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Agrément Certificate

15/5236

Product Sheet 1

DURAFLEX PVC-U DOOR SYSTEMS

DIAMOND SUITE PVC-U SINGLE LEAF AND DOUBLE LEAF RESIDENTIAL DOORSETS

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets, bevelled and featured, in white and coloured laminated foil finishes, for external use as primary and secondary access doors in walls of domestic and non-domestic buildings for replacement and new-build applications.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Thermal properties — the doors can contribute to meeting the national Building Regulations (see section 6).

Weathertightness — the systems can be used in the exposure situations described in this Certificate (see section 7).

Unauthorised access — doors from within the range can contribute to preventing unauthorised access to dwellings and similar habitable applications (see section 9).

Access — the systems can be fitted with a low-aluminium threshold that meets the national Building Regulations (see Section 11).

Durability — the PVC-U extruded profiles will continue to function satisfactorily for a period in excess of 35 years (see section 17).



The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 9 December 2015

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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In the opinion of the BBA, Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets, if installed, used and maintained in accordance with the provisions of this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following national Building Regulations (the presence of a UK map indicates that the subject is related to the national Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: C2(b)	Resistance to moisture
Comment:	The doors have adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards the wall satisfying this Requirement. See Table 3 (section 7) of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	The doors will not constitute a significant condensation risk and so can contribute towards the wall satisfying this Requirement. See section 12.1 of this Certificate.
Requirement: F1(1)	Means of ventilation
Comment:	The doors can contribute to natural purge ventilation. See section 8 of this Certificate.
Requirement: K4(a)(b)	Protection against impact with glazing (applicable to England only)
Comment:	Doors fitted with safety glass can satisfy this Requirement. See section 13.1 of this Certificate.
Requirement: L1(a)(i)	Conservation of fuel and power
Comment:	The doors can contribute to satisfying this Requirement. See section 6 of this Certificate.
Requirement: M1	Access and use
Comment:	Doors fitted with accessible (low) thresholds will contribute to satisfying this Requirement. See section 11 of this Certificate.
Requirement: M2	Access to extensions to buildings other than dwellings
Comment:	Doors fitted with accessible (low) thresholds will contribute to satisfying this Requirement. See section 11 of this Certificate.
Requirement: N1	Protection against impact with glazing (applicable to Wales only)
Comment:	Doors fitted with safety glass can satisfy this Requirement. See section 13.1 of this Certificate.
Regulation: Q1	Unauthorised access (applicable to England only)
Comment:	The doors as described in the additional Enhanced Security Sheet ES1, can satisfy this requirement for new dwellings (see section 9.1 of this Certificate).
Regulation: 7	Materials and workmanship
Comment:	The doors are acceptable. See sections 17.1 and 17.2 and the <i>Installation</i> part of this Certificate.
Regulation: 26	CO₂ emission rates for new buildings
Regulation: 26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation: 26A	Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation: 26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:	The systems can contribute to satisfying these Regulations. See section 6.1 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The doors satisfy the requirements of this Regulation. See sections 16.1, 16.2, 16.3, 16.4, 17.1 and 17.2 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building Standards applicable to construction
Standard: 2.9	Escape
Comment:	Doors fitted with a thumbturn lock can satisfy this Standard, with reference to clause 2.9.18 ⁽²⁾ . See section 13.3 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The doors have adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards the wall satisfying this Standard, with reference to clause 3.10.1 ⁽¹⁾⁽²⁾ . See Table 3 (section 7) of this Certificate.
Standard: 3.14	Ventilation
Comment:	The doors can contribute to natural ventilation with reference to clauses 3.14.2 ⁽¹⁾⁽²⁾ and 3.14.3 ⁽¹⁾ of this Standard (see section 8 of this Certificate).
Standard: 3.15	Condensation
Comment:	The doors will not constitute a significant condensation risk and so can contribute towards the wall satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See section 12.1 of this Certificate.
Standard: 3.16	Natural lighting
Comment:	When calculating the contribution of the doors to natural lighting, with reference to clause 3.16.1 ⁽¹⁾ and 3.16.3 ⁽¹⁾ of this Standard, the area of glazing can be calculated in accordance with section 10 of this Certificate.
Standard: 4.1	Access to buildings
Comment:	Doors fitted with accessible (low) thresholds will contribute to satisfying this Standard, with reference to clause 4.1.9 ⁽¹⁾⁽²⁾ . See section 11 of this Certificate.

