_1}$ , prEN 13633 or prEN 13637.

Doorsets intended for escape routes shall be identified as such with the appropriate class according to Table 2.

### 4.11 Acoustic performance

The sound insulation shall be determined in accordance with EN ISO 140-3 (reference method) or for specific window types in accordance with Annex B.

The test results shall be evaluated in accordance with EN ISO 717-1.

### 4.12 Thermal transmittance

The thermal transmittance for windows and external pedestrian doorsets shall be determined by using:

- $\boxed{A_1}$  EN ISO 10077-1:2006, Table F.1 Thermal transmittances for vertical windows with fraction of the frame area 30 % of the whole window area and common types of glazing spacer bars or EN ISO 10077-1:2006, Table F.3 Thermal transmittances for vertical windows with fraction of the frame area 30 % of the whole window area, glazing spacer bars with improved thermal performance and, for windows with bars, Annex J  $\boxed{A_1}$

or by calculation using:

- EN ISO 10077-1 or
- EN ISO 10077-1 and EN ISO 10077-2

or by hot box method using:

- EN ISO 12567-1 or
- EN ISO 12567-2

as appropriate.

$\boxed{A_1}$  Calculation previously performed in accordance with EN ISO 10077-1:2000 and tabulated values in accordance with EN ISO 10077-1:2000, Table F.1, may be taken into account with an addition of 0,1 W/m<sup>2</sup>K.  $\boxed{A_1}$

EN ISO 12567-1 shall be used as reference method for windows and doorsets, EN ISO 12567-2 as reference method for roof windows.

The collective symbols for thermal transmittance are  $U_w$  for windows and  $U_D$  for doorsets, i.e. the symbol  $U_{st}$  used in EN ISO 12567-1 is equivalent to  $U_w$  or  $U_D$  and the symbol  $U_m$  used in EN ISO 12567-2 is equivalent to  $U_w$ .

## 4.13 Radiation properties

The determination of the total solar energy transmittance (solar factor, g-value) and light transmittance of translucent glazings shall be carried out in accordance with EN 410, or if relevant, with EN 13363-1 or EN 13363-2 (reference method).

## 4.14 Air permeability

Two air permeability tests shall be carried out in accordance with EN 1026  $\boxed{A_1}$  (reference method)  $\boxed{A_1}$ , one with positive test pressures and one with negative test pressures.

The tests for air permeability of screens shall be carried out on the screen or on its individual parts including joints between the individual parts. In the latter case the air permeability of the screen shall be calculated as the sum of the air permeability of the individual parts and the joints.

The test result, defined as the numerical average of the two air permeability values ( $\text{m}^3/\text{h}$ ) at each pressure step shall be expressed in accordance with EN 12207:1999, 4.6.

$\boxed{A_1}$  Classification of products with described product characteristics can be carried out in accordance with Annex I.  $\boxed{A_1}$

## 4.15 Durability

### 4.15.1 General

The manufacturer shall provide information about maintenance and the replaceable parts.

The manufacturer shall declare the material(s) from which the product is manufactured including any applied coating and/or protection. This shall apply to all components that have an effect on the durability of the product in intended use except those components that comply with individual product standards (hardware, weather stripping). Where possible this shall be done by reference to European Standards.

By means of adequate choice of materials (including coatings, preservations, composition and thickness), components and assembly methods, the manufacturer shall ensure the durability of his product(s) for an economically reasonable working life taking into account his published maintenance recommendations.

NOTE The durability of windows and external pedestrian doorsets depends on the long-term performance of the individual components and materials as well as the assembly of the product and its maintenance. Specifications and classifications for individual materials and components are to be found in their respective material and component standards.

### 4.15.2 Durability of certain characteristics

The durability of certain characteristics shall be ensured as follows:

- watertightness and air permeability: The durability of these characteristics depends mainly on the weather strippings which shall be replaceable.
- thermal transmittance: The durability of this characteristic is mainly linked to the long-term performance of the glazing (especially the Insulated Glass Units (IGU)). Glass meeting the requirements of the standards identified in Annex C shall be deemed to meet the durability requirements.
- ability to release (only for locked doorsets in escape routes): The durability of this characteristic shall be ensured by compliance with 4.10.

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A1 *deleted text* A1

### 4.16 Operating forces

Manually operated windows shall be tested in accordance with EN 12046-1. The results shall be expressed in accordance with EN 13115.

Manually operated external pedestrian doorsets shall be tested in accordance with EN 12046-2. The results shall be expressed in accordance with EN 12217.

### 4.17 Mechanical strength

Windows shall be tested in accordance with EN 14608 and EN 14609. Prior to and after those tests manually operated windows shall be tested in accordance with EN 12046-1. The results shall be expressed in accordance with EN 13115.

External pedestrian doorsets shall be tested in accordance with EN 947, EN 948, EN 949 and EN 950. The results shall be expressed in accordance with EN 1192.

### 4.18 Ventilation

Air transfer devices integrated in a window or an external pedestrian doorset shall be tested and evaluated in accordance with EN 13141-1:2004, 4.1. Joints and openings not subject to testing shall be taped over.

The results shall include:

- air flow characteristics ( $K$ ) and flow exponent ( $n$ );
- air flow rate at (4, 8, 10 and 20) Pa pressure difference.

NOTE 1 Additional pressure differences may be stated.

The volume air flow rate  $q_v$  shall be determined as follows:

$$q_v = K (\Delta p)^n$$

where

$K$  is the air flow characteristic of the device;

$n$  is the flow exponent;

$\Delta p$  is the pressure difference.

NOTE 2 Individual devices, designated to be installed in a window or external pedestrian doorset at a later date, are not covered by this European Standard.

### 4.19 Bullet resistance

After testing in accordance with EN 1523 the bullet resistant characteristics of windows and external pedestrian doorsets shall be expressed in accordance with EN 1522.

### 4.20 Explosion resistance

#### 4.20.1 Shock tube

After testing in accordance with EN 13124-1 the explosion resistance characteristics of windows and external pedestrian doorsets shall be expressed in accordance with EN 13123-1.

#### 4.20.2 Range test

After testing in accordance with EN 13124-2 the explosion resistance characteristics of windows and external pedestrian doorsets shall be expressed in accordance with EN 13123-2.

#### 4.21 Resistance to repeated opening and closing

A repeated opening and closing test shall be carried out in accordance with EN 1191. The results shall be expressed in accordance with EN 12400.

#### 4.22 Behaviour between different climates

A climate test on windows with frames manufactured from a combination of materials shall be carried out in accordance with ENV 13420.

NOTE ENV 13420 can be used for evaluating design or production changes. The test method is not appropriate for routine quality control purposes, nor is it applicable to well established designs.

A climate test on external pedestrian doorsets shall be carried out in accordance with EN 1121. The results shall be expressed in accordance with EN 12219.

#### 4.23 Burglar resistance

After testing in accordance with ENV 1628, ENV 1629 and ENV 1630 the results shall be expressed in accordance with ENV 1627.

#### 4.24 Special requirements

##### 4.24.1 Unframed glass doorsets

Glass in unframed glass doorsets shall comply with EN 1863-2, EN 12150-2, EN ISO 12543-2, EN 14179-2 or EN 14321-2.

~~A1~~ deleted text ~~A1~~

##### 4.24.2 Power operated windows

###### 4.24.2.1 Safety in use

Drive units and other hardware/electrical components installed on electrically driven windows shall be designed, tested and controlled in accordance with EN 60335-2-103.

Pneumatically and hydraulically driven hardware for windows shall additionally be designed, tested and controlled in accordance with EN 12453:2000, 5.2.3 and 5.2.4.

###### 4.24.2.2 Other requirements

Electrical drives shall be designed, tested and controlled in accordance with EN 61000-6-3 and EN 61000-6-1.

NOTE If the product is designed for special applications, locations etc., other standards may apply.

## 5 Classification and designation

A summary of the classification of the characteristics covered by this European Standard is given in Tables 1 and 2.

NOTE 1 Any characteristics which align vertically within Tables 1 and 2 are coincidental.

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The manufacturer shall identify which characteristics have been determined and the level of performance declared. The characteristic shall be identified either by its title or by the reference number given in the first column of the appropriate table.

In order to enable the specifier to determine whether or not a product is fit for a given intended use, the manufacturer shall provide the necessary product descriptions, e.g. intended use, product range, range of application, information on durability.

NOTE 2 The intended use of a product can be expressed in general terms, possibly specified by means of references to the determined characteristics.

NOTE 3 When specifying required levels of performance characteristics (classes/declared values) for a given specific end use (e.g. location, use and size of the building), of windows and external pedestrian doorsets, the specifier should take into account the intended use, e.g. sound protection, heat loss, climatic conditions, frequency of use, exposure.

Each of the specified requirements shall be fulfilled, i.e. the "performance profile" of the product shall cover or be more favourable than the "requirement profile". Otherwise, the product is not fit for that given specific end use, e.g. if a characteristic has not been stated and national regulations are in force which require a value as part of regulatory marking for that/those characteristic(s) for that building.

NOTE 4 Unfitness of a certain product for a given specific end use does not exclude, that the product in question is fit for a different, given specific end use. This is subject to examination in each individual case.

NOTE 5 Annex D has been included to demonstrate the use of Table 1 and 2 as well as the use of "performance profile" and "requirement profile".

NOTE 6 Guidelines for suitable performance levels for various purposes and locations can be found in national documents.

NOTE 7 Where characteristics are required that are not covered by this European Standard (e.g. the accuracy, finish or appearance of the product), this can be the subject of a separate agreement on a contract by contract basis between the specifier and the manufacturer, e.g. by references to other standards.

Table 1 — Classification of characteristics for windows

No.	Clause	Characteristic/ value/dimension	Classification/value								Class/ de- clared value			
1	4.2	<b>Resistance to wind load</b>	npd	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>E<sub>xxxx</sub></b>					
		Test pressure P1 (Pa)		(400)	(800)	(1200)	(1600)	(2000)	(> 2000)					
2	4.2	<b>Resistance to wind load</b>	npd	<b>A</b>		<b>B</b>		<b>C</b>						
		Frame deflection		(≤1/150)		(≤1/200)		(≤1/300)						
3	4.3	<b>Resistance to snow and permanent load</b>	npd	Declared information on the infill  (e.g. type and thickness of glass)										
4	4.4.1	<b>Reaction to fire</b>	npd	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A2</b>	<b>A1</b>				
	4.4.2	<b>External fire performance</b>	npd	see EN 13501-5										
5	4.5	<b>Watertightness</b>	npd	<b>1 A</b>	<b>2 A</b>	<b>3 A</b>	<b>4 A</b>	<b>5 A</b>	<b>6 A</b>	<b>7 A</b>	<b>8 A</b>	<b>9 A</b>	<b>E<sub>xxx</sub></b>	
		Non-shielded (A) Test pressure (Pa)		(0)	(50)	(100)	(150)	(200)	(250)	(300)	(450)	(600)	(>600)	
6	4.5	<b>Watertightness</b>	npd	<b>1 B</b>	<b>2 B</b>	<b>3 B</b>	<b>4 B</b>	<b>5 B</b>	<b>6 B</b>	<b>7 B</b>				
		Shielded (B) Test pressure (Pa)		(0)	(50)	(100)	(150)	(200)	(250)	(300)				
7	4.6	<b>Dangerous substances</b>	npd	As required by regulations										
8	4.7	<b>Impact resistance</b>	npd	<b>200</b>	<b>300</b>	<b>450</b>	<b>700</b>	<b>950</b>						
		Drop height (mm)												
9	4.8	<b>Load-bearing capacity of safety devices</b>	npd <sup>a</sup>	Threshold value										
10	4.11	<b>Acoustic performance</b>	npd	Declared values										
		Sound insulation $R_w$ ( $C; C_{tr}$ ) (dB)												
11	4.12	<b>Thermal transmittance</b>	npd	Declared value										
		$U_w$ (W/(m <sup>2</sup> · K))												
12	4.13	<b>Radiation properties</b>	npd	Declared value										
		Solar factor ( $g$ )												
13	4.13	<b>Radiation properties</b>	npd	Declared value										
		Light transmittance ( $\tau_v$ )												

(Continued)

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**Table 1 (concluded)**

No.	Clause	Characteristic/ value/dimension	Classification/value								Class/ de- clared value		
14	4.14	<b>Air permeability</b>	npd	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>						
		Max. test pressure (Pa)		(150)	(300)	(600)	(600)						
		Reference air permeability at 100 Pa (m <sup>3</sup> /(h · m <sup>2</sup> ) or m <sup>3</sup> /(h · m))		(50 or 12,50)	(27 or 6,75)	(9 or 2,25)	(3 or 0,75)						
15	4.16	<b>Operating forces<sup>b</sup></b>	npd	<b>1</b>				<b>2</b>					
16	4.17	<b>Mechanical strength</b>	npd	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>						
17	4.18	<b>Ventilation</b>	npd	Declared values									
		Air flow exponent <i>n</i>											
		Air flow characteristic <i>K</i>											
		Air flow rates											
18	4.19	<b>Bullet resistance</b>	npd	<b>FB1</b>	<b>FB2</b>	<b>FB3</b>	<b>FB4</b>	<b>FB5</b>	<b>FB6</b>	<b>FB7</b>	<b>FSG</b>		
19	4.20.1	<b>Explosion resistance</b>	npd	<b>EPR1</b>		<b>EPR2</b>		<b>EPR3</b>		<b>EPR4</b>			
		Shock tube											
20	4.20.2	<b>Explosion resistance</b>	npd	<b>EXR1</b>		<b>EXR2</b>		<b>EXR3</b>		<b>EXR4</b>		<b>EXR5</b>	
		Range test											
21	4.21	<b>Resistance to repeated opening and closing</b>	npd	<b>5000</b>		<b>10 000</b>		<b>20 000</b>					
		Number of cycles											
22	4.22	<b>Behaviour between different climates</b>	npd	[To be prepared]									
23	4.23	<b>Burglar resistance</b>	npd	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>				
NOTE 1 <b>npd: no performance determined.</b>													
NOTE 2    The figures in brackets are for information.													
a    Only if safety device(s) is (are) not provided.													
b    Manually operated windows only.													

