



**BSI Standards Publication**

# **Performance of windows and doors**

Part 1: Classification for weathertightness and  
guidance on selection and specification

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### Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 16, an inside back cover and a back cover.

## Foreword

### Publishing information

This part of BS 6375 is published by BSI and came into effect on 1 January 2009. It was prepared by Subcommittee B/538/1, *Windows*, and Subcommittee B/538/2, *Doors*, under the authority of Technical Committee B/538, *Doors, windows, shutters, hardware and curtain walling*. A list of organizations represented on these committees can be obtained on request to their secretary.

### Supersession

This part of BS 6375 supersedes BS 6375-1:2004, which is withdrawn.

### Relationship with other publications

BS 6375 is published in three parts:

- Part 1: *Classification for weathertightness and guidance on selection and specification*;
- Part 2: *Specification for operation and strength characteristics*;
- Part 3: *Additional performance characteristics*.

It is related to the European product standard for windows and pedestrian doors, BS EN 14351<sup>1)</sup> (see also *Information about this document*).

### Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- revision of the foreword to align with Parts 2 and 3;
- clarification of the air permeability tests and requirements;
- tests previously required by PAS 23-1 for entrance doorsets have been included. It is expected that PAS 23-1 will be withdrawn.

BS 6375 has been prepared to provide advice on the selection of performance characteristics for windows and doorsets intended for the UK market. The full range of characteristics is also provided in the various parts of BS EN 14351.

BS EN 14351 is the harmonized European Standard for windows and doors and is the standard that has to be referenced if the product is to be CE marked. Not all the characteristics listed in BS EN 14351 are required for CE marking, and of those that are required, only those mandated (i.e. covered by national building regulations) in the UK need be declared.

The majority of characteristics identified in BS EN 14351 have a number of performance levels. BS 6375 provides guidance to the specifier and the manufacturer on an appropriate level for the UK market. This can be by a single value for a product characteristic or by a value for a particular service condition. For example, a doorset in a public building might need to meet a more severe level of performance for some characteristics than a doorset in a dwelling.

<sup>1)</sup> Only the first part of BS EN 14351 has been published to date. Part 2 (*Internal doors*) and Part 3 (*Resistance to fire and smoke*) are still in preparation.

Specifiers are not obliged to use a particular performance level but need to be aware that unnecessarily selecting a more severe performance level can incur a cost penalty out of proportion to the performance advantage.

BS EN 14351 and BS 6375 cover a range of products and characteristics and are therefore divided into parts. BS EN 14351 is divided into product groups and BS 6375 is divided into performance characteristics. Not all characteristics will be applicable to all product groups or to all end uses. In addition, BS 6375 may be used for product groups not covered by BS EN 14351.

BS 6375 does not identify a recommended performance level for any characteristic that is recommended in national regulations (e.g. U values for windows); these levels are subject to statute.

If a manufacturer wishes to declare a CE marked performance this has to be declared against the appropriate part of BS EN 14351.

Manufacturers wishing to CE mark products are advised to seek advice from the relevant national regulatory authority.

### **Presentation conventions**

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

*Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.*

### **Contractual and legal considerations**

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

**Compliance with a British Standard cannot confer immunity from legal obligations.**

## 1 Scope

BS 6375 is the national application document for BS EN 14351. This part of BS 6375 specifies the exposure categories related to test pressure levels for air permeability, watertightness and wind resistance for external windows and doorsets. It is applicable to all types of vertical windows and doorsets, and includes windows in which the opening lights are not fully framed, e.g. adjustable glass louvres. It is applicable to both factory-glazed and site-glazed products.

*NOTE Recommendations for the design and installation of patent glazing are given in BS 5516.*

The standard excludes patent glazing (see Note) and curtain walls that span across horizontal structural members of floors, but includes the opening lights within a vertical patent glazing or curtain walling system.

## 2 Normative references

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

BS 6399-2:1997, *Loading for buildings – Part 2: Code of practice for wind loads*

BS EN 1026, *Windows and doors – Air permeability – Test method*

BS EN 1027:2000, *Windows and doors – Watertightness – Test method*

BS EN 12207:2000, *Windows and doors – Air permeability – Classification*

BS EN 12208, *Windows and doors – Watertightness – Classification*

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

BS EN 12211, *Windows and doors – Resistance to wind load – Test method*

BS EN 14351 (all parts), *Windows and doors – Product standard, performance characteristics*<sup>2)</sup>

## 3 Terms and definitions

For the purposes of this part of BS 6375, the following terms and definitions apply.

### 3.1 design height ( $H$ )

*NOTE In the case of a dormer window, this is the building ridge height.*

maximum height of a wall in which a window or doorset occurs

### 3.2 doorset

*NOTE This is also known as a door assembly.*

complete unit, as installed, comprising door leaf, door frame, any associated side panels and/or top lights, and any operating hardware, locks and accessories

<sup>2)</sup> Only the first part of BS EN 14351 has been published to date. Part 2 (*Internal doors*) and Part 3 (*Resistance to fire and smoke*) are still in preparation.