Standard:	4.8(a)(b)	Danger from accidents
Comment:		Doors fitted with safety glass can satisfy this Standard, with reference to clause 4.8.2 ⁽¹⁾ . See section 13.1 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The doors can contribute to satisfying these Standards, with reference to clauses 6.1.1 ⁽¹⁾ , 6.1.2 ⁽¹⁾ , 6.1.4 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.1.7 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.4 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾ , 6.2.8 ⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.11 ⁽¹⁾⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ . See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The doors can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition the doors can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾⁽²⁾ [Aspect 1 ⁽¹⁾⁽²⁾]. See section 6 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for these doors under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23	Fitness of materials and workmanship
Comment:		The doors are acceptable. See sections 17.1 and 17.2 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The doors have adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards the wall satisfying this Regulation. See Table 3 (section 7) of this Certificate.
Regulation:	33	Means of escape
Comment:		Doors fitted with a thumbturn lock can meet this Regulation with reference to Technical Booklet E, clause 2.87. See section 13.3 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:		The doors can contribute to satisfying these Regulations. See section 6 of this Certificate.
Regulation:	65(1)	Means of ventilation
Comment:		When calculating the area of door openings for rapid ventilation purposes, see section 8 of this Certificate.
Regulation:	91	Access and use
Regulation:	92	Access to extensions
Comment:		Doors fitted with accessible (low) thresholds will contribute to satisfying these Regulations. See section 11 of this Certificate.
Regulation:	96	Impact with glazing
Comment:		Doors fitted with safety glass can meet this Regulation. See section 13.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.3) and 13 *Safety* (13.4) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.7 *Doors, windows and glazing*.

General

The Certificate holder is a system supplier, supplying bar length of PVC-U profile. The door systems detailed within this Certificate are manufactured by BBA-approved window and door fabricators. Details of currently approved fabricators can be found on the BBA website.

Technical Specification

1 Description

1.1 Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets (bevelled and featured) comprise inward- and outward-opening doorsets, all framed in white or laminated coloured foil PVC-U and glazed internally with sealed double-glazed units⁽¹⁾.

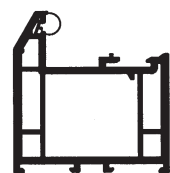
(1) Outside the scope of this Certificate.

1.2 The doors are fabricated from white or laminated coloured foil finish, unplasticised polyvinyl chloride (PVC-U) profiles, produced by conventional extrusion techniques from material complying with Category B (PVC-U with additional polymers), as defined in BS EN 12608 : 2003. Laminated foil profiles are surface-covered with PVC which incorporates a clear acrylic protective lacquer. Profiles are available with the foil applied to both visible faces of a brown PVC-U substrate or to the exterior face only of a white PVC-U substrate. The profiles covered by this Certificate (listed in Table 1 and shown in Figure 1) also include those supplied with Q-LON integral gaskets, rolled-in during the extrusion process, eliminating the need for separate weatherseals and glazing gaskets.