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Table 2 — Classification of characteristics for external pedestrian doorsets

No.	Clause	Characteristic/ value/dimension	Classification/value										Class/ de- clared value	
1	4.2	<b>Resistance to wind load</b> Test pressure P1 (Pa)	npd	<b>1</b> (400)	<b>2</b> (800)	<b>3</b> (1200)	<b>4</b> (1600)	<b>5</b> (2000)	<b>E<sub>xxxx</sub></b> (> 2000)					
2	4.2	<b>Resistance to wind load</b> Frame deflection	npd	<b>A</b> (≤1/150)			<b>B</b> (≤1/200)			<b>C</b> (≤1/300)				
3	4.5	<b>Watertightness</b> Non-shielded (A) Test pressure (Pa)	npd	<b>1 A</b> (0)	<b>2 A</b> (50)	<b>3 A</b> (100)	<b>4 A</b> (150)	<b>5 A</b> (200)	<b>6 A</b> (250)	<b>7 A</b> (300)	<b>8 A</b> (450)	<b>9 A</b> (600)	<b>E<sub>xxx</sub></b> (>600)	
4	4.5	<b>Watertightness</b> Shielded (B) Test pressure (Pa)	npd	<b>1 B</b> (0)	<b>2 B</b> (50)	<b>3 B</b> (100)	<b>4 B</b> (150)	<b>5 B</b> (200)	<b>6 B</b> (250)	<b>7 B</b> (300)				
5	4.6	<b>Dangerous substances</b>	npd	As required by regulations										
6	4.7	<b>Impact resistance</b> Drop height (mm)	npd	<b>200</b>	<b>300</b>	<b>450</b>	<b>700</b>	<b>950</b>						
7	4.8	<b>Load-bearing capacity of safety devices</b>	npd <sup>a</sup>	Threshold value										
8	4.9	<b>Height and width</b>	npd	Declared values										
9	4.10	<b>Ability to release</b>	npd	See EN 179, EN 1125 <a href="#">A1</a> , EN 1935 <a href="#">A1</a> , prEN 13633 or prEN 13637										
10	4.11	<b>Acoustic performance</b> Sound insulation $R_w (C; C_{tr})$ (dB)	npd	Declared values										
11	4.12	<b>Thermal transmittance</b> $U_D (W/(m^2 \cdot K))$	npd	Declared value										
12	4.13	<b>Radiation properties</b> Solar factor (g)	npd	Declared value										

(continued)



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**Table 2 (concluded)**

No.	Clause	Characteristic/ value/dimension	Classification/value								Class/declared value			
13	4.13	<b>Radiation properties</b>	npd	Declared value										
		Light transmittance ( $\tau_v$ )												
14	4.14	<b>Air permeability</b>	npd	1 (150) (50 or 12,50)	2 (300) (27 or 6,75)	3 (600) (9 or 2,25)	4 (600) (3 or 0,75)							
		Max. test pressure (Pa) Reference air permeability at 100 Pa ( $m^3/(h \cdot m^2)$ ) or $m^3/(h \cdot m)$ )												
15	4.16	<b>Operating forces</b> <del>(A1)</del> deleted text <del>(A1)</del>	npd	1	2	3	4							
16	4.17	<b>Mechanical strength</b>	npd	1	2	3	4							
17	4.18	<b>Ventilation</b>	npd	Declared values										
		Air flow exponent $n$ Air flow characteristic $K$ Air flow rates												
18	4.19	<b>Bullet resistance</b>	npd	FB1	FB2	FB3	FB4	FB5	FB6	FB7	FSG			
19	4.20.1	<b>Explosion resistance</b>	npd	EPR1		EPR2		EPR3		EPR4				
		Shock tube												
20	4.20.2	<b>Explosion resistance</b>	npd	EXR1		EXR2		EXR3		EXR4		EXR5		
		Range test												
21	4.21	<b>Resistance to repeated opening and closing</b>	npd	5 000	10000	20000	50000	100000	200000	500000	1000000			
		Number of cycles												
22	4.22	<b>Behaviour between different climates</b>	npd	1(x) <del>(A1)</del> b <del>(A1)</del>			2(x) <del>(A1)</del> b <del>(A1)</del>			3(x) <del>(A1)</del> b <del>(A1)</del>				
		Permissible deformation												
23	4.23	<b>Burglar resistance</b>	npd	1	2	3	4	5	6					
NOTE 1 npd: no performance determined.														
NOTE 2 The figures in brackets are for information.														
a Only if safety device(s) is (are) not provided.														
<del>(A1)</del> deleted text <del>(A1)</del>														
<del>(A1)</del> b <del>(A1)</del> Test climate (a, b, c, d or e) shall be stated.														

**6 Handling, installation, maintenance and care**

The manufacturer shall provide information on the following:

- storage and handling, if the manufacturer is not responsible for installation of the product;
- installation requirements and techniques (on site), if the manufacturer is not responsible for installation of the product;
- maintenance and cleaning;
- end use instructions including instructions on component replacement;
- safety in use instructions (see 4.8,  $\text{A}_1$  deleted text  $\text{A}_1$  and  $\text{A}_1$  4.24.2.1  $\text{A}_1$ ).

Noise emission of power operated windows  $\text{A}_1$  deleted text  $\text{A}_1$  is not a significant hazard for the users of these products. It is a comfort aspect. The instructions for use shall give the A-weighted emission sound pressure level in the vicinity of these products when it is more than 70 dB or, which will generally be the case, shall indicate that this level is less than or equal to 70 dB.

## 7 $\text{A}_1$ Evaluation of conformity

### 7.1 General

The compliance of windows and external pedestrian doorsets with the requirements of this European Standard and with the stated values (including classes) shall be demonstrated by:

- Initial Type Testing (ITT) (see 7.2);
- Factory Production Control (FPC) (see 7.3);

NOTE 1 Information on special procedure for Initial Type Testing can be found in 7.2.5 (cascading ITT).

NOTE 2 In the context of regulatory marking the responsibilities for the said tasks (testing, control etc.) are given in Tables ZA.3a, ZA.3.b and ZA.3c.

### 7.2 Initial Type Testing (ITT)

#### 7.2.1 General

An Initial Type Test is the complete set of tests or other procedures, in respect of the characteristics to be assessed, determining the performance of samples of products representative of the product type.

All characteristics in Clause 4 for which the manufacturer is stating a value shall be subject to ITT by tests and/or calculation and/or tabulated values in accordance with the relevant subclauses of Clause 4, with the following exceptions:

- release of dangerous substances may be assessed indirectly by controlling the content of the substance concerned.

NOTE Tabulated values could be also CAP, CWFT.

Where components are used where the characteristics of the components have already been determined by the component manufacturer, e.g. radiation properties of IGU, on the basis of conformity with other technical specifications, these characteristics need not be reassessed provided that the components' performance and method of assessment remain the same, that the characteristics of the component are suitable for the intended end use of the finished product, and insofar as the manufacturing process does not have a detrimental affect on the determined characteristics.

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Components CE marked in accordance with appropriate harmonised European specifications may be presumed to have the performances stated with the CE marking, although this does not replace the responsibility of the manufacturer to ensure that the product as a whole is correctly designed (where the manufacturer is responsible for the design) and its components have the necessary performance values to meet the design of the product.

Tests previously performed in accordance with the provisions of this European Standard (same product, same characteristic(s), test method, sampling procedure etc.) may be taken into account.

Insofar as it is demonstrative of the declared characteristics, only one ITT is required where different manufacturing units are producing the same product for the same manufacturer using the same materials and the same documented production and process control.

### 7.2.2 Further type testing

Whenever a change occurs in the window and external pedestrian doorset design, the raw material or supplier of the components, or the production process (subject to the definition of a family), which would affect significantly one or more of the characteristics (i.e. the design becomes dissimilar; see 3.4), the type testing shall be repeated for the concerned characteristic(s).

It is not necessary to make a new ITT in case the product:

- 1) will comprise the same components used for the ITT and will be assembled in accordance with the relevant assembly instructions;
- 2) will comprise components with equivalent performances and will be assembled in accordance with the relevant assembly instructions.

### 7.2.3 Sampling

#### 7.2.3.1 Selection of samples

The samples selected for testing shall be representative of the product family, taking into account 3.4 and Annex E as well as the product descriptions. For the purpose of sampling and testing the manufacturer shall have the option of declaring one product from the product family as representative for the whole family or part of it provided that this product has the more unfavourable combination of performance characteristics (see Annex A, Annex E and Annex F).

NOTE A product can be in different families for different characteristics.

Where a range of tests is to be carried out, a sufficient number of samples shall be selected to take account of the destructive nature of the tests (see Annex E). Annex E specifies the number of test specimens (samples) required for each test and any change in size that is allowed for similar designs. Suitable test sequences for windows are identified in Annex G. Products shall only be excluded from selection of samples where they have been clearly marked as defective and have been isolated.

#### 7.2.3.2 Marking of samples

All samples to be used for testing purposes shall be suitably marked to identify which characteristics are to be determined and to ensure traceability.

Sample-marking on the product shall at least include production time, place and date and time of sampling.

#### 7.2.3.3 Sampling report

A sampling report shall be prepared to accompany the sample(s) selected which shall include the following information:

- manufacturer and manufacturing unit;
- place of sampling;
- stock or batch quantity (from which the samples have been taken), if necessary;
- number of samples;
- identification or description of the sample(s) (e.g. by means of cross sections);
- marking of the sample(s) by the sampler;
- purpose of test (e.g. Initial Type Test, audit test);
- characteristics to be determined and clear identification of which sample(s) to be used for the required characteristic(s), where necessary;
- place and date;
- signature of the sampler and the manufacturer, if relevant.

#### 7.2.3.4 Retention of samples

Used samples (test specimens) shall be indelibly marked as already tested. Samples shall be retained until the test report has been granted to the applicant. The manufacturer shall be responsible for the retention and disposal of samples in accordance with his written procedures.

#### 7.2.4 Test report

The results of each test shall be recorded in a test report, which shall, as a minimum, include the following information:

- name of the manufacturer;
- description of the test specimen and sampling information, see 7.2.3.3;
- identification of the testing laboratory, the applied test methods and the personnel executing the test, implying the names of the operators;
- the apparatus and its calibration;
- place and date of the testing;
- the results of the test, including analysis if relevant;
- place, date and authorized signature.

The test report shall comply with the relevant clauses of the technical specifications. The complete set of reports, related to a product, shall be retained by the manufacturer for as long as the product is manufactured plus, as a minimum, ten years.

#### 7.2.5 Cascading ITT

##### 7.2.5.1 General

An assembly designer (who may be either a component manufacturer, a designer, a "system house" or a body providing a common service to manufacturers) who designs an assembly, may submit an

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“assembled product”, using components manufactured by him or by others, to initial type testing performed by a third party in accordance with the performance characteristics listed in Table ZA.1 and then make an ITT report available to assemblers, i.e. the actual manufacturer of the product(s) placed on the market. In this case the assembly designer may make ITT report available to assembling manufacturers on the basis of ‘cascading’ the appropriate test report down to them.