*NOTE The “permanent” type provides continuous ventilation. The “controlled” type is adjusted to provide a range of ventilation.*

### 3.3 ventilation device

ventilator other than an opening light incorporated in a window or doorset

*NOTE Retention of water within the window or doorset system is not defined as leakage.*

### 3.4 water penetration

continuous or repeated wetting of the internal surface of the test specimen or parts which are not designed to be wetted when water drains back to external face  
[BS EN 1027]

### 3.5 weathertightness

performance in respect of air permeability, watertightness and wind resistance

### 3.6 wind load

peak gust wind pressure that can be expected on a surface of a building window or doorset

## 4 Exposure category and classification

*NOTE The classifications given in Table 1 are those suitable for the UK selected from BS EN 12207, BS EN 12208 and BS EN 12210.*

The exposure category of a window or doorset shall be classified in accordance with Table 1. For a window or doorset to be included in an exposure category, the test pressure for each relevant characteristic shall be attained or exceeded.

Doorsets that are tested and classified with a wind load greater than 1 200 shall be classified in accordance with BS EN 12207, BS EN 12208 and BS EN 12210.

## 5 Sequence of test

*NOTE A flow chart indicating the sequence of test is given in Annex B.*

The tests shall be performed on a single sample in the following sequence:

- a) air permeability (see Clause 6);
- b) watertightness (see Clause 7);
- c) resistance to wind – deflection measurement at pressure P1 (see Clause 8);
- d) resistance to wind – pulsating test to P2 pressure (see Clause 8);
- e) resistance to wind – safety test to pressure P3 (see Clause 8).

Table 1 Exposure categories and classifications

| UK exposure categories <sup>A), B)</sup> | Air permeability (see Clause 6) |                       | Watertightness (see Clause 7) |                       | Resistance to wind load (see Clause 8) |          |                  |                 |
|------------------------------------------|---------------------------------|-----------------------|-------------------------------|-----------------------|----------------------------------------|----------|------------------|-----------------|
|                                          | Class <sup>C)</sup>             | Maximum test pressure | Class                         | Maximum test pressure | Class <sup>D)</sup>                    | P1       | P2 <sup>E)</sup> | P3              |
| <b>Doorsets</b>                          |                                 |                       |                               |                       |                                        |          |                  |                 |
| 800 U                                    | Class 0                         | No test               | Class 0                       | No test               | Class A2                               | 800 Pa   | 400 Pa           | 1 200 Pa        |
| 800 X                                    | Class 1                         | 150 Pa                | Class 2A                      | 50 Pa                 | Class A2                               | 800 Pa   | 400 Pa           | 1 200 Pa        |
| 800                                      | Class 2                         | 300 Pa                | Class 3A                      | 100 Pa                | Class A2                               | 800 Pa   | 400 Pa           | 1 200 Pa        |
| 1 200                                    | Class 2                         | 300 Pa                | Class 3A                      | 100 Pa                | Class A3                               | 1 200 Pa | 600 Pa           | 1 800 Pa        |
| <b>Windows</b>                           |                                 |                       |                               |                       |                                        |          |                  |                 |
| 800                                      | Class 2                         | 300 Pa                | Class 3A                      | 100 Pa                | Class A2                               | 800 Pa   | 400 Pa           | 1 200 Pa        |
| 1 200                                    | Class 2                         | 300 Pa                | Class 3A                      | 100 Pa                | Class A3                               | 1 200 Pa | 600 Pa           | 1 800 Pa        |
| 1 600                                    | Class 2                         | 300 Pa                | Class 5A                      | 200 Pa                | Class A4                               | 1 600 Pa | 800 Pa           | 2 400 Pa        |
| 2 000                                    | Class 2                         | 300 Pa                | Class 5A                      | 200 Pa                | Class A5                               | 2 000 Pa | 1 000 Pa         | 3 000 Pa        |
| 2 000 +                                  | Class 2                         | 300 Pa                | Class 7A                      | 300 Pa                | Class AE                               | (xxxx)   | (xxxx) ×<br>0.5  | (xxxx) ×<br>1.5 |

For the purpose of selecting the appropriate exposure category the following procedure shall be used.

- Calculate the wind load for the given location (see Annex A).
- Select the exposure category (see Table 1) equal to or exceeding the determined wind load.

**NOTE** Specimens tested with wind load above Class 5 are classified Class E xxxx – where xxxx is the actual test pressure P1 (e.g. when P1 = 2 350 Pa this is classified as Class E 2 350, etc.).

- UK exposure category is specified by the design wind load, calculated in accordance with Annex A.
- Products designed to meet the accessibility requirements of UK building regulations are unlikely to exceed category 800 X.
- Air permeability test pressures above Class 2 (up to 600 Pa) are available when stringent levels of performance are required, for example when exceptionally airtight windows or doorsets are necessary, as in air-conditioned buildings.
- Combination of test pressure and frame deflection (see BS EN 12210).
- This pressure having been repeated 50 times.

## 6 Test for air permeability

**NOTE** To establish air leakage through the window or doorset and controllable vent (in the closed position), the air permeability test can be repeated with the vent closed but not taped. This information should be included in the test report.

**6.1** For classification purposes, permanent and controlled ventilation devices (including letterplates), if any, shall be taped over except when it is required to determine the amount of air flow through such devices.

**6.2** The specimen shall be tested in accordance with BS EN 1026 and the test shall be conducted with both positive and negative pressures. The test result, defined as the numerical average of the positive and negative air permeability values (m<sup>3</sup>/h) at each pressure step, shall be expressed and classified in accordance with BS EN 12207. Classification levels applicable in the UK shall be in accordance with Table 1.

**6.3** The air flow passing through the specimen, at each pressure difference applied in accordance with BS EN 1026, shall be expressed as an average leakage rate per metre length of opening joint visible on the inner face of the specimen and average leakage per metre square of window area.