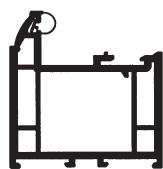
Table 1 Profiles

Manufacturer's designation	Profile type	Application
6002	L-section	65 mm outer frame (bevelled)
6502	L-section	65 mm outer frame (featured)
7001	L-section	70 mm outer frame (bevelled)
7501	L-section	70 mm outer frame (featured)
7002	L-section	70 mm outer frame (bevelled)
7502	L-section	70 mm outer frame (featured)
6065	Z-section	door leaf – inward-opening (bevelled)
6565	Z section	door leaf – inward-opening (featured)
6066	T section	door leaf – outward-opening (bevelled)
6566	T section	door leaf – outward-opening (featured)
6036	T section	116 mm mid-rail (bevelled)
6536	T section	116 mm mid-rail (featured)
6535	T section	false mullion (featured)
7036	T section	transom/mullion (bevelled)
7536	T section	transom/mullion (featured)
7037	Z section	transom/mullion (bevelled)
7537	Z section	transom/mullion (featured)
7518	—	door threshold (featured)
7519	—	composite door threshold (featured)
3680	—	stub sill (85 mm)
3640	—	sill (150 mm)
2182	—	sill (180 mm)
3038	—	coupling cover
5850	—	co-extruded glazing bead (28 mm featured)
5851	—	co-extruded glazing bead (28 mm bevelled)
5852	—	co-extruded glazing bead (28 mm scotia)
3880S	—	galvanized steel reinforcement (6065, 6565)
3883S	—	galvanized steel reinforcement (6002, 6502)
3993S1750	—	galvanized steel reinforcement (lock style pre-punched) (6065, 6565)
3569S	—	galvanized steel reinforcement (7002, 7502)
3574S	—	galvanized steel reinforcement (6065, 6066) (head, sill and hinge)
3572S	—	galvanized steel reinforcement (6063)
3579S	—	galvanized steel reinforcement (7002, 7502)
3882S	—	galvanized steel reinforcement (7001)
3829S	—	galvanized steel reinforcement (6065, 6066) (lock jamb)
3718S	—	galvanized steel reinforcement (7036, 7037)
3071	—	aluminium reinforcing (6535)
3082	—	aluminium coupling for 3038 (65 mm)
3549	—	aluminium coupling for 3038 (70 mm)
3767	—	weather bar

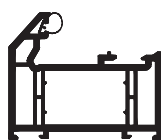
Figure 1 Profiles (all dimensions in mm)



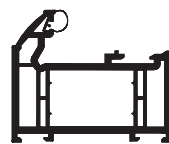
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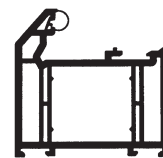
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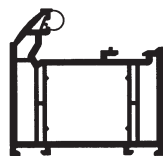
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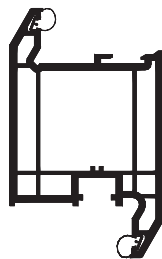
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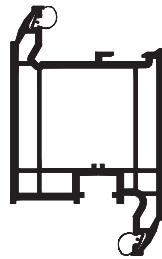
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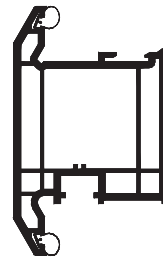
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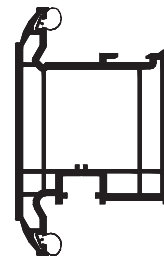
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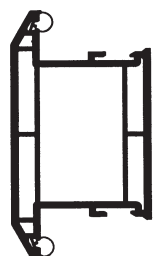
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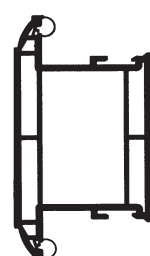
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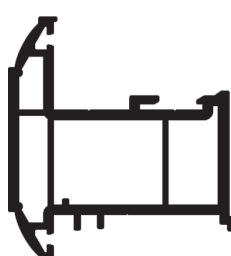
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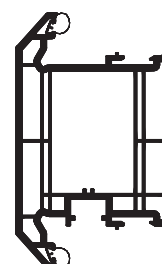
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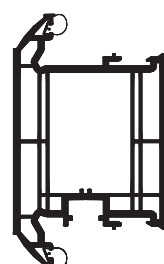
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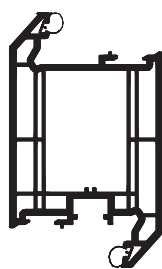
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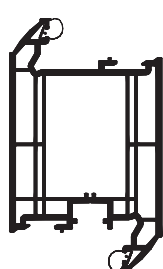
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7536



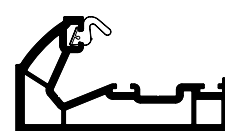
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7537