### 7.2.5.2 Conditions for use of designer’s ITT results

A manufacturer assembling components, some or all of which may be manufactured by others, may take into account the concept of “cascading ITT” in respect of the ITT report prepared on the basis of tests carried out by a notified body when declaring the performance of the product for which he has responsibility for placing on the market only under the following conditions:

- a) the manufacturer (assembler) has an agreement with the assembly designer for the use of the test results and supporting documentation;
- b) the manufacturer (assembler) shall be responsible for placing the product on the market and he shall be responsible for the correct assembly of the product in accordance with the assembly instructions issued by the assembly designer or by any body appointed by him to provide such assembly instructions;
- c) the assembly designer’s instructions for assembling the components shall be an integral part of the manufacturer’s (assembler’s) Factory Production Control (FPC) system;
- d) the manufacturer (assembler) shall be able to provide documented evidence that the combination of components he is using, and his manufacturing processes, correspond to the product that has been subject to the ITT;
- e) the manufacturer (assembler) shall retain a copy of the test report(s) comprising the ITT for 10 years after the finish of production;
- f) irrespective of any responsibility and liability issue within any agreement signed with the assembly designer, the manufacturer (assembler) shall remain responsible for the product being in compliance with all declarations of performance in accordance with this document.

NOTE 1 The formulation of an agreement can be done by licence, contract, or any other type of written consent.

NOTE 2 In the context of regulatory marking the responsibilities for the cascading ITT are given in ZA.2.1.

## 7.3 Factory Production Control (FPC)

### 7.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market conform to the stated performance characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

NOTE The term “manufacturer” does not in any way suggest limitations on the size of the enterprise in question, e.g. number of employees, turnover, number of produced units per year.

The FPC shall be suitable for the type and method of production, e.g. batch quantity, product type.

The results of inspections, tests or assessments requiring action shall be recorded, as shall any action taken. The action to be taken when control values or criteria are not met shall be recorded and retained for the period specified in the manufacturer's FPC procedures.

The manufacturer shall appoint a person to be responsible for the FPC system in each manufacturing unit and shall provide sufficient and competent personnel to establish, document and maintain an FPC system.

Manufacturers having an FPC system which complies with EN ISO 9001 and which addresses the requirements of this standard are recognised as satisfying the FPC requirements.

### **7.3.2 Personnel**

The responsibility, authority and the relationship between personnel that manage, perform or verify work affecting product conformity, shall be defined. This applies in particular to personnel that needs to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

### **7.3.3 Equipment**

Testing: Weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

Manufacturing: Equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

### **7.3.4 Raw materials and components**

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their conformity.

### **7.3.5 Production process**

The manufacturer shall plan and carry out production under controlled conditions. The FPC system shall document the various stages in the production, identify the checking procedure and those individuals responsible for all stages of production.

During the production process itself, a record shall be kept of all checks, their results, and any corrective actions taken. This record shall be sufficiently detailed and accurate to demonstrate that all stages of the production phase, and all checks, have been carried out satisfactorily.

### **7.3.6 Product testing and evaluation**

- The manufacturer shall establish procedures to ensure that the declared values of all of the characteristics are maintained. The means of control are:
- test and/or inspection of non-finished products or parts hereof during the production process;
- test and/or inspection of finished products.

Test and/or inspection shall be performed and evaluated in accordance with a test plan (including frequencies and criteria) prepared by the manufacturer and in accordance with any suitable part of relevant test standards.

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### 7.3.7 Traceability and marking

Individual products or product batches shall be identifiable and traceable with regard to their production origin. The manufacturer shall have procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

### 7.3.8 Non-conforming products

The manufacturer shall have written procedures which specify how non-conforming products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

### 7.3.9 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

## 7.4 Initial inspection of factory and FPC

An initial inspection shall be made, taking into account the requirements given in 7.3, and the results recorded. The inspection shall verify that:

- procedures are documented when required by this European Standard;
- suitably qualified personnel carry out the manufacturing and test processes;
- appropriate manufacturing and test equipment is available to ensure that products are manufactured in accordance with this European Standard and the manufacturer's documented procedures;
- manufacturing and test equipment is checked regularly for accuracy in accordance with the manufacturer's documented procedures;
- documented processes are carried out in accordance with the manufacturer's documented procedures;
- results are available from the ITT to establish compliance of performance with samples assessed during FPC;
- a procedure exists for dealing with non-conformity of component(s) or product(s).

NOTE In the context of regulatory marking the responsibility for the said task is given in the Tables ZA.3a, ZA.3.b and ZA.3c.

## 7.5 Continuous surveillance, assessment and approval of FPC

Regular assessment of the FPC shall be maintained on the basis of the manufacturer's documented procedures. Inspections shall be undertaken not less than once a year. Where significant deviations from documented procedures are recorded, the frequency of inspections shall be increased as necessary.

Continuous surveillance, assessment and approval shall inspect and record that:

- the requirements of 7.3 and 7.4 are maintained;
- the documented processes are carried out in accordance with the documentation;

- checks according to the test plan demonstrate that products achieve the same values as the product(s) submitted to ITT (see 7.3.6);
- random checks are carried out on the equivalence of the manufactured product with the product(s) submitted to ITT. This may be by indirect measures, e.g. dimensions, component specifications, densities etc. of products selected from the production line, or the stock if the product passes the quality control;
- any non-conformances, comments or recommendations resulting from previous assessments have been appropriately dealt with;
- any significant changes in the factory production control, including significant modifications of the manufacturing process have been identified and their potential effect on the conformity of the product(s) assessed;
- any changes in raw materials, component(s) or supplier(s) shall be identified and their likely effect on the conformity of the finished product(s) shall be assessed.

NOTE In the context of regulatory marking the responsibility for the said task is given in the Tables ZA.3a, ZA.3.b and ZA.3c

## 7.6 Testing of samples taken at the factory in accordance with a prescribed plan

The testing of samples taken at the factory is considered part of the FPC according to 7.3.6. 

## 8 Labelling and marking

The manufacturer shall provide sufficient information to ensure the traceability of his product (e.g. by means of product codes) giving the link between the product, the manufacturer and the production. This information shall either be contained on a product label or detailed in accompanying documents or in the manufacturer's published technical specification(s).

Relevant designations of characteristics (see Clause 5) as well as information about intended use, handling, installation, maintenance and care (see Clause 6) shall either be contained on a product label or detailed in accompanying documents or in the manufacturer's published technical specification(s).

NOTE Information that is required for regulatory marking (see Annex ZA) need not be duplicated elsewhere.



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**Annex A**  
(informative)

**Interdependence between characteristics and components**

**A.1 General**

Table A.1 suggests some interdependencies between characteristics and components, i.e. which characteristic might change if a certain component is modified. Further guidance might be derived from relevant test and classification standards. Table A.1 provides one of several means to determine whether or not retesting due to product modifications should be carried out.

**Table A.1 — Interdependence between characteristics and components**

Characteristics	Components				Glazing <sup>e</sup>
	Hardware <sup>a</sup>	Weather <sup>b</sup> stripping	Frame, casement, sash, leaf		
			Material <sup>c</sup>	Profile <sup>d</sup>	
Resistance to wind load	(Y)	(Y)	Y	Y	Y
Resistance to snow load	N	N	N	N	Y
Reaction to fire	(Y)	Y	Y	(Y)	N
External fire performance	(Y)	(Y)	(Y)	(Y)	(Y)
Watertightness	(Y)	Y	(Y)	Y	N
Dangerous substances	(Y)	(Y)	(Y)	N	(Y)
Impact resistance	(Y)	N	(Y)	(Y)	Y
Load-bearing capacity of safety devices	Y	N	Y	Y	N
Ability to release	Y	(Y)	(Y)	(Y)	N
Acoustic performance <sup>f</sup>	N	(Y)	(Y)	Y	Y
Thermal transmittance	N	(Y)	(Y)	Y	Y
Radiation properties	N	N	N	N	Y
Air permeability	(Y)	Y	(Y)	Y	N
Operating forces	Y	Y	(Y)	(Y)	(Y)
Mechanical strength	Y	N	(Y)	Y	(Y)

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Characteristics	Components				
	Hardware <sup>a</sup>	Weather <sup>b</sup> stripping	Frame, casement, sash, leaf		Glazing <sup>e</sup>
			Material <sup>c</sup>	Profile <sup>d</sup>	
Ventilation	N	N	N	Y	N
Bullet resistance	N	N	Y	Y	Y
Explosion resistance	Y	N	Y	Y	Y
Resistance to repeated opening and closing	Y	(Y)	(Y)	(Y)	(Y)
Behaviour between different climates	N	(Y)	Y	Y	N
Burglar resistance	Y	N	Y	Y	Y
<p>Key</p> <p>Y Modification of the component will probably change the characteristic in question</p> <p>(Y) Modification of the component will possibly change the characteristic in question</p> <p>N Modification of the component will probably not change the characteristic in question</p> <p><sup>a</sup> Number, location, fixing; in case of hardware exchange: if there exists documented evidence on the basis of the relevant hardware standards that the hardware performances are equivalent to those offered by the hardware (used on ITT) replaced, then no re-testing is necessary.</p> <p><sup>b</sup> Number, material.</p> <p><sup>c</sup> Young's Modulus, thermal conductivity, density.</p> <p><sup>d</sup> Area and shape of cross sections, assembly, ventilation devices.</p> <p><sup>e</sup> Type, mass, coating, cavity, gas, installation, sealing.</p> <p><sup>f</sup> See Annex B.</p>					

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## Annex B (normative)

### Determination of sound insulation of windows

#### B.1 General

The sound insulation  $R_w$  ( $C$ ;  $C_{tr}$ ) of windows shall be determined by test according to EN ISO 140-3 (reference method), see B.2. As an alternative, the sound insulation of single windows (definition, see EN 12519:2004, 2.2.10) with IGUs (insulating glass units) can be determined by using tabulated values, see B.3. The results shall be expressed in accordance with EN ISO 717-1. Window sound insulation values  $R_w \geq 39$  dB or  $R_w + C_{tr} \geq 35$  dB shall be determined by testing.

Concerning window sizes, extension and extrapolation rules for sound insulation values determined by either method are specified in Table B.3. Rules concerning other aspects than size are described in B.1 and B.2.

NOTE Extension rules are rules for allowable component changes without change of value (= similar design, see 3.4). Extrapolation rules are rules for change of value due to changes of product size.

#### B.2 Determination of sound insulation by testing

Testing shall be carried out according to EN ISO 140-3, i.e. a test specimen size 1,23 m x 1,48 m (corresponding to dimensions of the test aperture of 1,25 m x 1,50 m) is recommended. Other window sizes may be applied for testing, if appropriate. Extrapolation rules concerning sizes are found in Table B.3. IGU extension rules are given below. Other changes of the window, see Annex A.

Change of IGU is allowed without a new test of the window, provided that the IGU has the same or better  $R_w$  and/or  $R_w + C_{tr}$  (data from test according to EN ISO 140-3 or generic data, see EN 12758 or EN 12354-3). This rule is not valid for IGUs with  $SF_6$ .

NOTE The type of glass (annealed glass, thermally toughened glass, heat strengthened glass, chemically strengthened glass) does not influence the sound insulation (see EN 12758:2002, 3.2 and Table 1).

#### B.3 Determination of sound insulation of single windows with IGUs using tabulated values

##### B.3.1 Sound insulation of single windows based on IGU sound insulation data and window construction criteria

The sound insulation of single windows with IGUs can be determined according to the procedure in B.3.3. General conditions are given in B.3.2 and specific required characteristics for different levels of sound insulation are given in B.3.3. The tabulated values are derived from test results mainly using test specimen size 1,23 m x 1,48 m (reference size) corresponding to an overall area of 1,82 m<sup>2</sup>. The extrapolation rules are given in Table B.3.

##### B.3.2 General conditions for use of procedure in B.3.3

The procedure in B.3.3 applies to fixed and openable (top/side/bottom-hung, pivoted or sliding) single windows with IGU. The procedure does not apply to window-doors with infill panels.

Table B.1 and Table B.2 do not apply to IGUs with  $SF_6$ .

The seals required shall be smooth, permanently flexible, resistant to weathering and easy to replace, and at least one seal shall be continuous.

The air permeability of the window shall be at least Class 3, see 4.14, for sliding windows at least Class 2.

