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BS 6375-2:2009

BSI British Standards

Performance of windows and doors –

Part 2: Classification for operation and strength characteristics and guidance on selection and specification

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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This part of BS 6375 supersedes BS 6375-2:1987, which is withdrawn.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[1)] (see also *Information about this document*).

Information about this document

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

- The standard now refers to European test methods and classes of performance. It identifies those performance classes that are applicable to the UK market.
- Tests previously required by PAS 23-1 for entrance doorsets have been included, although some minor changes to acceptable performance levels have been made. It is expected that PAS 23-1 will be withdrawn.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.

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1) 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.

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.

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.

This part of BS 6375 identifies in separate clauses the requirements that are applicable to windows and those that are applicable to doorsets.

Presentational 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.

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1 Scope

BS 6375 is the national application document for BS EN 14351 and identifies the characteristics and classes of performance appropriate for windows and internal/external pedestrian doorsets intended for the UK. It is applicable to both factory-glazed and site-glazed products.

This part of BS 6375 specifies performance requirements for the operation and strength of manually operated windows and internal/external pedestrian doorsets in their fully finished condition.

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 6100 (all parts), *Building and civil engineering terms – Vocabulary*

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

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

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

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

BS EN 1191, *Windows and doors – Resistance to repeated opening and closing – Test method*

BS EN 1192:2000, *Doors – Classification of strength requirements*

BS EN 12046-1, *Operating forces – Test method – Part 1: Windows*

BS EN 12046-2, *Operating forces – Test method – Part 2: Doors*

BS EN 12217:2003, *Doors – Operating forces – Requirements and classification*

BS EN 12400:2002, *Windows and pedestrian doors – Mechanical durability – Requirements and classification*

BS EN 12519, *Windows and pedestrian doors – Terminology*

BS EN 13049:2003, *Windows – Soft and heavy body impact – Test method, safety requirements and classification*

BS EN 13115:2001, *Windows – Classification of mechanical properties – Racking, torsion and operating forces*

BS EN 14351 (all parts), *Windows and doors – Product standard, performance characteristics* [2)]

BS EN 14608, *Windows – Determination of the resistance to racking*

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

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2) 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.

3 Terms and definitions

For the purposes of this part of BS 6375, the terms and definitions given in BS EN 12519, BS EN 14351-1, BS 6100 and the following apply.

3.1 safety device

hardware fitted to a window or doorset to provide a secure or safe position for the casement, sash or door leaf when in the open position

NOTE Examples include retaining and reversing catches, restrictors, and fixing devices for cleaning procedures.

4 General

The performance characteristics and requirements for windows and pedestrian doorsets shall be determined and expressed in accordance with Clause **5** or Clause **6** as appropriate. The characteristics identified in these clauses shall be selected according to the end-use requirements.

NOTE 1 The required classifications are summarized in Annex A.

NOTE 2 Not all characteristics are necessary for every product or end-use situation. Characteristics should only be selected where the end-use situations make it necessary.

NOTE 3 The order in which these characteristics are listed is not significant except that it maintains the order in which the characteristics are identified in BS EN 14351.

NOTE 4 All the possible performance levels are given in BS EN 14351.

NOTE 5 BS EN 14351 requires manufacturers to provide handling, installation, maintenance and care instructions with their products to ensure that all those characteristics required of a product are achieved.

5 Performance characteristics and requirements for windows

5.1 Operating forces

When tested in accordance with BS EN 12046-1, the declared performance achieved by the window shall not exceed the values specified in BS EN 13115:2001, Class 1 for the operating forces shown in Table 1.

Table 1 **Operating forces for windows**

Operation	**Maximum values for Class 1 specified in BS EN 13115:2001**	
	Force	**Torque**
	N	N·m
Lever handle	100	10
Finger operation	50	5
Movement of casement or sash	100	—

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5.2 Mechanical strength

NOTE 1 The tests specified in this subclause may be carried out independently but are grouped together for classification purposes.

NOTE 2 Traditionally Class 3 has been successfully applied in the UK.

5.2.1 Resistance to static torsion

NOTE This test simulates an attempt to release a jammed sash.

When tested in accordance with BS EN 14609 for resistance to static torsion, the window shall meet the requirements of Class 3 as defined by BS EN 13115:2001.

5.2.2 Racking

NOTE This test simulates any accidental vertical load applied to an open casement.

When tested in accordance with BS EN 14608 for racking, the window shall meet the requirements of Class 3 as defined by BS EN 13115:2001.

5.3 Load-bearing capacity of safety devices

NOTE This requirement is applicable only to windows that are fitted with a safety device.