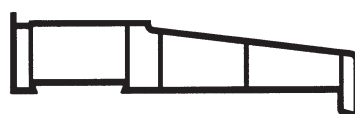
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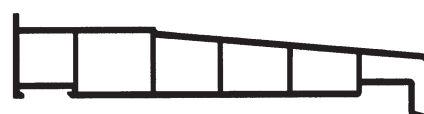
7519



3680



3640



2182



3038



5850



5851



5852



3880S



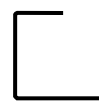
3883S



3993S1750



3574S



3569S



3572S



3579S



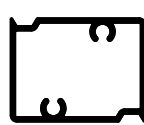
3882S



3829S



3718S



3071



3082



3549



3767

1.3 The Certificate holder should adhere to the methods of selection, machining and assembly of frame components as detailed in the fabrication instructions and this Certificate.

1.4 The PVC-U extrusions are cut to length, and all holes routed or drilled. Where required, galvanized steel reinforcement sections are inserted in the PVC-U sections before they are welded together. The welded connections are cleaned up by polishing, knifing or using a purpose-made machine which also forms a groove or raised pyramid at the weld. The doors are completed by securing the fittings in position with screws.

1.5 Drainage is provided by a series of slots, 5 mm by 25 mm, positioned in accordance with the fabrication instructions. Door frames incorporating sidelight frames are drained as separate units and drainage slots are cut accordingly. Pressure equalisation is achieved by 5 mm diameter holes, as defined in the fabrication instructions. Coloured laminated foil sills are vented, as described in the fabrication instructions, to prevent pressure changes causing distortion.

1.6 Inward opening doors are fitted with a weather bar at threshold level.

Reinforcement

1.7 For white doorsets the outer frame is reinforced with galvanized steel in all jamb and sill members adjacent to the door leaf.

1.8 All members of door leaves are fully reinforced with galvanized steel. Mid-rails are reinforced with galvanized steel when their length exceeds 1000 mm.

1.9 All laminated coloured foil finished members of the door are fully reinforced with galvanized steel.

1.10 Galvanized steel reinforcement is roll-formed from material with a G Z 275N coating complying with BS EN 10327 : 2004.

Size range

1.11 This Certificate covers Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets with or without sidelight frames within the limitations shown in Table 2.

Table 2 Size restriction

	Dimension (mm)	
	Width	Height
<i>Single-leaf glazed doorsets with or without a mid-rail</i> Maximum overall size	1050	2100
<i>Double-leaf fully glazed doorsets</i> Maximum overall size	1800	2100
<i>Doorsets with a sidelight, both with or without a mid-rail</i> Maximum overall size	1560	2100

Fittings

1.12 All doors covered by this Product Sheet are hung on three hinges, each fixed to the frame with screws penetrating two thicknesses of PVC-U and/or reinforcement. In doorsets incorporating a sidelight, the door leaf is hung on a jamb attached to the masonry surround. A different hinge arrangement or the use of dog bolts may be necessary for doors requiring a higher level of security.

1.13 Doors are fastened by multi-point locks operated by a handle available as a lever type on both sides. Handles are available in various finishes. The lock is supplied with adjustable keeps and is fitted with a security cylinder mechanism designed to resist picking.

1.14 The doorsets can be supplied with a letterplate in the mid-rail of the door leaf or the sidelight frame. However, the weathertightness of such doors has not been assessed.

1.15 Details of currently approved hinges, locks and other fittings can be obtained from the BBA.

Glazing

1.16 Doors and sidelight frames are available with half- or full-height glazed panels. The doors are supplied either glazed or ready for glazing on site using sealed double-glazed units with thicknesses in accordance with BS 6262-1 : 2005 or, if required by the national Building Regulations, with toughened or laminated glass in accordance with BS 6206 : 1981. All glass used is safety glass (see section 1.3), which is positioned by plastic setting blocks and packing pieces. Q-LON gaskets and weatherstripping can be provided ready-applied onto profiles. The double-glazed unit is secured by co-extruded beads. Insulated infill panels for doors or sidelights have not been assessed.

