

Plastics windows made from unplasticized polyvinyl chloride (PVC-U) extruded hollow profiles — Specification

ICS 91.060.50

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/1, Windows, upon which the following bodies were represented:

- Association of Builders' Hardware Manufacturers
- Building Research Establishment (BRE)
- British Plastics Federation
- British Wood Preserving and Damp-proofing Association
- British Woodworking Federation
- Centre for Window and Cladding Technology
- Construction Fixings Association
- Consumer Policy Committee of BSI
- Council for Aluminium in Building
- Flat Glass Manufacturers' Association
- Glass and Glazing Federation
- Guild of Architectural Ironmongers
- Health and Safety Executive
- LHC Building Components and Services
- NHBC National House-building Council
- Royal Institute of British Architects
- Security Facilities Executive
- Society of Chief Architects of Local Authorities
- Steel Window Association
- Timber Research and Development Association
- Co-opted member

This British Standard, having been prepared under the direction of the Sector Policy and Strategy Committee for Building and Civil Engineering, was published under the authority of the Standards Policy and Strategy Committee on 8 March 2002

© BSI 28 September 2004

First published March 1991
Second edition March 2002

The following BSI references relate to the work on this British Standard:
Committee reference B/538/1
Draft for comment 99/107861 DC

ISBN 0 580 37427 0

Amendments issued since publication

Amd. No.	Date	Comments
15107	17 August 2004	See foreword
15366 Corrigendum No. 1	28 September 2004	Implementation of parts of Amendment No. 1 previously omitted

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Abbreviations for window types and handing	3
5 Materials	8
6 Welds	8
7 Mechanical joints (mullion and transom joints)	9
8 Colour consistency	9
9 Construction	9
10 Glazing	10
11 Security	10
12 Safety	10
13 <i>Deleted</i>	10
14 Weathertightness	10
15 Operation and strength	11
16 Whole window U-value	11
17 Marking	11
Annex A (normative) Weld test	12
Annex B (normative) Mechanical joint tests	14
Annex C <i>Deleted</i>	18
Annex D <i>Deleted</i>	18
Annex E (informative) Evaluation of conformity	18
Annex F (informative) Durability and recycling	19
Bibliography	21
Figure 1 — Window types and handing	4
Figure 2 — Illustrations of window types and handing for work drawings	7
Figure A.1 — Apparatus for weld test	13
Figure B.1 — Test pieces for additional tests	15
Figure B.2 — Test pieces for the watertightness test	16
Figure B.3 — Thermal stress test	16
Figure B.4 — Arrangement for torsion test	17
Figure B.5 — Torsion test loading cycle	17
Table 1 — Exposure categories	11

Foreword

This British Standard has been prepared by Subcommittee B/538/1. It supersedes BS 7412:1991, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**. Tags indicating changes to text carry the number of the amendment. For example, text altered by amendment no. 1 is indicated by **A1** **A1**.

This edition of the standard has been brought up to date for aspects relating to mechanical joints, security, thermal performance, evaluation of conformity, and durability and recycling. Requirements for T-joints are included in this edition.

The requirements for raw materials and properties of the finished profile for white PVC-U extruded hollow profiles are specified in BS 7413.

Annex A and Annex B are normative. Annex E and Annex F are informative.

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 does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 21 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

1 Scope

This British Standard specifies requirements for the materials, including glass and glazing, construction, security, safety, weathertightness, and operation and strength performance of new windows made from PVC-U extruded hollow profiles conforming to BS 7413, up to the point of installation of the windows provided the windows have been handled and stored in accordance with the manufacturer's instructions.

This British Standard applies to windows manufactured from PVC-U hollow profiles incorporating fusion welded corner joints. It applies to the following window types, in multi-light or composite form:

- a) hinged: side hung (open in or out), top hung (open out), bottom hung (open in), tilt and turn or turn before tilt;
- b) projecting: side hung (open in or open out) and top hung (open out or reversible);
- c) pivoted: horizontal and vertical (hung centrally or off-centre) including reversible;
- d) sliding: horizontal and vertical;
- e) side hung: fully reversible;
- f) fixed light.