When fitted in accordance with the manufacturer's instructions and tested in accordance with BS EN 14609 but with the safety device engaged, safety devices shall be capable of achieving the performance requirements given in BS EN 14351, when applied to the casement or sash in the most unfavourable position and/or direction.

5.4 Impact resistance

The recommended class for impact resistance for the UK is Class 0. If a higher class is declared, the window shall be tested in accordance with BS EN 13049 and classified in accordance with Table 2.

NOTE 1 There are six classes of performance for this test, including a Class 0, but to date there is no experience in the UK of the effect of this test on windows, nor has any need for such a test been previously identified.

NOTE 2 This test is used to assess the safe fixing of glass or other fragmental material in a window intended for use at a level where protection is required from falling through to a lower level, e.g. windows at ground level externally providing light to a basement.

NOTE 3 In view of the window's intended use (see Note 2) it might be necessary to carry out the test from both sides.

Table 2 **Impact resistance for windows**

Dimensions in millimetres

Classification in BS EN 13049:2003	Drop height
Class 0	0
Class 1	200
Class 2	300
Class 3	450
Class 4	700
Class 5	950

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5.5 Resistance to repeated opening and closing

NOTE For a typical domestic window opened twice a day, the 10 000 cycle test, referred to in Class 2, is equivalent to approximately 15 years' use.

When tested in accordance with BS EN 1191, the declared performance achieved by the window shall be not less than the 10 000 cycles as specified in BS EN 12400:2002 for Class 2 for repeated opening and closing.

6 Performance characteristics and requirements for external pedestrian doorsets

6.1 Category of duty

Doorsets shall be assigned a category of duty according to their intended end-use.

NOTE 1 Doorsets are employed in a range of situations, in buildings varying from entrance doors to shops, where little incentive to exercise care exists. To facilitate doorset performance selection, four classes of duty have been identified (see Table 3), against each of which the suggested level of performance has been given relative to each performance characteristic.

NOTE 2 Where an enhanced security characteristic (e.g. PAS 24) is required, the performance levels identified in this standard might be different. Reference should be made to the enhanced security standard for the appropriate levels of performance.

Table 3 **Categories of use for the UK** [A)]

UK category of use	UK description of typical use
Light	Secondary external doorsets to dwellings
Medium	External doorsets to dwellings, providing primary access Office doorsets providing access to areas not visited by members of the public and school classrooms [B)]
Heavy	Doorsets for shops, hospitals wards and other buildings which provide access to designated public areas
Severe	Doorsets for stockrooms, school and hospital corridors etc. commonly opened by driving trolleys against them

[A)] Users should be careful in their selection of class. If a particular use is not specifically mentioned, specifiers should take advice from manufacturers as to the best available category.

[B)] For schools, refer to the DCSF publication *Standard specification, layout and dimensions – Internal doorsets in schools* [1].

6.2 Operating forces

NOTE Limiting finger torque values in BS EN 12217 can be excessive. Until a revision has taken place they should not be applied in the UK.

When tested in accordance with BS EN 12046-2, the doorset shall be classified in accordance with BS EN 12217 and the performance achieved shall not exceed the values specified for Class 1 for external doorsets and Class 2 for internal doorsets in Table 4.

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Table 4 **Operating forces for doorsets**

Operation	Maximum values for classes specified in BS EN 12217:2003			
	Class 1 (external doorsets)		Class 2 (internal doorsets)	
	Force	Torque	Force	Torque
	N	N·m	N	N·m
Closing or motion	75	—	50	—
Hand operation	100	10	50	5
Finger [A)] operation	20	5	10	2.5

[A)] Design is usually a key or small knob.

6.3 Mechanical strength

NOTE The following series of tests can be carried out independently but are grouped together for classification purposes. Only one class is acceptable in each case, based on the proposed category of use (see Table 5).

6.3.1 Vertical load

When tested in accordance with BS EN 947, the doorset shall be classified in accordance with BS EN 1192. The classification achieved shall be suitable for the required UK category of duty, as shown in Table 5.

Table 5 **Mechanical strength classes**

Classification in BS EN 1192:2000	UK category of duty
Class 0	—
Class 1	Light
Class 2	Medium
Class 3	Heavy
Class 4	Severe

6.3.2 Static torsion

When tested in accordance with BS EN 948, the doorset shall be classified in accordance with BS EN 1192. The classification achieved shall be suitable for the required UK category of duty, as shown in Table 5.

6.3.3 Soft and heavy body impact

When tested in accordance with BS EN 949, the doorset shall be classified in accordance with BS EN 1192. The classification achieved shall be suitable for the required UK category of duty, as shown in Table 5.