1.17 The glazing units must meet the requirements of BS EN 1279-2 : 2002 and (if relevant) BS EN 1279-3 : 2002.

Weatherstripping and gaskets

1.18 Weatherstripping in the form of Q-LON, a polyethylene exterior sheath containing a polyurethane high-resilient foam centre core, is used. It is located in grooves around the periphery of the door leaf and the fixed frame.

1.19 Internally-beaded doors and sidelights are fitted with Q-LON gaskets between the frame and the double-glazed unit. The unit is secured by co-extruded glazing beads with flexible Thermoplastic Elastomer (TPE), forcing the glass against the externally-fitted Q-LON gasket. Externally-beaded doors and sidelights have not been assessed.

2 Manufacture

2.1 The doors are fabricated from white or coloured laminated foil-finish unplasticised polyvinyl chloride (PVC-U) profiles, produced by conventional extrusion techniques from material complying with BS EN 12608 : 2003. Coloured laminated foil-finish profiles are surface-covered with PVC which incorporates a clear protective lacquer. Profiles are available with the foil applied to both visible faces of a brown or tan PVC-U substrate or to the exterior face only of a white PVC-U substrate. See also sections 1.4 to 1.11.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Duraflex, A Division of MASCO UK Windows Group Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 (Certificate FM 10093) and BS EN ISO 14001 : 2004 (Certificate EMS 514848) by BSI.

3 Delivery and site handling

3.1 The doors are delivered to site glazed or ready for glazing. For transportation they are suitably protected to avoid damage. External surfaces of the PVC-U profiles are additionally protected with adhesive tape. Particular care is needed to avoid damaging coloured laminated foil finishes as it may be difficult to restore the surface appearance.

3.2 The doors should be stored under cover in a clean area, vertically on edge and suitably supported to avoid distortion or damage.

3.3 The weight of glazing can be calculated, where required for manual handling operations, by reference to the information contained in BS 952-1 : 1995. The weight of the unglazed frame, and its ease of handling, particularly by one person, must also be taken into account when planning site operations.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets.

Design Considerations

4 Use

The Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets are satisfactory for use when installed into the external walls of buildings as primary or secondary access doors in dwellings or similar applications.

5 Practicability of installation

5.1 The systems are designed to be installed by a competent general builder, or a contractor, experienced with these types of systems.

5.2 In common with other types of doors fitted to prepared openings, Diamond Suite doorsets must be correctly positioned in relation to vertical damp-proof courses to prevent water penetration to the internal reveal.

6 Thermal properties



6.1 The following fully-reinforced Diamond Suite PVC-U Single Leaf fully-glazed Residential Door with mid-rail, 1230 mm wide by 2180 mm high, achieves a U value (U_w) of $1.8 \text{ W} \cdot \text{m}^{-2} \cdot \text{K}^{-1}$ when calculated in accordance with BS EN ISO 10077-2 : 2012:

- 7502 outer frame (reinforced with 3569S)
- 6566 sash/leaf (reinforced with 3574S)
- 6536 mid-rail (reinforced with 3572S)
- aluminium low threshold
- 5850 glazing bead
- 4/20/4 mm sealed double-glazed unit
 - 20 mm argon-filled cavity (90%)
 - external pane: 4 mm Pilkington Optifloat
 - internal pane: 4 mm Pilkington K ($\epsilon = 0.14$)
 - spacer: Swisspacer.

6.2 The following fully-reinforced Diamond Suite PVC-U Double Leaf fully-glazed French Door, 2000 mm wide by 2180 mm high, achieves a U value (U_w) of $1.7 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ when calculated in accordance with BS EN ISO 10077-2 : 2012:

- 7502 outer frame/threshold (reinforced with 3579S)
- 6566 sash/leaf (reinforced with 3574S)
- 6535 false mullion (reinforced with 3071 aluminium)
- 5850 glazing bead
- 4/20/4 mm sealed double-glazed unit
 - 20 mm air-filled cavity
 - external pane: 4 mm Pilkington Optifloat
 - internal pane: 4 mm Pilkington K ($\epsilon = 0.14$)
 - spacer: Swisspacer.