### B.3.3 Procedure for determination of window $R_w$ (C; $C_{tr}$ ) based on IGU data

For windows fulfilling the general conditions in B.3.2, the following steps are used:

- b) Table B.1:  $R_w$  for the window is found based on  $R_w$  for IGU;
- c) Table B.2:  $R_w + C_{tr}$  for the window is found based on  $R_w + C_{tr}$  for IGU;
- d) window C = -1 dB;
- e) calculate window  $C_{tr} = \text{“Table B.2” } (R_w + C_{tr} \text{ (window)}) - \text{“Table B.1” } (R_w \text{ (window)})$ ;
- f) correction according to Table B.3, if needed;
- g) CE-marking of window:  $R_w$  (C;  $C_{tr}$ ) based on the results of steps a), c), d) and e).

EXAMPLE CE-marking of a top-hung single window, dimensions 1,2 m x 1,6 m, 1 seal, air permeability Class 3 and IGU with  $R_w$  (C;  $C_{tr}$ ) = 30 (-1; -4) dB

IGU  $R_w = 30$  dB implies Window  $R_w = 33$  dB

IGU  $R_w + C_{tr} = 26$  dB implies Window  $R_w + C_{tr} = 28$  dB

C = -1 dB

$C_{tr} = 28 \text{ dB} - 33 \text{ dB} = -5 \text{ dB}$

Area 1,2 m x 1,6 m = 1,92 m<sup>2</sup> < 2,7 m<sup>2</sup>, so no correction is necessary, i.e. CE-marking  $R_w$  (C;  $C_{tr}$ ) = 33 (-1; -5).

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**Table B.1 —  $R_w$  for window based on  $R_w$  for IGU**

IGU $R_w^a$ [dB]	Single windows <sup>b</sup>		Single, sliding windows <sup>c</sup>	
	Window $R_w$ [dB]	Number of seals re- quired <sup>d</sup>	Window $R_w$ [dB]	Number of seals required <sup>d</sup>
27	30	1	25	1
28	31	1	26	1
29	32	1	27	1
30	33	1	28	1
32	34	1	29	1
34	35	1	29	1
36	36	2	30	1
38	37	2	N/A	N/A
40	38	2	N/A	N/A

<sup>a</sup> Test according to EN ISO 140-3 (reference method) or generic data according to EN 12758 or EN 12354-3.

<sup>b</sup> Fixed and openable (top/side/bottom-hung or pivoted) single windows fulfilling air permeability Class 3, see 4.14.

<sup>c</sup> Single, sliding windows fulfilling air permeability Class 2, see 4.14.

<sup>d</sup> Openable windows only.

**Table B.2 —  $R_w + C_{tr}$  for window based on  $R_w + C_{tr}$  for IGU**

IGU $R_w + C_{tr}$ <sup>a</sup> [dB]	Single windows <sup>b</sup>		Single, sliding windows <sup>c</sup>	
	Window $R_w + C_{tr}$ [dB]	Number of seals re-quired <sup>d</sup>	Window $R_w + C_{tr}$ [dB]	Number of seals required <sup>d</sup>
24	26	1	24	1
25	27	1	25	1
26	28	1	26	1
27	29	1	26	1
28	30	1	27	1
30	31	1	27	1
32	32	2	28	1
34	33	2	N/A	N/A
36	34	2	N/A	N/A

<sup>a</sup> Test according to EN ISO 140-3 (reference method) or generic data according to EN 12758 or EN 12354-3.

<sup>b</sup> Fixed and openable (top/side/bottom-hung or pivoted) single windows fulfilling air permeability Class 3, see 4.14.

<sup>c</sup> Single, sliding windows fulfilling air permeability Class 2, see 4.14.

<sup>d</sup> Openable windows only.

### B.4 Test results and tabulated values – Range of application

The extrapolation rules for test results and tabulated values are shown in Table B.3.

**Table B.3 — Extrapolation rules for different window sizes**

Window size range		Sound insulation value for window
Test results (see B.2) for test specimen of any size	Tabulated values (see B.3) <sup>a</sup>	
-100% to +50% of test specimen overall area	Overall area $\leq 2,7 \text{ m}^2$	$R_w$ and $R_w + C_{tr}$ according to B.2 or B.3
+50% to +100% of test specimen overall area	$2,7 \text{ m}^2 < \text{Overall area} \leq 3,6 \text{ m}^2$	$R_w$ and $R_w + C_{tr}$ corrected by -1 dB
+100% to +150% of test specimen overall area	$3,6 \text{ m}^2 < \text{Overall area} \leq 4,6 \text{ m}^2$	$R_w$ and $R_w + C_{tr}$ corrected by -2 dB
>+150% of test specimen overall area	$4,6 \text{ m}^2 < \text{Overall area}$	$R_w$ and $R_w + C_{tr}$ corrected by -3 dB

<sup>a</sup> The area intervals indicated for tabulated values are identical to the intervals for test results according to B.2 using the recommended test specimen size 1,23 m x 1,48 m.

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## **Annex C** **(informative)**

### **Standards and draft standards on glass**

EN 572-9, *Glass in building — Basic soda lime silicate glass products — Part 9: Evaluation of conformity/Product standard.*

EN 1096-4, *Glass in building — Coated glass — Part 4: Evaluation of conformity/Product standard.*

EN 1279-5, *Glass in building — Insulating glass units — Part 5: Evaluation of conformity.*

EN 1748-1-2, *Glass in building — Special basic products — Borosilicate glasses — Part 1-2: Evaluation of conformity/Product standard.*

EN 1748-2-2, *Glass in building — Special basic products — Glass ceramics — Part 2-2: Evaluation of conformity/Product standard.*

EN 1863-2, *Glass in building — Heat strengthened soda lime silicate glass — Part 2: Evaluation of conformity/Product standard.*

EN 12150-2, *Glass in building — Thermally toughened soda lime silicate safety glass — Part 2: Evaluation of conformity/Product standard.*

EN 12337-2, *Glass in building — Chemically strengthened soda lime silicate glass — Part 2: Evaluation of conformity/Product standard.*

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

EN 13024-2, *Glass in building — Thermally toughened borosilicate safety glass — Part 2: Evaluation of conformity/Product standard.*

EN 14178-2, *Glass in building — Basic alkaline earth silicate glass products — Part 2: Evaluation of conformity/Product standard.*

EN 14179-2, *Glass in building — Heat soaked thermally toughened soda lime silicate safety glass — Part 2: Evaluation of conformity/Product standard.*

EN 14321-2, *Glass in building — Thermally toughened alkaline earth silicate safety glass — Part 2: Evaluation of conformity/Product standard.*

## Annex D (informative)

### Examples of performance and requirement profiles of a roof window

The use of Tables 1 and 2 is demonstrated in Table D.1.

**Table D.1 — Examples of performance and requirement profiles of a roof window**

No.	Clause	Characteristic/ value/dimension	Classification/value							Class/ declared value				
			1	2	3	4	5	Exxxx	5					
1	4.2	<b>Resistance to wind load</b> Test pressure P1 (Pa)	npd	1 (400)	2 (800)	3 (1200)	4 (1600)	5 (2000)	Exxxx (> 2000)	5				
2	4.2	<b>Resistance to wind load</b> Frame deflection	npd	A (≤1/150)		B (≤1/200)	C (≤1/300)			B				
3	4.3	<b>Resistance to snow and permanent load</b>	npd	Declared information on the infill 4-16-4 (e.g. type and thickness of glass)						4-16-4				
4	4.4.1	<b>Reaction to fire</b>	npd	F	E	D	C	B	A2	A1	D			
5	4.4.2	<b>External fire performance</b>	npd							B <sub>roof, t1</sub>	npd			
6	4.5	<b>Watertightness</b> Non-shielded (A) Test pressure (Pa)	npd	1 A (0)	2 A (50)	3 A (100)	4 A (150)	5 A (200)	6 A (250)	7 A (300)	8 A (450)	9 A (600)	Exxx (>600)	8A
7	4.5	<b>Watertightness</b> Shielded (B) Test pressure (Pa)	npd	1 B (0)	2 B (50)	3 B (100)	4 B (150)	5 B (200)	6 B (250)	7 B (300)			npd	
8	4.7	<b>Impact resistance</b> Drop height (mm)	npd	200	300	450	700	950	450					

(Continued)



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**Table D.1 (concluded)**

9	4.8	<b>Load-bearing capacity of safety devices</b>	npd		Passed	Threshold value	Passed	
10	4.11	<b>Acoustic performance</b> Sound insulation $R_w$ (C; $C_{tr}$ ) (dB)	npd	30(-1;-5)	33(-1;-5)	Declared values	33 (-1; -5)	
11	4.12	<b>Thermal transmittance</b> $U_w$ (W/(m <sup>2</sup> · K))	npd	1,7	Declared value	1,5	1,7	
12	4.13	<b>Radiation properties</b> Solar factor ( $g$ )	npd	0,55	Declared value		0,55	
13	4.13	<b>Radiation properties</b> Light transmittance ( $\tau_v$ )	npd		Declared value	0,75	0,75	
14	4.14	<b>Air permeability</b> Max. test pressure (Pa) Reference air permeability at 100 Pa (m <sup>3</sup> /(h · m <sup>2</sup> ) or m <sup>3</sup> /(h · m))	npd	1 (150) (50 or 12,50)	2 (300) (27 or 6,75)	3 (600) (9 or 2,25)	4 (600) (3 or 0,75)	4
<p>Key</p> <p>○ — ○ Performance profile of the window in question</p> <p>△ ..... △ Requirement profile for one specified end use</p>								

Table D.1 demonstrates, that the window in question does not fulfil the requirements on characteristics Nos. 7 and 11 and is therefore not fit for the specified end use.

## **Annex E** **(normative)**

### **Determination of characteristics**

#### **E.1 Separate determination of characteristics for windows**

Separate determination of characteristics for windows shall be carried out in accordance with Table E.1.

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**Table E.1 — Separate determination of characteristics for windows**

Clause	Characteristic	Classification standard <sup>a</sup>	Test or calculation standard <sup>a</sup>	Test type <sup>b</sup>	Number of test specimens	Size of test specimen	Range of direct application (providing similar design, see 3.4)
4.2	Resistance to wind load	EN 12210	EN 12211	Destructive	1	Not specified	-100 % of frame width and height of test specimen
4.3	Resistance to snow load	Information on the infill	National regulations and/or recommendations	Calculation	—	Not specified	-100 % of test specimen overall area
<b>A1</b> 4.4.1	Reaction to fire	EN 13501-1	See EN 13501-1	Destructive	See EN 13501-1 and Annex H <b>A1</b>		
4.4.2	External fire performance	EN 13501-5	ENV 1187	Destructive	See ENV 1187		
4.5	Water-tightness	EN 12208	EN 1027	Non-destructive	1	Not specified	-100 % to +50 % of test specimen overall area
4.6	Dangerous substances	As required by regulations					
4.7	Impact resistance	EN 13049	EN 13049	Destructive	1 or 2	Not specified	>Overall area of test specimen
4.8	Load-bearing capacity of safety devices	Threshold value	EN 14609	Non-destructive	1	Not specified	-100 % of test specimen overall area
4.11	Acoustic performance	Declared values	EN ISO 140-3 EN ISO 717-1	Non-destructive or tabulated values	1 —	See Annex B	See Annex B
<b>A1</b> 4.12	Thermal transmittance	Declared value	EN ISO 10077-1:2006, Table F.1 or Table F.3, Annex J	Tabulated values	—	Not specified	All sizes
			EN ISO 10077-1 EN ISO 10077-1 and EN ISO 10077-2	Calculation	—	1,23 (± 25 %) m × 1,48 (-25 %) m or 1,48 (+25 %) m × 2,18 (± 25 %) m	Overall area ≤ 2,3 m <sup>2</sup> c d Overall area > 2,3 m <sup>2</sup> c
			EN ISO 12567-1 EN ISO 12567-2	Non-destructive	1 1	1,23 (± 25 %) m × 1,48 (-25 %) m or 1,48 (+25 %) m × 2,18 (± 25 %) m	Overall area ≤ 2,3 m <sup>2</sup> c d Overall area > 2,3 m <sup>2</sup> c <b>A1</b>
4.13	Radiation properties (infill) <sup>e</sup>	Declared values	EN 410 EN 13363-1 EN 13363-2:2002	—	—	—	All sizes

(Continued)

Table E.1 (concluded)

Clause	Characteristic	Classification standard <sup>e</sup>	Test or calculation standard <sup>a</sup>	Test type <sup>b</sup>	Number of test specimens	Size of test specimen	Range of direct application (providing similar design, see 3.4)
A1 4.14	Air permeability	EN 12207	EN 1026	Non-destructive	1	Not specified	-100 % to +50 % of test specimen overall area
			Annex I	Tabulated values	—	Not specified	All sizes A1
4.16	Operating forces <sup>f</sup>	EN 13115	EN 12046-1	Non-destructive	1	Not specified	-100 % of test specimen overall area
4.17	Mechanical strength	EN 13115	EN 12046-1 EN 14608 EN 14609	Destructive or non-destructive (depending on result)	1	Not specified	-100 % of test specimen overall area
4.18	Ventilation	Declared values	EN 13141-1	Non-destructive	1	Not specified	Same design and size of air device
4.19	Bullet resistance	EN 1522	EN 1523	Destructive	1	Not specified	<sup>g</sup>
4.20	Explosion resistance	EN 13123-1 EN 13123-2	EN 13124-1 EN 13124-2	Destructive	1	Not specified	<sup>g</sup>
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191	Destructive	1	Not specified	-100 % of test specimen overall area
4.22	Behaviour between different climates	To be prepared	ENV 13420	Destructive	1	1,23 (±25%) m × 1,48 (-25%) m	All sizes
4.23	Burglar resistance	ENV 1627	ENV 1628 ENV 1629 ENV 1630	Destructive	See ENV 1627	Not specified	See ENV 1627

<sup>a</sup> In some cases supplementary information is given in the corresponding subclause, e.g. on references.