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6.3.4 Hard body impact

When tested in accordance with BS EN 950, the doorset shall be classified in accordance with BS EN 1192. The classification achieved shall be suitable for the required UK category of duty, as shown in Table 5.

6.4 Load-bearing capacity of safety devices

NOTE This requirement is applicable only to doorsets that are fitted with a safety device.

When fitted in accordance with the manufacturer's instructions and tested in accordance with BS EN 948 but with the safety device engaged, safety devices shall be capable of achieving the performance requirements given in BS EN 14351, when applied to the door leaf in the most unfavourable position and/or direction.

6.5 Resistance to repeated opening and closing

NOTE On each cycle for external doorsets, the operating mechanism should be activated to its full weathering performance position.

When tested in accordance with BS EN 1191, the doorset shall be classified in accordance with BS EN 12400. The classification achieved shall be suitable for the required UK category of duty, as shown in Table 6.

Table 6 **Repeated opening and closing** [A)]

Classification in BS EN 12400:2002	UK category of duty
Class 0	—
Class 1	Light
Class 2	
Class 3	
Class 4	Medium
Class 5	
Class 6	Heavy
Class 7	Severe
Class 8	

[A)] For fire doorsets fitted with self-closing devices, reference should be made to BS EN 14600 (see BS 6375-3), which contains a different proposed category of use selection. It is hoped to clarify this and provide further advice before the publication of prEN 14351-3, which refers to BS EN 14600. Table 7 shows the categories and performance levels from BS EN 14600.

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Table 7 **Repeated opening and closing cycles for fire doors with self-closing devices – Categories of use from BS EN 14600**

BS EN 14600 examples of intended use	BS EN 14600:2005 category of duty
No performance determined	C0
Normally held open	C1
Low frequency of use for those with high incentive to exercise care such as doorsets to private residences and large industrial and commercial doorsets	C2
Medium frequency of use primarily by those with some incentive to exercise care	C3
High frequency of use by public with little incentive to exercise care	C4
Subject to frequent use	C5

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Annex A (informative) Summary of classifications

The test methods, classification standards and classes for windows covered by this British Standard are summarized in Table A.1. Similar information for doorsets covered by this British Standard is summarized in Table A.2.

Table A.1 **Summary of classification for windows**

Characteristic	Test method	Classification standard	Class for all windows
Operating forces for windows	BS EN 12046-1	BS EN 13115:2001	Class 1
Resistance to static torsion	BS EN 14609	BS EN 13115:2001	Class 3
Racking	BS EN 14608	BS EN 13115:2001	Class 3
Load-bearing capacity of safety devices	BS EN 14609	BS EN 14351	350 N threshold value
Impact resistance	BS EN 13049	BS EN 13049	Class 0
Resistance to repeated opening and closing	BS EN 1191	BS EN 12400:2002	Class 2

Table A.2 **Summary of classification for doorsets**

Characteristic	Test method	Classification standard	Class for doorsets			
			Light	Medium	Heavy	Severe
Operating forces for doorsets	BS EN 12046-2	BS EN 12217	Class 1 for external doorsets Class 2 for internal doorsets			
Vertical load	BS EN 947	BS EN 1192	Class 1	Class 2	Class 3	Class 4
Static torsion	BS EN 948	BS EN 1192	Class 1	Class 2	Class 3	Class 4
Soft and heavy body impact	BS EN 949	BS EN 1192	Class 1	Class 2	Class 3	Class 4
Hard body impact	BS EN 950	BS EN 1192	Class 1	Class 2	Class 3	Class 4
Load-bearing capacity of safety devices	BS EN 948	BS EN 14351	350 N threshold value			
Resistance to repeated opening and closing	BS EN 1191	BS EN 12400	Class 1, 2 or 3	Class 4 or 5	Class 6	Class 7 or 8

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Bibliography

Standards publications

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BS 6375-1, *Performance of windows and doors – Part 1: Classification for weathertightness and guidance on selection and specification*

BS 6375-3, *Performance of windows and doors – Part 3: Classification for additional performance characteristics and guidance on selection and specification*

PAS 23-1, *General performance requirements for door assemblies – Part 1: Single leaf, external door assemblies to dwellings*

PAS 24, *Enhanced security performance requirements for door assemblies – Single and double leaf, hinged external door assemblies to dwellings*

BS EN 14600:2005, *Doorsets and openable windows with fire resisting and/or smoke control characteristics – Requirements and classification*

Other publications

[1] DEPARTMENT FOR CHILDREN, SCHOOLS AND FAMILIES. *Standard specification, layout and dimensions – Internal doorsets in schools*. DCSF 01001 2007. London: Crown Copyright, 2008. ISBN 978 1 84775 088 4.

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