6.3 The overall thermal insulation of the door will be dependent on the performance of the double-glazed units. For units other than those described above, the indicative U values shown in Table 6e of SAP 2009 *The Government's Standard Assessment Procedure for Energy Rating of Dwellings* can be used. When available, a certified U value by measurement to BS EN ISO 12567-1 : 2010, or calculation to BS EN ISO 10077-1 : 2006 and BS EN ISO 10077-2 : 2012, should be used in preference. Alternatively, details of Door Energy Ratings may be available for specific frame and glazing combinations on the BFC website (www.bfrc.org).

6.4 Design door thermal performances are detailed in the documents supporting the national Building Regulations.

7 Weathertightness

7.1 Selected samples from the two doorset systems were tested in accordance with BS 6375-1 : 2009 and are suitable for use as indicated in Table 3 of this Certificate. The gradings are based on the assumption that the outer frame is supported on all four sides in accordance with the manufacturer's instructions.

7.2 For unusual building layouts, building shapes or ground topography, the designer will need to give particular consideration to the prevailing exposure conditions.

Table 3 Weathertightness classifications

Door style	Strength and stability/ resistance to wind load according to BS EN 12210 : 2000	Watertightness according to BS EN 12208 : 2000	Air permeability according to BS EN 12207 : 2000	Overall UK exposure category (BS 6375-1 : 2009)
Single-leaf fully glazed doors with or without mid-rail up to maximum size				
— standard threshold	Class 2C (800Pa)	Class 5A (150Pa)	Class 2 (300Pa)	800
— low aluminium threshold	Class 2C (800Pa)	Class 2A (50Pa)	Class 2 (300Pa)	800X
Double leaf French doors up to maximum size	Class 2C (800Pa)	Class 3A (100Pa)	Class 2 (300Pa)	800

8 Ventilation



The opening area for natural ventilation may be calculated by subtracting 136 mm for standard threshold, or 83 mm for low aluminium threshold, from the height and:

- 136 mm from the width, for single-leaf doors
- 200 mm from the width, for double-leaf French doors when both leaves are opened.

9 Unauthorised access



9.1 Diamond Suite doorsets according to Enhanced Security sheet ES1 have been tested in accordance with PAS 24 : 2012, Annexes A and B, and can contribute to preventing unauthorised access to dwellings and similar habitable applications.

9.2 Diamond Suite doorsets are fitted with locking mechanisms and features as described in sections 1.12 and 1.13. They provide adequate security against unauthorised entry by the opportunist intruder when tested generally in accordance with Clause 6.14 of PAS 23-1 : 1999, (basic security test). Where relevant, reference should be made to NHBC Standards 2014, Part 6.7 *Doors, windows and glazing*.

9.3 Attention should be paid to packing of glazing units adjacent to all locking points. In addition, frame fixings should coincide with the locating points of the locking system, with suitable packing installed between the frame and the fabric of the building.

9.4 Glazing beads fitted internally on doors and any associated sidelights are extremely difficult to remove from the outside. Glazing beads fitted externally have not been assessed.

10 Glass area



The approximate unobstructed glass area of the doors is determined by deducting from the overall width and height the appropriate profile dimensions. Each applicable feature, for example a fixed light, requires twice the outer frame dimension to be deducted from the overall width and overall height. Typical profile dimensions are given in Table 4.

Table 4 Typical dimensions for determining unobstructed glass area

Feature	Deduction from overall height and width (mm)
Outer frame in sidelight	68
Outer frame and door leaf	146
Mid-rail	116
Door threshold and bottom rail	146