It is applicable to windows in which any frame member is not longer than 3 m. It does not apply to curtain walls that span across horizontal structural members of floors but is applicable to windows within a curtain walling system.

2 Normative references

The following normative documents contain provisions, which through reference in this text constitute provisions of the British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 952-1, *Glass for glazing — Part 1: Classification*.

BS 952-2, *Glass for glazing — Part 2: Terminology for work on glass*.

A1 References deleted **A1**

BS 5713, *Specification for hermetically sealed flat double glazing units*.

BS 6100-1.0, *Glossary of building and civil engineering terms — Part 1: General and miscellaneous — Subsection 1.0: General*.

BS 6100-1.3.5, *Glossary of building and civil engineering terms — Part 1: General and miscellaneous — Subsection 1.3: Parts of construction works — Subsection 1.3.5: Doors, windows and openings*.

BS 6100-1.3.6, *Glossary of building and civil engineering terms — Part 1: General and miscellaneous — Subsection 1.3: Parts of construction works — Subsection 1.3.6: Jointing products, builders' hardware and accessories*.

BS 6100-1.5.1, *Glossary of building and civil engineering terms — Part 1: General and miscellaneous — Subsection 1.5: Operations; associated plant and equipment — Subsection 1.5.1: Co-ordination of dimensions; tolerances and accuracy*.

BS 6100-1.6, *Glossary of building and civil engineering terms — Part 1: General and miscellaneous — Subsection 1.6: Persons*.

BS 6262, *Code of practice for glazing of buildings*.

A1 BS 6375-1:2004, *Performance of windows — Part 1: Classification for weathertightness (including guidance on selection and specification)*. **A1**

BS 6375-2:1987, *Performance of windows — Part 2: Specification for operation and strength characteristics*.

BS 7413:2002, *Unplasticized polyvinyl chloride (PVC-U) profiles for windows and doors — Specification*.

A1 BS 7950:1997, *Specification for enhanced security performance of casement and tilt/turn windows for domestic applications*. **A1**

BS EN 515, *Aluminium and aluminium alloys — Wrought products — Temper designations*.

BS EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition.*

BS EN 573-4, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 4: Forms of products.*

BS EN 755 (all parts), *Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles.*

BS EN 1670:1998, *Building hardware — Corrosion resistance — Requirements and test methods.*

BS EN 10088-2, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip for general purposes.*

BS EN 10142, *Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming — Technical delivery conditions.*

BS EN 12020-1, *Aluminium and aluminium alloys — Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 — Part 1: Technical conditions for inspection and delivery.*

BS EN 12020-2, *Aluminium and aluminium alloys — Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 — Part 2: Tolerances on dimensions and form.*

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 ISO 105-A01:1996, *Textiles — Tests for colour fastness — Part A01: General principles of testing.*

BS EN ISO 4042, *Fasteners — Electroplated coatings.*

BRITISH PLASTICS FEDERATION. BPF WG 323/1: October 1991. *Code of practice for the reinforcement of high impact modified PVC-U windows and doors*¹⁾.

BRITISH PLASTICS FEDERATION. BPF WG 345/1: November 1993. *Gaskets and weatherstrips for windows, doors and curtain walling — Part 1: Requirement, classification and methods of test for gaskets co-extruded beads, weatherstrips and cellular adhesive tapes*¹⁾.

BRITISH PLASTICS FEDERATION. BPF WG 355/1: June 1996. *Infill panels for doors and windows*¹⁾.

BRITISH PLASTICS FEDERATION. BPF WG 363/1: February 2001. *Specification and guidelines for the selection and application of fasteners for the manufacture of plastics windows and doors*¹⁾.

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in BS 6100-1.0, BS 6100-1.3.5, BS 6100-1.3.6, BS 6100-1.5.1 and BS 6100-1.6 and the following apply.