<sup>b</sup> Non-destructive test: Test specimen may be used for another test.  
Destructive test: Test specimen cannot be used for another test.

<sup>c</sup> Where detailed calculation of the heat loss from a specific building is required, the manufacturer shall provide accurate and relevant, calculated or tested thermal transmittance values (design values) for the size(s) in question.

<sup>d</sup> Provided that  $U_g$  (see EN 673)  $\leq 1,9 \text{ W}/(\text{m}^2 \cdot \text{K})$ , "Overall area  $\leq 2,3 \text{ m}^2$  <sup>c,d</sup>" is replaced by "All sizes<sup>c</sup>".

<sup>e</sup> Total solar energy transmittance (solar factor, g-value) and light transmittance.

<sup>f</sup> Manually operated windows only.

<sup>g</sup> Until relevant standards and/or guidelines are in place, undetermined conditions shall be agreed on by the manufacturer and the testing laboratory.

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### **E.2 Separate determination of characteristics for external pedestrian doorsets**

Separate determination of characteristics for external pedestrian doorsets shall be carried out in accordance with Table E.2.

Table E.2 — Separate determination of characteristics for external pedestrian doorsets

Clause	Characteristic	Classification standard <sup>a</sup>	Test or calculation standard <sup>a</sup>	Test type <sup>b</sup>	Number of test specimens	Size of test specimen	Range of direct application (providing similar design, see 3.4)
4.2	Resistance to wind load	EN 12210	EN 12211	Destructive	1	Not specified	-100 % of frame width and height of test specimen
4.5	Watertightness	EN 12208	EN 1027	Non-destructive	1	Not specified	-100 % to +50 % of test specimen overall area
4.6	Dangerous substances	As required by regulations					
4.7	Impact resistance	EN 13049	EN 13049	Destructive	1 or 2	Not specified	> Overall area of test specimen (infill)
4.8	Load-bearing capacity of safety devices	Threshold value	EN 948	Non-destructive	1	Not specified	-100 % of test specimen overall area
4.9	Height and width	Declared values					
<b>A1</b> 4.10	Ability to release	See EN 179, EN 1125, EN 1935, prEN 13633 and prEN 13637 <b>A1</b>					
4.11	Acoustic performance	Declared values	EN ISO 140-3 EN ISO 717-1	Non-destructive	1	Minimum approximately 0,9 m x 2,0 m	<sup>c</sup>
4.12	Thermal transmittance	Declared values	EN ISO 10077-1 or EN ISO 10077-1 and EN ISO 10077-2	Calculation	—	1,23 (±25%) m x 2,18 (±25%) m or 2,00 (±25%) m x 2,18 (±25%) m	Overall area <sup>d</sup> ≤ 3,6 m <sup>2</sup>
					—		Overall area <sup>d</sup> > 3,6 m <sup>2</sup>
			EN ISO 12567-1	Non-destructive	1	1,23 (±25%) m x 2,18 (±25%) m or 2,00 (±25%) m x 2,18 (±25%) m	Overall area <sup>d</sup> ≤ 3,6 m <sup>2</sup>
					1		Overall area <sup>d</sup> > 3,6 m <sup>2</sup>
4.13	Radiation properties (infill) <sup>e</sup>	Declared values	EN 410 EN 13363-1 EN 13363-2	—	—	—	All sizes
<b>A1</b> 4.14	Air permeability	EN 12207	EN 1026	Non-destructive	1	Not specified	<sup>c</sup>
			Annex I	Tabulated values	—	Not specified	All sizes <b>A1</b>
4.16	Operating forces <b>A1</b> deleted text <b>A1</b>	EN 12217	EN 12046-2	Non-destructive	1	Not specified	-100 % of test specimen overall area
4.17	Mechanical strength	EN 1192	EN 947 EN 948 EN 949 EN 950	Destructive or non-destructive (depending on result)	1	Not specified	-100 % of test specimen overall area

(Continued)

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**Table E.2 (concluded)**

Clause	Characteristic	Classification standard <sup>a</sup>	Test or calculation standard <sup>a</sup>	Test type <sup>b</sup>	Number of test specimens	Size of test specimen	Range of direct application (providing similar design, see 3.4)
4.18	Ventilation	Declared values	EN 13141-1	Non-destructive	1	Not specified	Same design and size of air device
4.19	Bullet resistance	EN 1522	EN 1523	Destructive	1	Not specified	<del>A1</del> f <del>A1</del>
4.20	Explosion resistance	EN 13123-1 EN 13123-2	EN 13124-1 EN 13124-2	Destructive	1	Not specified	<del>A1</del> f <del>A1</del>
4.21	Resistance to repeated opening and closing	EN 12400	EN 1191	Destructive	1	Not specified	-100 % of test specimen overall area
4.22	Behaviour between different climates	EN 12219	EN 1121	Destructive or non-destructive (depending on result)	1	1,23 (±25%) m x 2,18 (±25%) m	All sizes
4.23	Burglar resistance	ENV 1627	ENV 1628 ENV 1629 ENV 1630	Destructive	See ENV 1627	Not specified	See ENV 1627

<sup>a</sup> In some cases supplementary information is given in the corresponding subclause, e.g. on references.

<sup>b</sup> Non-destructive test: Specimen may be used for another test.  
Destructive test: Specimen cannot be used for another test.

<sup>c</sup> Weather stripping on four sides: - 100 % to + 50 % of test specimen overall area  
Weather stripping on three sides: - 100 % of test specimen overall area

<sup>d</sup> Where detailed calculation of the heat loss from a specific building is required, the manufacturer shall provide accurate and relevant, calculated or tested thermal transmittance values (design values) for the size(s) in question.

<sup>e</sup> Total solar energy transmittance (solar factor, g-value) and light transmittance.

~~A1~~ deleted text ~~A1~~

~~A1~~ f ~~A1~~ Until relevant standards and/or guidelines are in place, undetermined conditions shall be agreed on by the manufacturer and the testing laboratory.

## Annex F (informative)

### Optional selection of representative test specimens for windows

#### F.1 Guidelines for an optional selection of representative test specimens

Guidelines for an optional selection of representative test specimens are shown in Table F.1 which only applies to windows.

**Table F.1 — Optional selection of representative test specimens for windows**

Window types	Representative test specimens (most unfavourable)
Fixed window Single side hung casement (opening inwards or outwards) Tilt and turn Top hung casement Bottom hung casement	Tilt and turn window
Two or more side hung casements (opening inwards or outwards)	Window with the maximum number of side hung casement all opening inwards
Horizontal single/double sliding sash(es)	Window with horizontal double sliding sashes
Horizontal single/double tilting and sliding sashes	Window with horizontal double tilting and sliding sashes
Vertical single/double sliding sash(es)	Window with vertical double sliding sashes
Vertical/horizontal pivot casement	Window with vertical or horizontal pivot casement
Louvre window with intermediate vertical/horizontal axis	Window with the maximum number of louvres with intermediate vertical or horizontal axis
Sliding folding window	Window with the maximum number of folding casements
Top or side hung reversible window	Window with top or side hung reversible casement

The application of Table F.1 implies that the glazing and the weather stripping of the test specimens are the same as those of the corresponding group of window types and that the sash(es)/casement(s) are not provided with glazing bar(s). The test specimens should only be used for the determination of the following characteristics:



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- resistance to windload;
- watertightness;
- acoustic performance;
- thermal transmittance;
- radiation properties;
- air permeability.

Other characteristics should be determined by means of tests and/or calculation on the window type in question.

## **Annex G** (informative)

### **Examples of test sequences for optional combined determination of characteristics for windows**

#### **G.1 Optional test sequences**

If more than one characteristic is determined for one and the same test specimen, the optional test sequences in Table G.1 may apply.

NOTE In some cases applicants may find it advantageous to profit by multi-purpose test rigs and other apparatuses.

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**Table G.1 — Examples of optional test sequences for combined determination of characteristics for windows**

Characteristic	Classification standard	Test standard/ Test sequence	Test type <sup>a</sup>	Number of test specimens	Size of test specimen	Range of application
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Air permeability	EN 12207	EN 1026	Non-destructive	1	Not specified	see Table E.1
Watertightness	EN 12208	EN 1027	Non-destructive			see Table E.1

Air permeability	EN 12207	EN 1026	Non-destructive	1	Not specified	see Table E.1
Watertightness	EN 12208	EN 1027	Non-destructive			see Table E.1
Resistance to wind load	EN 12210	EN 12211	Destructive			see Table E.1

Operating forces <sup>b</sup>	EN 13115	EN 12046-1	Non-destructive	1	Not specified	see Table E.1
Mechanical strength	EN 13115	EN 14608 EN 14609 EN 12046-1	Destructive			see Table E.1

Operating forces <sup>b</sup>	EN 13115	EN 12046-1	Non-destructive	1	Not specified	see Table E.1
Resistance to repeated opening and closing	EN 12400	EN 1191 EN 12046-1	Destructive			see Table E.1

Ventilation	Declared value	EN 13141-1	Non-destructive	1	Not specified	see Table E.1
Air permeability	EN 12207	EN 1026	Non-destructive			see Table E.1

Other combinations	Possible, providing that any destructive test is carried out last. Table E.1 applies.					
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<sup>a</sup> Non-destructive test: Specimen may be used for another test.  
Destructive test: Specimen cannot be used for another test.

<sup>b</sup> Manually operated windows only.

## Annex H (normative)

### **A1** Selection, preparation, mounting and fixing of test specimen for testing roof windows in accordance with EN 13823 and EN ISO 11925-2 and field of direct application

#### H.1 EN 13823 (SBI test)

The test specimen consists of one finished roof window with the overall dimensions  $1,0_{-0,2}^0$  m  $\times$   $1,5_{-0,1}^0$  m. Handles can be removed from the test specimen, the hole(s) shall be covered by means of non-combustible material covering a minimum area of the test specimen.

The test specimen shall be mounted vertically into the long wing with the inner side facing the burner, see Figure H.1.

NOTE 1 The consequence, i.e. that the infill has a distance to the u-profile of the test rig, is considered acceptable.

The test specimen and ventilation devices, if any, shall be tested in closed position.