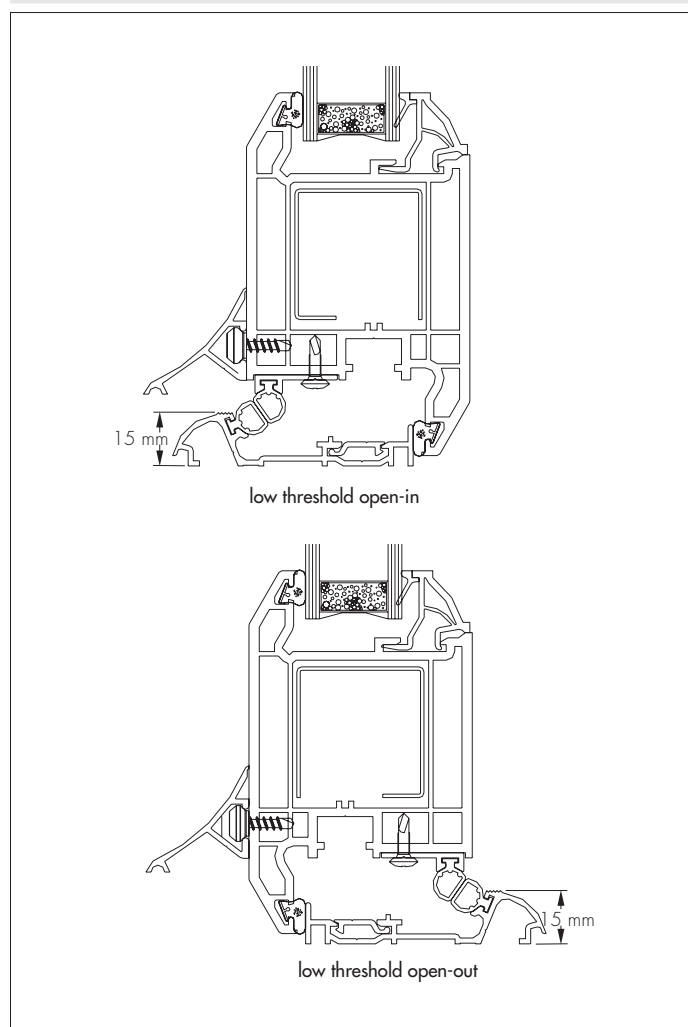
11 Access



11.1 Doors can be fitted with a 15 mm high aluminium threshold designed to meet the requirements of the relevant national Building Regulations when suitably installed (see Figure 3).

11.2 When an external residential door has a minimum clear opening width of 775 mm, it will provide access for all persons, including those with disabilities.

Figure 3 Typical threshold sections



12 Condensation risk



12.1 In normal domestic or similar applications, PVC-U doors will not constitute a significant condensation risk when correctly installed.

12.2 Guidance on some satisfactory design details is given in *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar building* TSO 2002 and the *Accredited Construction Details*. Further information is contained in BRE Report BR 262 : 2002.

13 Safety



13.1 Glazed doors and sidelights are fitted, where required, with safety glass complying with BS EN 12600 : 2002 and therefore meet the safety recommendations given in BS 6262-4 : 2005⁽¹⁾.

(1) Dealing with the safety of people upon impact with the glazing.

13.2 The PVC-U doors do not have an established fire resistance rating and should not be used where fire resistance requirements apply.



13.3 When the doors are fitted in an escape route, they should be fitted only with a lock or fastening which is readily operated, without a key, from the side approached by people making an escape; such devices have not been included in this assessment.

13.4 When selecting means of access during the period of installation, for example use of scaffolding, the safety of the operatives, occupants and passers-by should be considered.

14 Resistance to impact

14.1 Doorsets will be unaffected by the soft body or hard body impacts likely to be encountered in dwellings or similar applications.

14.2 Slamming of the door, such as could occur in high winds, will not cause damage to the door leaf or frame.

15 Ease of operation

The doorsets can be operated without difficulty when correctly installed.

16 Maintenance



16.1 The doorsets can be re-glazed and the gaskets and weatherstripping replaced, but these operations should be carried out by specialist operatives using the materials recommended by the Certificate holder and approved by the BBA.

16.2 If a co-extruded glazing bead gasket is damaged, for example during re-glazing, it may be necessary to replace the complete bead. Replacements are available from the Certificate holder.

16.3 If damage occurs, the furniture and fittings can be replaced by releasing the fixing screws and changing the fitting.

16.4 The hinges and locking mechanism should be cleaned and lubricated periodically to minimise wear and to ensure smooth operation. More frequent lubrication may be required depending on the environmental conditions.