3.1

casement

framed opening light that is hinged or pivoted

3.2

window fastening

component that is used to secure separate members of a window assembly to each other, to secure an item of hardware to a window member, or to secure a completed window assembly into the structure of a building

3.3

glazing gasket

plastic or synthetic rubber member used between the glass and the frame and/or the glass and glazing bead

3.4

window hardware

any fitting attached to the window, which is used to operate and/or secure it

¹⁾ Available from: British Plastics Federation, 6 Bath Place, Rivington Street, London EC2A 3JE
(Tel: 020 7457 5000) www.bpf.co.uk

3.5**multi-light window**

window incorporating opening and/or fixed lights within one perimeter frame

3.6**sash**

framed opening light that slides

3.7**switch barrier**

device that prevents a tilt and turn window from engaging in the tilt mode and the turn mode at the same time

3.8**ventilation device**

ventilator other than an opening light incorporated into a window

NOTE A permanent ventilation device provides continuous ventilation. A controlled device is closeable and may be adjusted to provide ventilation.

3.9**weatherstrip**

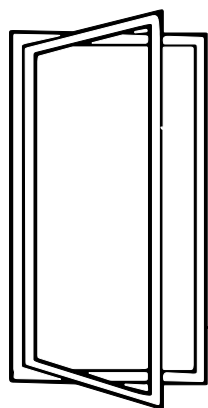
strip of resilient material designed to reduce air infiltration and water penetration

4 Abbreviations for window types and handing

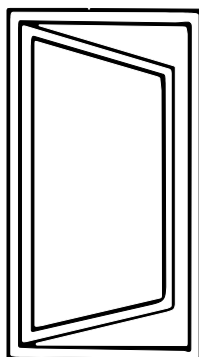
NOTE Window types and examples of handing are shown in Figure 1 and Figure 2.

For the purposes of this British Standard the following abbreviations apply for window types and handing:

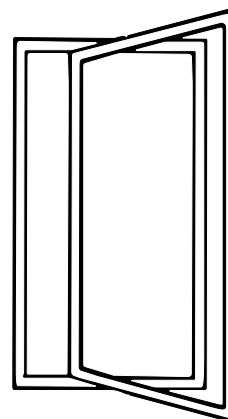
F	fixed light
SH	side hung
TH	top hung
BH	bottom hung
VP	vertical pivot
HP	horizontal pivot
HR	horizontal pivot reversible
VR	vertical pivot reversible
TP	projected top hung
SP	projected side hung
HS	horizontal slider
VS	vertical slider
TT	tilt and turn
TBT	turn before tilt
RH	right hand
LH	left hand



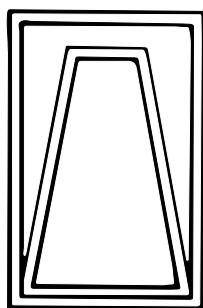
Side hung left hand open out



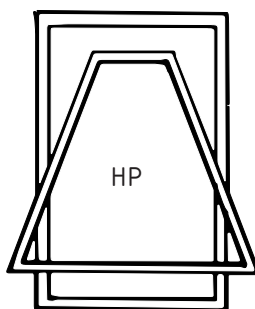
Side hung left hand open in



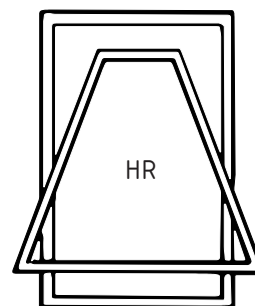
Projecting side hung left hand



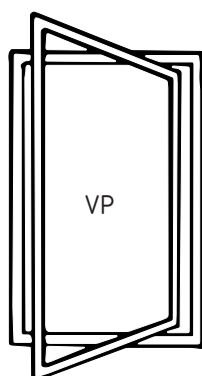
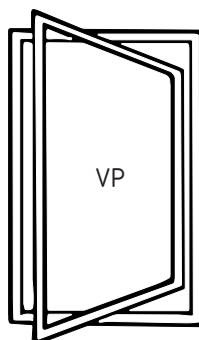
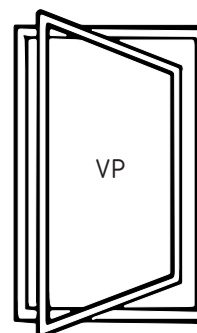
Bottom hung



Horizontal pivot



Horizontal pivot reversible

Vertical pivot right hand
two-thirds open outVertical centre pivot right hand
left half open outVertical pivot right hand
one-third open out

It shall be stated whether the window is viewed from the outside or the inside.

Figure 1 — Window types and handing