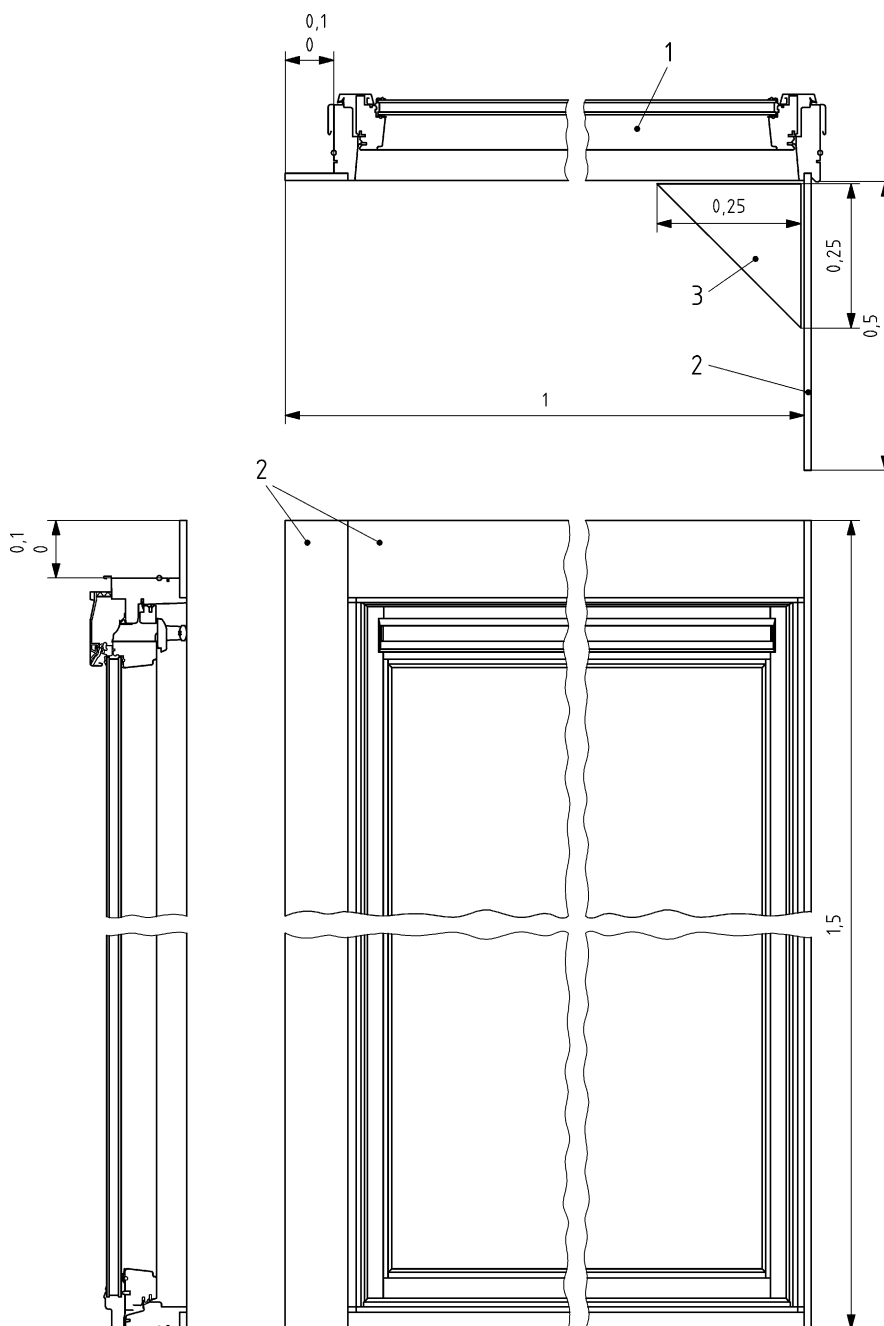
Remaining openings, if any, shall be filled out with non-combustible calcium silicate (CaSi)-board according to EN 13238.

The short wing shall consist of a non-combustible CaSi-board, see Figure H.1. The two wings shall be joined in a way which does not influence the test result.

NOTE 2 The principle is that surfaces which are invisible in the end use installation are covered with CaSi-board.

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Dimensions in metres



### Key

- 1 test specimen
- 2 calcium silicate board
- 3 burner

Figure H.1 — Test specimen and SBI test rig

## H.2 EN ISO 11925-2 (Single flame test)

Only the main components of a roof window:

- frame;

- casement/sash;
- infill (if combustible);

shall be subject to the single flame test, if not already classified by Commission Decision.

The test specimen (250 mm long) shall be cut out of the complete frame/casement/sash for a roof window similar to the SBI test specimen in a representative way.

Weather stripping shall not be included. The burner flame shall be applied to the surface(s) (surface flame exposure) visible from the inner side in end use installation. If required, also the outer side can be subjected to the burner flame.

In case of combustible infill, the test specimen (250 mm × 90 mm) shall be cut out of the complete infill similar to the infill of the SBI test specimen. The burner flame shall be applied to the visible inner side in end use installation by surface flame exposure. If required, also the outer side can be subjected to the burner flame.

The overall result of the single flame test is determined by the main component with the least favourable performance.

### H.3 Field of direct application

The test results (H.1 and H.2) are applicable to roof windows with:

- infill of any type of glass (except laminated glass);
- infill of the same or lower amount of the same combustible materials or of the same or higher reaction to fire classification according to EN 13501-1;
- weather stripping of the same material or material reaching the same or better reaction to fire classification.

Concerning the application rules for the casements/sashes and/or frames the following shall be applied:

- for wooden profiles: Test results from the lowest density of wood with highest exposed surface area are valid for all higher densities and lower exposed areas;
- for plastic profiles: The test result is valid for all other frames or sashes of the same material and with the same or lower unit mass per length;
- for all metallic profiles containing organic components use a test specimen made out of a frame with the highest amount of organic components. The test result is valid also for all other frames of the same material with lower amount of organic components made out of the same organic material;
- profiles made exclusively from materials classified as A1 according to EN 13501-1 need not to be tested;

NOTE The influence of gaskets will be checked by performing some tests before having the possibility to give correct advice how to deal with them.

- for organic finishes apply the rule that all finishes of the same generic organic material with lower mass per unit area are covered by the test result.  $\text{A}_1$

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**Annex I**  
(normative)

**A1** Classification of air permeability of products with described product characteristics

Classification of products with described product characteristics is shown in Table I.1. The classification is valid for all sizes.

**Table I.1 — Air permeability, classification of products with described product characteristics**

Product specification	Class according to 4.14 and according to EN 12207
External pedestrian doorsets with a continuous weather stripping under appropriate compression	1
Fixed and openable windows with a continuous weather stripping under appropriate compression	2
Fixed lights with seal or sealant to the infilling	3

**A1**

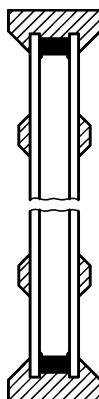
## Annex J (normative)

### A1 Thermal transmittance for windows with bars

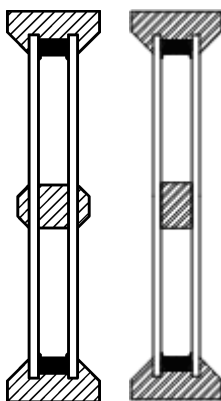
The thermal transmittance ( $U_w$ ) for windows with bar(s) can be calculated by increasing ( $\Delta U_w$ ) the thermal transmittance for the corresponding window without bar(s), determined in accordance with 4.12, as stated in Table J.1.

**Table J.1 — Thermal transmittance for windows with bars**

Figure	Description	$\Delta U_w$ W/m <sup>2</sup> K
J.1	Attached bar(s)	0,0
J.2	Single cross bar in the IGU with or without attached bars	0,1
J.3	Multiple cross bars in the IGU with or without attached multiple bars	0,2
J.4	Glazing bar (Georgian bar)	0,4



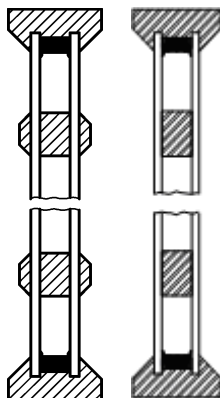
**Figure J.1 — Attached bar(s)**



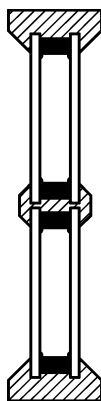
**Figure J.2 — Single cross bar in the IGU with or without attached bars**



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**Figure J.3 — Multiple cross bars in the IGU with or without attached multiple bars**



**Figure J.4 — Glazing bar (Georgian bar)**



## Annex ZA (informative)

### **Ⓐ** Clauses of this European Standard addressing the provisions of the EU Construction Product Directive

#### ZA.1 Scope and relevant characteristics

Parts of this European Standard have been prepared under Mandates M/101 Doors, windows, shutters, gates and related building hardware, amendments M/126, M/130 and M/122 Roof coverings, rooflights, roof windows and ancillary products, given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard, shown in this annex, meet the requirements of mandates given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the windows and external pedestrian doorsets covered by this annex for the intended uses indicated herein; reference shall be made to the information accompanying the CE marking symbol.

**WARNING — Other requirements and other EU Directives, not affecting the fitness of intended uses, can be applicable to the products falling within the scope of this European Standard.**

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction website on EUROPA (accessed through [http://ec.europa.eu/enterprise/construction/internal/dangsub/dangmain\\_en.htm](http://ec.europa.eu/enterprise/construction/internal/dangsub/dangmain_en.htm) ).

NOTE 3 Comparison between the information accompanying the CE marking symbol and the requirements on a specific building, provided by the specifier, will demonstrate whether or not the product is fit for use in that specific building (see Clause 5).

This annex establishes the conditions for the CE marking of the windows and external pedestrian doorsets intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as Clause 1 of this European Standard with regards to the products covered. It establishes the conditions for the CE marking of windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics intended for the use indicated below and shows the relevant clauses applicable (see Table ZA.1).

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**Table ZA.1 — Relevant clauses (performance characteristics)**

**Construction product:** Windows (including roof windows) and external pedestrian doorsets.

**Intended uses:** Communication in domestic and commercial locations.

CPD ER No.	Essential characteristics	Mandate			Requirement clauses in this European Standard	Levels and/or classes	Notes
		M/101		M/122			
		Windows	Doors	Roof windows			
2	External fire performance	N	N	Y	4.4.2	B <sub>ROOF</sub> (t1) - F <sub>ROOF</sub> (t1), B <sub>ROOF</sub> (t2) - F <sub>ROOF</sub> (t2), B <sub>ROOF</sub> (t3) - C <sub>ROOF</sub> (t3) - D <sub>ROOF</sub> (t3) - F <sub>ROOF</sub> (t3), B <sub>ROOF</sub> (t4) - C <sub>ROOF</sub> (t4) - D <sub>ROOF</sub> (t4) - E <sub>ROOF</sub> (t4) - F <sub>ROOF</sub> (t4)	
	Reaction to fire	N	N	Y	4.4.1	A1, A2, B, C, D, E, F	
	Resistance to fire (E + EI)	Y	Y	Y			
	Smoke leakage (S)	Y	Y	N			
	Self-closing (C)	N	Y (self-closing fire doors only)	N			
3	Watertightness <sup>a</sup>	Y	Y	Y	4.5 and 4.15		Technical classes of convenience
	Dangerous substances	Y (indoor impact only) <sup>c</sup>	Y (indoor impact only) <sup>c</sup>	N	4.6		
4	Resistance to wind load	Y	Y	Y	4.2		Technical classes of convenience
	Resistance to snow and permanent load	N	N	Y	4.3		[kN/m <sup>2</sup> ]
	Impact resistance	N	Y (glazed doors with injury risk only)	Y	4.7 and 4.24.1		Technical classes of convenience
	Load-bearing capacity of safety devices	Y <sup>b</sup>	Y <sup>b</sup>	Y <sup>b</sup>	4.8		Threshold
	Height	N	Y	N	4.9		[mm]
	Ability to release <sup>a</sup>	N	Y (locked doors in escape routes only) <sup>d</sup>	N	4.10 and 4.15		Technical classes of convenience

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5	Acoustic performance	Y (when required)	Y (when required)	Y	4.11		[dB]
6	Thermal transmittance <sup>a</sup>	Y (when required)	Y (when required)	Y	4.12 and 4.15		[W/(m <sup>2</sup> · K)]
	Radiation properties	Y (when required)	Y (when required)	Y	4.13		[dimensionless]
	Air permeability <sup>a</sup>	Y (when required)	Y (when required)	Y	4.14 and 4.15		Technical classes of convenience
Key Y = Yes N = No							
NOTE 1 The grey shaded areas are for the completeness of the Mandates. They are not covered by this European Standard, see Figure 1							
NOTE 2 The CWFT option for external fire performance, see Commission Decision 2000/553/EC, does not apply to roof windows covered by this European Standard.							
<sup>a</sup> Including durability. <sup>b</sup> Threshold levels have been identified by the technical specification writers. <sup>c</sup> Indoor impact means influence on the indoor air quality. <sup>d</sup> Mechanically secured in closed position.							

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (npd) in the information accompanying the CE marking (see ZA.3) may be used. The npd option may not be used, however, where the characteristic is subject to a threshold level.

