

Specification for

Plastics windows made from PVC-U extruded hollow profiles

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Elements and Components (of Diverse Materials) for Buildings Standards Policy Committee (ECB/-) to Technical Committee ECB/46, upon which the following bodies were represented:

- Association of Builders' Hardware Manufacturers
- Association of Metropolitan Authorities
- British Board of Agrément
- British Plastics Federation
- Consumer Policy Committee of BSI
- Department of Health
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property Services Agency)
- Flat Glass Manufacturers' Association
- Glass and Glazing Federation
- Institution of Fire Engineers
- London Housing Consortium
- Plastics Window Association Ltd.
- Royal Institute of British Architects

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Foreword

This British Standard has been prepared under the direction of the Elements and Components (of Diverse Materials) for Buildings Standards Policy Committee.

This standard applies to windows manufactured from PVC-U profiles incorporating fusion welded corner joints. In the case of multi-light windows, two methods are currently used by industry to join intermediate transoms and mullions to outer frames: fusion welding and mechanical connection. The standard applies to windows employing either method; however no test methods are currently available to assess the strength and other physical characteristics of the assembly and until such test methods are developed, the mechanical strength of window assemblies should be assessed in accordance with BS 6375-2.

The requirements for the raw materials and properties of the finished profile after manufacture for white PVC-U extruded hollow profiles with heat welded corner joints for plastics windows are specified in BS 7413 (materials type A) and BS 7414 (materials type B).

A British Standard does not purport to include all the necessary provision of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 19 and a back cover.

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1 Scope

This British Standard specifies types, and requirements for materials, construction, security, safety, and the weathertightness and operation and strength performance of windows that are made from PVC-U extruded hollow profiles as defined in BS 7413 and BS 7414 (see foreword) including glass and glazing.

It is applicable to all types of windows in which any frame member is not longer than 3 m.

The standard excludes curtain walls that span across horizontal structural members or floors but includes windows within a curtain walling system.

Methods of test are given in Appendix A, Appendix B, Appendix C, Appendix D and Appendix E and recommendations for the installation of glazing gaskets in Appendix F.

NOTE The titles of the publications referred to in this standard are listed on page 18.

2 Definitions

For the purposes of this British Standard the definitions given in BS 6100-1.0, Subsections 1.3.5 and 1.5.1 and Section 1.6 apply together with the following.

2.1

bearing device

a wheel roller, skid or other device fitted at the head or sill of a horizontally sliding window to support the weight of the sash and facilitate movement

2.2

casement

a framed opening light that is hinged or pivoted¹⁾

2.3

co-extruded glazing bead

a rigid glazing bead that has an integral glazing gasket permanently fused to it during the extrusion process

2.4

composite window

two or more windows joined to fill an opening¹⁾

2.5

double window

two separate windows superimposed in the same opening¹⁾

2.6

window fixing

any item 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

2.7

glazing gasket

a plastics or synthetic rubber member, used between the glass and frame and/or the glass and glazing bead

2.8

window hardware

fittings attached to the window that are used to operate and/or secure it

2.9

multi-light window

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

2.10

sash

a framed opening light that slides¹⁾

¹⁾ BS 6100 definitions included for convenience.

2.11

switch barrier

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

2.12

ventilation device

a ventilator other than an opening light incorporated in a window

NOTE The “permanent” type provides continuous ventilation. The “controlled” type is closable and can be adjusted to provide a small amount of ventilation.

2.13

weatherstrip

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

3 Window types, handing and abbreviations

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

3.1 Window types

The requirements of this British Standard shall apply to the following window types:

- a) hinged: side hung (open in or open out), top hung (open out), bottom hung (open in), and tilt and turn;
- 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.

NOTE Windows can be in multi-light or composite form.

3.2 Handing

In specifying the handing it shall be stated whether the window is viewed from the outside or inside.

Multi-light windows shall be handed according to the position of the largest opening light.

Side-hung casements shall be handed according to the position of the hinges.

Vertically pivoted and vertically pivoted reversible casements shall be handed according to the position of the pivots in relation to the open-out portion, and the proportion opening outwards shall be stated.

3.3 Abbreviations

The following abbreviations shall be used to distinguish the 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
T&T	Tilt and turn, or turn and tilt
RH	Right hand
LH	Left hand

4 Materials

NOTE The performance requirements of the materials and physical properties for white PVC-U extruded hollow profiles with heat welded corner joints are specified in BS 7413 and BS 7414 (see foreword.)

4.1 Glass

4.1.1 The type and quality of glass shall comply with BS 952-1 and 2.

4.1.2 Glass thickness and type shall be selected, using the recommendations given in BS 6262, to withstand the calculated design wind pressure (see **11.4.2** and Table 1).

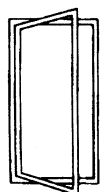
4.1.3 Hermetically sealed flat double glazing units shall comply with BS 5713.

4.2 Reinforcement

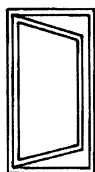
Reinforcement shall be installed so that it shall not move or rattle when the window is in use. If metal reinforcement is used it shall be manufactured from one of the following materials.

- a) Mild steel sheet hot-dip zinc coated of grade Z2 G275 N complying with BS 2989. Alternatively reinforcement shall be manufactured from mild steel of a similar grade which is subsequently given a corrosion resistant coating to equal the above grade. Reinforcement to this quality shall be used only in profiles or systems so designed and sealed that no exterior moisture can come into contact with the reinforcement.
- b) Austenitic stainless steel sheet or strip of grade 304S11, 304S15, 304S16 or 304S31, surface finish 2D, complying with BS 1449-2. Reinforcement to this quality can be used in any type of profile or system.
- c) Extruded aluminium alloy 6063 (condition TB, TE or TF) or 6082 (condition TB, TE or TF) complying with BS 1474. Reinforcement to this quality can be used in any type of profile or system.

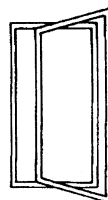
NOTE Unless the profile section design is specially robust, reinforcement of the fixing points for friction hinges is particularly recommended for windows weighing more than 5 kgs. This reduces the risk of distortion of plastics that may occur as a result of high stress at the attachment points eventually leading to fouling between vent and frame in service. For the same reason the designed complement of hinge fixings should always be fitted, and quality control procedures during window assembly should ensure that fixing screws, rivets, etc. are never omitted.



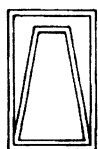
Side hung left hand
open out (includes
reversible type)



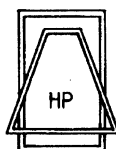
Side hung left hand open in



Projected side hung left hand



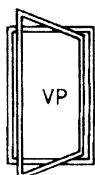
Bottom hung



Horizontal pivot



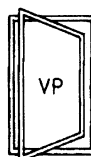
Horizontal pivot reversible



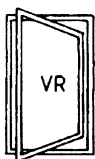
Vertical pivot right hand
two-thirds open out



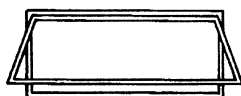
Vertical centre pivot right
hand left half open out



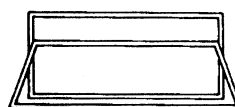
Vertical pivot right hand
one-third open out



Vertical centre pivot
reversible right hand
left half open out



Top hung



Projected top hung
(includes reversible type)

Figure 1 — Window types and handing