The Clement W40 Steel Window Technical Specification

Product Summary

An advanced steel window introduced in the 1990s, W40 windows are ideal for larger projects such as schools and public buildings, but equally may be used in all types of property where strong, durable frames, efficient opening casements and robust fittings are required.

W40 windows are suitable for new build or refurbishment projects, where the pattern of the original fenestration is to be maintained.

Part L Regulations

Compliant to Part L, using the centre pane glass U value method.

Manufacturing Specification

Made to suit your individual requirements W40 windows are generally manufactured in accordance with BS 6510:2010 specifications for hot rolled steel windows. The mild steel sections used for Clement window and door frames are precision rolled in Switzerland using only recycled steel to suit Clement's unique profiles and tolerances. All frames and ancillary profiles are hot dip galvanised to BS EN ISO 1461 and available with a factory applied polyester powder coating to BS EN ISO 13438 from the RAL colour range, exceeding the minimum paint thickness over the zinc of 60 microns.

Manufacturing Description

Frames are manufactured from hot rolled mild steel profiles with corner joints mitred, welded and dressed square and flat. Small panes can be formed with T glazing bars whose ends are tenon riveted and/or welded to the frame and cross joints are interlocked and welded with rigid joints. Composite windows can be assembled by connecting windows horizontally and/or vertically with mullions and/or transoms of hot rolled slim steel profiles. Box sections are available as tubes or as box mullions which can be either hot rolled or manufactured from sheet steel. Pressed metal cills are available in a choice of profiles. Trickle vents can be fitted in accordance with Part F of the Building Regulations.

Locking system

The W40 range of windows is available with multi point locking to BS 7950 or traditional single point locking and other security devices if required.

Fixing

W40 windows can be fitted into timber subframes, or direct to brickwork, concrete or stone. Windows are installed using fixing lugs or stainless steel screws.

Glazing

W40 can be supplied with various glazing options, from both inside or outside including:

- Clear glazing
- Georgian bars: using our G+ welded bar system, an applied bar system in a horizontal or vertical pattern
- Genuine T bars
- Leaded lights, using real lead that is soldered by hand in a diamond or rectangular pattern in variable widths of lead.

Combinations of fixed lights, top hung, side hung, bottom hung, horizontal and vertical pivot windows are available as well as single and double doors in both 'open in' and 'open out' configurations.

Windows are designed for drained and ventilated glazing on site, from inside or outside, of insulating glass units up to a maximum unit size of 26mm, using factory finished beads and polymer rubber glasket in accordance with BS 8000-7. All opening vents are weather-sealed using EDPM.

In accordance with Glass & Glazing Federation best practice, Clement steel windows are factory glazed, however, our concealed fixings mean that fixed light windows need to be glazed on site after the frames have been installed. Glazing beads are made of aluminium or glass reinforced plastic (GRP).

W40 windows can be supplied shaped, with shaped heads, and 'curved on plan'.

Dimensions (Provided for guidance purposes only)

Nominal profile width	40mm
Typical sight lines: fixed lights perimeter	< 45mm
Hinged casements	< 70mm

Windows and doors for composite panels are purpose made, generally within the limits shown in the table below; sizes outside these limits may be discussed with one of our sales consultants.

WINDOWS					
	Width		**Height**		**Perimeter**
	Min	**Max**	**Min**	**Max**	**Max**
Fixed light	300	3000	300	3000	9400
Top hung	300	2000	300	2000	6600
Side hung	300	1000	300	2400	6600
Bottom hung	300	2000	300	1600	6600
Horizontal pivot	400	1800	400	1800	6400
Vertical pivot	400	1500	400	2400	6500
DOORS					
	Width		**Height**		**Perimeter**
	Min	**Max**	**Min**	**Max**	**Max**
Single	600	1000	2000	2500	6600
Double	1200	2000	2000	2500	8600

Source: Steel Window Association

W40 windows meet the weather-tightness (air infiltration, water penetration and wind loading) performance criteria within BS 6375-1:2009 appropriate to the specified design wind pressure.

BS 6375-1:2009

Air permeability is measured in terms of both area ($m^3/h/m^2$) and opening joint length ($m^3/h/m$) against progressively increasing test pressures through 300Pa up to 600Pa for classes 3 and 4. Class 2, or a maximum value at 300Pa of 13 $m^3/h/m$, is the UK standard requirement. Water tightness is measured in resistance to leakage at progressively increasing test pressures, 300Pa being considered the most severe UK requirement. The values tabulated in Pascals can also be expressed in classes ranging from 2A (50Pa) through 8A (600Pa) to exceptional resistance up to a maximum of E1050. Wind load resistance entails a deflection test (at 2000Pa for class 5), a repeated pressure test of 50 positive and 50 negative gusts at half the deflection test pressure, and a safety test at 150% of the deflection test pressure (ie 3000Pa for class 5). The prefix C means that deflection of the longest frame member was less than 1/300 with less than 1/150 (prefix A) considered adequate in the UK.

BS 6375-1 Test Pressure Class 2009 edition				
Window Type	**Air**	**Water**	**Wind**	**BS 6375-1 Exposure Category**
Fixed light	4	300	C5	2000
Top hung	3	300	C5	2000
Side hung (open out)	4	300	C5	2000
Side hung (open in)	4	300	C5	2000
Bottom hung	4	300	C5	2000
Horizontal pivot	4	300	C5	2000
Vertical pivot	2	150	C5	1200

Source: Steel Window Association

The 2009 edition of BS 6375-1 clarifies and supersedes the 2004 edition but does not change either the test methods or the basis of classification. This means that test results declared in conformity with BS 6375-1:2004 remain valid according to BS 6375-1:2009.

Heat

W40 windows when double glazed with argon filled low-E warm edge insulating glass units, will have a typical “U” value of 2.0.

Sound

The average sound reduction index (SRI) of a single glazed unit is approximately 30 dB, but this varies with window type, size and glass thickness.

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