**ZA.2 Procedure(s) for the attestation of conformity of products**

**ZA.2.1 System(s) of attestation of conformity**

The system(s) of attestation of conformity of the construction products indicated in Table ZA.1, in accordance with the EC Decision 1999/93/EC (OJEU L29 of 3.2.99) and EC Decision 1998/436/EC (OJEU L194 of 10.7.98) as amended, as given in Annex III of the Mandates M/101 and M/122 respectively, are shown in Table ZA.2 for the indicated intended use(s) and relevant level(s) or class(es).

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**Table ZA.2 — System(s) of attestation of conformity (AoC) for external pedestrian doorsets and windows (including roof windows)**

Products	Intended use(s)	Levels or class(es)	Attestation of conformity system(s)
Doors and gates (with or without related hardware)	Fire/smoke compartmentation and escape routes		1
	On escape routes		1
	Other declared specific uses and/or uses subject to other specific requirements, in particular noise, energy, tightness and safety in use		3
	For internal communication only		4
Windows (with or without related hardware)	Fire/smoke compartmentation and on escape routes		1
	Any other		3
Roof windows	For uses subject to resistance to fire regulations (e.g. fire compartmentation)	Any	3
	For uses subject to reaction to fire regulations <sup>a</sup>	A1(*), A2(*), B(*), C(*)	1
		A1(**), A2(**), B(**), C(**), D, E	3
		(A1 to E)(***), F	4
	For uses subject to external fire performance regulations <sup>b</sup>	Products requiring testing	3
		Products “deemed to satisfy” without testing (CWFT lists)	4
	For uses contributing to stiffening the roof structure	—	3
For uses other than those specified above	—	3	

NOTE The grey shaded areas are for the completeness of the Mandates. They are not covered by this European Standard, see Figure 1.

System 1: CPD Annex III.2.(i), without audit testing of samples

System 3: CPD Annex III.2.(ii), Second possibility

System 4: CPD Annex III.2.(ii), Third possibility

\* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)

\*\* Products/materials not covered by footnote (\*)

\*\*\* Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC, amended 2000/605/EC)

<sup>a</sup> Commission Decision 2000/147/EC and 2001/596/EC

<sup>b</sup> Commission Decision 2001/671/EC

Non-series production – Where a manufacturer produces an individual and non-series product(s) he may be permitted to declare conformity for certain characteristics (characteristics which do not have a special impact on health and safety) without the involvement of a notified body, see superscript <sup>x</sup> in Tables ZA.3a, ZA.3b and ZA.3c.

Cascading ITT - The ITT report(s) resulting from tests carried out by (a) notified laboratory(ies) may be used for CE marking purposes without the manufacturer (assembler) having to involve a Notified Body to check the product subject to the provisions given in 7.2.5. However the body with legal responsibility for affixing CE marking will have to be able to demonstrate that the product is functionally identical to the one used for the ITT report.

The attestation of conformity of windows (including roof windows) and external pedestrian doorsets shall be based on the evaluation of conformity procedures indicated in Table ZA.3a, Table ZA.3b and Table ZA.3c resulting from the application of the sub-clauses of this European Standard indicated therein.

Determination of characteristics coming under the control of the product certification body or being performed by a notified test laboratory under the responsibility of the manufacturer, as shown in Table ZA.3a and Table ZA.3b, by means of tabulated values or calculations may be carried out by the manufacturer, but the basis on which the determination is made shall be checked by the same body as indicated for that characteristic in Table ZA.3a and Table ZA.3b.

The testing laboratories notified for initial type testing for systems 1 and 3 should perform their testing using their own testing apparatus and personnel.

Tests might also be performed using the manufacturer's testing facilities, i.e. personnel and equipment, for testing in the framework of conformity attestation, provided that:

- the Notified Body agrees to use the manufacturer's testing facilities knowing that he retains the responsibility for performing the test;
- the manufacturer's facilities for testing are calibrated;
- the tests at the manufacturer's test facilities are performed in strict conformity with the testing procedure of the relevant test technical specifications;
- a Notified Body assists to the test carried out by the manufacturer's staff and decides whether to take into consideration the test results or not;

The use of the manufacturer's testing facilities does not mean sub-contracting. It does not give to the manufacturer the status of a Notified Body.

When a manufacturer's facilities are used by a Notified Body to perform all or part of testing this shall be noted in the test report.

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**Table ZA.3a — Assignment of evaluation of conformity tasks for products under AoC system 1**

Essential characteristics	Task under the responsibility of the product certification body (including sampling)									Task under the responsibility of the manufacturer (including sampling)								
	Continuous surveillance, assessment and approval of FPC by a notified body as described in 7.5			Initial inspection of factory and FPC by a notified body as described in 7.4			Initial type testing of the product by a notified body as described in 7.2			Testing of samples taken at the factory in accordance with a prescribed plan by the manufacturer as described in 7.6			Initial type testing of the product by the manufacturer as described in 7.2			FPC by the manufacturer as described in 7.3		
	W	D	RW	W	D	RW	W	D	RW	W	D	RW	W	D	RW	W	D	RW
Resistance to wind load <sup>x</sup>	-	N	N	-	N	N	-	Y	N	All characteristics related to reaction to fire (RW only) and ability to release (locked door on escape routes only)	-	N	Y	-	Y	Y		
Resistance to snow and permanent load	-	-	N	-	-	N	-	-	N		-	-	Y	-	-	Y		
Reaction to fire *	-	-	Y	-	-	Y	-	-	Y		-	-	N	-	-	Y		
External fire performance	-	-	N	-	-	N	-	-	Y		-	-	N	-	-	Y		
Water-tightness <sup>x</sup>	-	N	N	-	N	N	-	Y	Y		-	N	N	-	Y	Y		
Dangerous substances	-	N	-	-	N	-	-	Y			-	N	-	-	Y	-		
Impact resistance	-	N	N	-	N	N	-	Y	Y		-	N	N	-	Y	Y		
Load-bearing capacity of safety devices	-	N	N	-	N	N	-	Y	Y		-	N	N	-	Y	Y		
Height	-	N	-	-	N	-	-	N	-		-	Y	-	-	Y	-		
Ability to release	-	Y	-	-	Y	-	-	Y	-		-	N	-	-	Y	-		
Acoustic performance <sup>x</sup>	-	N	N	-	N	N	-	Y	Y		-	N	N	-	Y	Y		
Thermal transmittance <sup>x</sup>	-	N	N	-	N	N	-	Y	Y		-	N	N	-	Y	Y		
Radiation properties <sup>x</sup>	-	N	N	-	N	N	-	N	N		-	Y	Y	-	Y	Y		
Air permeability <sup>x</sup>	-	N	N	-	N	N	-	Y	Y	-	N	N	-	Y	Y			

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Key W: Windows FPC: Factory production control

D: Doors Y: The indicated task(s) shall be performed on the product/characteristics in question

RW: Roof windows N: The indicated task(s) need not be performed on the product/characteristic in question

-: The indicated task(s) is not applicable for the product/characteristic in question

\* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material), see Table ZA.2

<sup>x</sup> for non-series production these initial type tests (and/or, if relevant, the use of tabulated values and/or calculations) may be performed by the manufacturer

NOTE The term "Notified Body" is used only for organisations notified under article 18 of the CPD (certification bodies, inspection bodies and testing laboratories).



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**Table ZA.3b — Assignment of evaluation of conformity tasks for products under AoC system 3**

Essential characteristics	Tasks under the responsibility of the manufacturer (including sampling)								
	Initial type testing of the product by a notified body as described in 7.2			Initial type testing of the product by the manufacturer as described in 7.2			FPC by the manufacturer as described in 7.3		
	W	D	RW	W	D	RW	W	D	RW
Resistance to wind load <sup>x</sup>	Y	Y	N	N	N	Y	Y	Y	Y
Resistance to snow and permanent load	-	-	N	-	-	Y	-	-	Y
Reaction to fire**	-	-	Y	-	-	N	-	-	Y
External fire performance	-	-	Y	-	-	N	-	-	Y
Watertightness <sup>x</sup>	Y	Y	Y	N	N	N	Y	Y	Y
Dangerous substances	Y	Y	-	N	N	-	Y	Y	-
Impact resistance	-	N	Y	-	Y (glazed doors with injury risk only)	N	-	Y	Y
Load-bearing capacity of safety devices	Y	Y	Y	N	N	N	Y	Y	Y
Height	-	N	-	-	Y	-	-	Y	-
Acoustic performance <sup>x</sup>	Y	Y	Y	N	N	N	Y	Y	Y
Thermal transmittance <sup>x</sup>	Y	Y	Y	N	N	N	Y	Y	Y
Radiation properties <sup>x</sup>	N	N	N	Y	Y	Y	Y	Y	Y
Air permeability <sup>x</sup>	Y	Y	Y	N	N	N	Y	Y	Y
Key	W:	Windows	FPC: Factory production control						
	D:	Doors	Y: The indicated task(s) shall be performed on the product/characteristics in question						
	RW:	Roof windows	N: The indicated task(s) need not be performed on the product/characteristic in question						
			-: The indicated task(s) is not applicable for the product/characteristic in question						
			** Products/materials for which the reaction to fire performance is not susceptible to change during the production process						
			<sup>x</sup> for non-series products these initial type tests (and/or the use of tabulated values and/or calculations) may be performed by the manufacturer						
NOTE	The term “Notified Body” is used only for organisations notified under article 18 of the CPD (certification bodies, inspection bodies and testing laboratories).								

**Table ZA.3c — Assignment of evaluation of conformity tasks for products under AoC system 4**

Essential characteristics	Tasks under the responsibility of the manufacturer (including sampling)								
	Initial type testing of the product by a notified body as described in 7.2			Initial type testing of the product by the manufacturer as described in 7.2			FPC by the manufacturer as described in 7.3		
	W	D	RW	W	D	RW	W	D	RW
Resistance to wind load <sup>x</sup>	-	-	-	N	N	N	N	N	N
Resistance to snow and permanent load	-	-	-	-	-	N	-	-	N
Reaction to fire <sup>***</sup>	-	-	-	-	-	Y	-	-	Y
External fire performance <sup>xx</sup>	-	-	-	-	-	Y	-	-	Y
Water-tightness <sup>x</sup>	-	-	-	N	N	N	N	N	N
Dangerous substances	-	-	-	N	N	-	N	N	-
Impact resistance	-	-	-	-	N (glazed doors with injury risk only)	N	-	N	N
Load-bearing capacity of safety devices	-	-	-	N	N	N	N	N	N
Height	-	-	-	-	N	-	-	N	-
Acoustic performance <sup>x</sup>	-	-	-	N	N	N	N	N	N
Thermal transmittance <sup>x</sup>	-	-	-	N	N	N	N	N	N
Radiation properties <sup>x</sup>	-	-	-	N	N	N	N	N	N
Air permeability <sup>x</sup>	-	-	-	N	N	N	N	N	N
<p>Key    W:    Windows                D:    Doors                RW:   Roof windows</p> <p>FPC:    Factory production control</p> <p>      Y:    The indicated task(s) shall be performed on the product/characteristics in question</p> <p>      N:    The indicated task(s) need not be performed on the product/characteristic in question</p> <p>      -:    The indicated task(s) is not applicable for the product/characteristic in question</p> <p>      *** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC, amended 2000/605/EC).</p> <p>      <sup>x</sup> for non-series products these initial type tests (and/or the use of tabulated values and/or calculations) may be performed by the manufacturer</p> <p>      <sup>xx</sup> Products “deemed to satisfy” without testing (CWFT lists)</p>									
<p>NOTE    The term “Notified Body” is used only for organisations notified under article 18 of the CPD (certification bodies, inspection bodies and testing laboratories).</p>									

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### ZA.2.2 EC Certificate and declaration of conformity

In case of products under AoC system 1: When compliance with the conditions of this annex is achieved, the certification body shall draw up the EC Certificate of conformity, which entitles the manufacturer to affix the CE marking. This certificate shall include:

- name, address and identification number of the certification body;
- name and address of the manufacturer, or his authorised representative established within the European Economic Area (EEA) and place(s) of production, possibly in a coded format;
- description of the product (type, identification, use etc.);
- provisions to which the product conforms (i.e. Annex ZA of this European Standard);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);
- number of certificate;
- conditions and period of validity of the certificate, where applicable;
- name of, and position held by, the person empowered to sign the certificate.

In case of products under AoC system 3: When compliance with the conditions of this annex is achieved, the manufacturer or his agent established within the EEA shall draw up and retain the EC Declaration of conformity, which entitles the manufacturer to affix the CE marking. This declaration shall include:

- name and address of the manufacturer, or his authorised representative established within the EEA, and place(s) of production, possibly in a coded format;
- description of the product (type, identification, use etc.), and a copy of the information accompanying the CE marking;
- provisions to which the product conforms (i.e. Annex ZA of this European Standard);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);
- name and address of the notified laboratory(ies);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

In case of products under AoC system 4: When compliance with the conditions of this annex is achieved, the manufacturer or his agent established within the EEA shall draw up and retain the EC Declaration of conformity, which entitles the manufacturer to affix the CE marking. This declaration shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production, possibly in a coded format;
- description of the product (type, identification, use,...), and a copy of the information accompanying the CE marking;

- provisions to which the product conforms (i.e. Annex ZA of this European Standard), and a reference to the ITT report(s) and factory production control records (if appropriate);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The above mentioned declaration and certificate shall be presented in the language or languages accepted in the Member State in which the product is to be used.

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market, if he takes responsibility for CE marking.

NOTE 2 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

### ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EEC.

The following information shall accompany the CE marking symbol:

- identification number of the certification body (only for products under AoC system 1);
- name and registered address or identifying mark of the manufacturer;
- the last two digits of the year in which the marking symbol was affixed;
- number of the EC Certificate of conformity (if relevant);
- reference to this European Standard (A2 EN 14351-1:2006+A2:2016 A2);
- description of the product: generic name, material, dimensions etc. and intended use.

The CE marking symbol as well as any accompanying information shall be affixed visibly, legibly and indelibly on one or more of the following locations (hierarchy of manufacturer's preference):

- any suitable part of the product itself, providing the visibility is ensured when the leaves, casements or sashes are opened;
- on an attached label;
- on its packaging;
- on the accompanying commercial document(s) (e.g. a delivery note) or the manufacturers published technical specification(s).

Where the information is split, the location(s) lower in the hierarchy shall repeat that part of the information already placed higher up in the hierarchy.

Information on non-essential characteristic(s) as well as voluntary commercial quality marking may be placed on any location, on condition that the visibility and legibility of the CE marking is not

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reduced and provided that such information and/or marking is not likely to deceive third parties as to the meaning and form of the CE marking.

In addition to the information listed above, the following information shall accompany the CE marking symbol:

- information on those relevant essential characteristics listed in Table ZA.1 which are to be declared presented as:

declared values and, where relevant, levels and/or classes (including “pass” for pass/fail requirements, where necessary) for each essential characteristic as shown in Table ZA.1, taking into account “NOTE” in Table ZA.1;

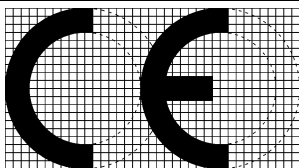
“No performance determined” for characteristics where this is relevant.

The “no performance determined” (npd) option may not be used where the characteristic is subject to a threshold level. Otherwise, the npd option may be used when and where the characteristic, for a given intended end use (see Clause 5) is not subject to regulatory requirements.

Figures ZA.1 and ZA.2 give an example of the information to be given, in order of priority, on the product and/or label and/or packaging and/or commercial documents.

Figure ZA.3 gives an example of the CE marking symbol with the information requested. All other information shall be given, in order of priority, on the product and/or label and/or packaging and/or commercial documents.

**EN 14351-1:2006+A2:2016 (E)**

 01234
AnyCo Ltd. PO Box 21, B-1050  10  01234-CPD-00234
<p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px;">A2</span> EN 14351-1:2006+A2:2016 <span style="border: 1px solid black; padding: 2px;">A2</span> </p> <p>Type XYZ- Roof window intended to be used in domestic and commercial locations</p> <p>Resistance to wind load – Test pressure: Class 5</p> <p>Resistance to wind load – Frame deflection: Class B</p> <p>Resistance to snow load: 4-16-4</p> <p>Reaction to fire: Euroclass D</p> <p>External fire performance: npd</p> <p>Watertightness – Non-shielded (A): Class 8A</p> <p>Watertightness – Shielded (B): npd</p> <p>Impact resistance: 450</p> <p>Load-bearing capacity of safety device: Threshold value</p> <p>Acoustic performance: 33 dB (-1; -5)</p> <p>Thermal transmittance: 1,7 W/m<sup>2</sup>K</p> <p>Radiation properties – Solar factor: 0,55</p> <p>Radiation properties – Light transmittance: 0,75</p> <p style="text-align: center;">Air permeability: Class 4</p>

CE marking, consisting of the CE marking symbol given in Directive 93/68/EEC

Identification number of certification body (only for products under AoC System 1).

Name and registered address of the manufacturer

Last two digits of the year in which the marking was affixed

Certificate number (only for products under AoC system 1)

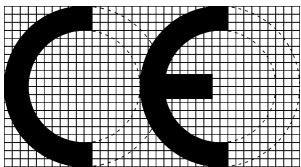
No. of European Standard with year of publication

Description of product

Information on essential characteristics (see Annex D)

**Figure ZA.1 — Example CE marking information for roof window**

**EN 14351-1:2006+A2:2016 (E)**

 01234
AnyCo Ltd. PO Box 21, B-1050  10  01234-CPD-00234
<p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px;">A2</span> EN 14351-1:2006+A2:2016 <span style="border: 1px solid black; padding: 2px;">A2</span> </p> <p>Type XYZ- External pedestrian doorset intended to be used in domestic and commercial locations</p> <p>Resistance to wind load – Test pressure: Class 2</p> <p>Resistance to wind load – Frame deflection: Class B</p> <p>Watertightness – Non-shielded (A): Class 5A</p> <p>Watertightness – Shielded (B): npd</p> <p>Height and width: 2 000 mm, 1 000 mm</p> <p>Acoustic performance: 32 dB (-1; -5)</p> <p>Thermal transmittance: 1,7 W/m<sup>2</sup>K</p> <p>Air permeability: Class 3</p>

CE marking, consisting of the CE marking symbol given in Directive 93/68/EEC

Identification number of certification body (only for products under AoC System 1).

Name and registered address of the manufacturer

Last two digits of the year in which the marking was affixed

Certificate number (only for products under AoC system 1)

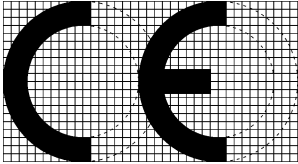
No. of European Standard with year of publication

Description of product

Information on essential characteristics

**Figure ZA.2 — Example CE marking information for external pedestrian doorset – Example 1**

**EN 14351-1:2006+A2:2016 (E)**

 01234	CE marking, consisting of the CE marking symbol given in Directive 93/68/EEC
AnyCo Ltd. PO Box 21, B-1050  10  01234-CPD-00234	Identification number of certification body (only for products under AoC System 1).  Name and registered address of the manufacturer  Last two digits of the year in which the marking was affixed  Certificate number (only for products under AoC system 1)
<b>EN 14351-1:2006+A2:2016</b>  Type XYZ- External pedestrian doorset intended to be used in domestic and commercial locations	No. of European Standard with year of publication  Description of product

**Figure ZA.3 — Example of CE marking information for external pedestrian doorset – Example 2**

In addition to any specific information relating to dangerous substances, the product shall also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE 1 European legislation without national derogations need not be mentioned.

NOTE 2 Affixing the CE marking symbol means, if a product is subject to more than one directive, that it complies with all applicable directives. **EN**



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## Annex ZB (informative)

### **A1** Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive Machinery 98/37/EC, amended by 98/79/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative Subclause 4.24.2.1 of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING** — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard. **A1**

## Annex ZC (informative)

### **A1** Relationship between this European Standard and the Essential Requirements of EU Directive 2006/95/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive Low Voltage 2006/95/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative Subclause 4.24.2.1 of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING** — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard. **A1**

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## Annex ZD (informative)

### **A1** Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive Machinery 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative Subclause 4.24.2.1 of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING** — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard. **A1**

## Bibliography

- [1] EN 572-9, *Glass in building — Basic soda lime silicate glass products — Part 9: Evaluation of conformity/Product standard*
- [2] EN 673, *Glass in building — Determination of thermal transmittance (U value) — Calculation method*
- [3] EN 1096-4, *Glass in building — Coated glass — Part 4: Evaluation of conformity/Product standard*
- [4] EN 1279-5, *Glass in building — Insulating glass units — Part 5: Evaluation of conformity*
- [5] EN 1748-1-2, *Glass in building - Special basic products - Borosilicate glasses — Part 1-2: Evaluation of conformity/Product standard*
- [6] EN 1748-2-2, *Glass in building — Special basic products — Glass ceramics — Part 2-2: Evaluation of conformity/Product standard*
- [7] EN 1873, *Prefabricated accessories for roofing — Individual roof lights of plastics — Product specification and test methods*
- [8] EN 12337-2, *Glass in building — Chemically strengthened soda lime silicate glass — Part 2: Evaluation of conformity/Product standard*
- A<sub>1</sub>**
- [9] EN 12608, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors — Classification, requirements and test methods **A<sub>1</sub>***
- [10] EN 13024-2, *Glass in building — Thermally toughened borosilicate safety glass — Part 2: Evaluation of conformity/Product standard*
- A<sub>2</sub>**
- [11] EN 13241, *Industrial, commercial, garage doors and gates — Product standard, performance characteristics **A<sub>2</sub>***
- [12] EN 13830, *Curtain walling — Product standard*
- [13] EN 14178-2, *Glass in building — Basic alkaline earth silicate glass products — Part 2: Evaluation of conformity/Product standard*
- [14] prEN 14351-2 (in course of preparation), *Windows and doors — Product standard, performance characteristics — Part 2: Internal pedestrian doorsets without resistance to fire and/or smoke leakage characteristics*
- A<sub>1</sub>** *deleted text **A<sub>1</sub>***
- [15] EN 14600, *Doorsets and openable windows with fire resisting and/or smoke control characteristics — Requirements and classification.*

**A<sub>2</sub>**

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- [16] EN 14963, *Roof coverings — Continuous rooflights of plastics with or without upstands — Classification, requirements and test methods*  $\overline{A_2}$

$\overline{A_2}$

- [17] EN 16034, *Pedestrian doorsets, industrial, commercial, garage doors and openable windows — Product standard, performance characteristics — Fire resisting and/or smoke control characteristics*  $\overline{A_2}$

$\overline{A_2}$

- [18] EN 16361, *Power operated pedestrian doors — Product standard, performance characteristics — Pedestrian doorsets, other than swing type, initially designed for installation with power operation*  $\overline{A_2}$

Staðlaráð Íslands er vettvangur hagsmunaaðila til að vinna að stöðlum og notkun staðla á Íslandi. Ráðið starfar á grundvelli laga um stöðlum.

Staðlaráð stendur fyrir námskeiðum og veitir ráðgjöf, upplýsingar og þjónustu um hvaðeina er lýtur að stöðlum og stöðlum. Jafnframt sér Staðlaráð um sölu staðla frá fjölmörgum staðlastofnunum.

Staðlaráð er fulltrúi Íslands í alþjóðlegu staðlasamtökunum ISO og IEC og evrópsku staðlasamtökunum CEN og CENELEC og ETSI og þátttakandi í norrænu stöðlunarsamstarfi INSTA.

#### Helstu verkefni eru:

- Umsjón með staðlagerð á Íslandi.
- Að aðhæfa og staðfesta þá staðla sem skylt er vegna aðildar Staðlaráðs að erlendum staðlasamtökum.
- Að greiða fyrir því að íslenskum stöðlum verði beitt í opinberri stjórn-sýslu og hjá einkaaðilum.
- Að starfrækja miðstöð stöðlunarstarfs á Íslandi sem þjónustar stofnanir, fyrirtæki, einstaklinga og samtök sem vilja nýta sér staðla.

Staðlaráð Íslands tekur ekki efnislega afstöðu til staðla og ákveður ekki hvað skuli staðlað. Ákvarðanir um það eru teknar af þeim sem eiga hagsmuna að gæta og þeir greiða fyrir verkefni.

#### Á vegum Staðlaráðs starfa fjögur fagstaðlaráð:

- Byggingarstaðlaráð (BSTR)
- Fagstaðlaráð í fiskimálum (FIF)
- Fagstaðlaráð í upplýsingatækni (FUT)
- Rafstaðlaráð (RST)

Á vegum Staðlaráðs starfa einnig fagstjórnir í gæðamálum og í véltækni.

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Það er einfalt og fyrirhafnarlítið að panta og finna staðla á netinu

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Íslenskir staðlar