16.5 The seal to the building structure will need to be replaced within the life of the doors.

16.6 The PVC-U frame members can be cleaned using a soft sponge and soapy water. Solvent-based, corrosive or abrasive cleaners should not be used, particularly on coloured laminated finishes, as the loss of the acrylic lacquer will have a serious effect on durability. If dirt is allowed to build up on the members over long periods it may become more difficult to restore the surface appearance.

16.7 Care should be taken when using proprietary materials for cleaning the glass, to ensure that deposits do not remain on the PVC-U where they may cause discoloration and damage to the surface. In addition, care must be taken to avoid damage to, or discoloration of, the members when stripping paint from adjacent timber, for example, by means of a blowlamp or paint stripper.

17 Durability



17.1 The PVC-U elements will continue to function satisfactorily for a period in excess of 35 years.

17.2 The co-extruded glazing beads, gaskets and fittings, including the hinges, locking mechanism and operating handles, as described in this Certificate, may need to be replaced within the life of the doors, particularly when exposed to aggressive environments, such as coastal or industrial locations.

17.3 Any slight colour change or surface dulling that might occur will be uniform over the visible surfaces of the doors for both white and coloured laminated foil finishes, assuming in the latter case that the acrylic lacquer is undamaged.

17.4 Paint can adversely affect the impact strength of the PVC-U frame members, and the application of dark colours to white profiles could lead to a risk of thermal distortion, therefore paint must not be applied. Repair of the coloured laminated profile is outside the scope of this Certificate.

18 Reuse and recyclability

The PVC-U profiles of the systems can be recycled.

Installation

19 General

19.1 The Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets must be fixed into the opening, in accordance with the recommendations in the BS 8213-4 : 2007, using proprietary expanding anchors through the frame or galvanized steel fixing lugs.

19.2 For white PVC-U doorsets, openings in new walls should be formed using a suitable template 10 mm wider and higher than the doorset to be installed. This should be increased to 15 mm wider and higher for non-white doors. Doors should not be built-in at the construction stage.

19.3 The provision of a cavity closer and/or cavity barrier around the door openings, prior to installation, may be required.

Technical Investigations

20 Tests

20.1 Tests were carried out on the Duraflex Diamond Suite PVC-U Single Leaf and Double Leaf Residential Doorsets in accordance with the methods defined in BS 6375-1 : 2009, BS 6375-2 : 2009, BS 6375-3 : 2009 and generally to PAS 23-1 : 1999 to determine:

- operating forces
- air permeability
- watertightness
- effect of wind loads
- resistance to vertical loads
- resistance to static torsion
- slamming resistance
- closure against obstruction
- abusive forces on handles
- resistance to soft and heavy body impact
- resistance to hard body impact
- cyclic operation
- basic security.

20.2 Tests were carried out in accordance with BS EN 12608 : 2003 and BS 7722 : 2010 on the PVC-U extrusions and coloured laminated foil finish profiles.

21 Investigations

The thermal transmittance values of doorsets were calculated in accordance with BS EN ISO 10077-2 : 2012.

Bibliography

BS 952-1 : 1995 *Glass for glazing — Classification*

BS 6206 : 1981 *Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings*

BS 6262-1 : 2005 *Glazing for buildings — General methodology for the selection of glazing*

BS 6262-4 : 2005 *Glazing for buildings — Code of practice for safety related to human impact*

BS 6375-1 : 2009 *Performance of windows and doors — Classification for weathertightness and guidance on selection and specification*

BS 6375-2 : 2009 *Performance of windows and doors — Classification for operation and strength characteristics and guidance on selection and specification*

BS 6375-3 : 2009 *Performance of windows and doors — Classification for additional performance characteristics and guidance on selection and specification*

BS 7722 : 2010 *Surface covered PVC-U profiles for windows and doorsets — Specification*

BS 8213-4 : 2007 *Windows, doors and rooflights — Code of practice for the survey and installation of windows and external doorsets*

BS EN 1279-2 : 2002 *Glass in building — Insulating glass units — Long term test method and requirements for moisture penetration*

BS EN 1279-3 : 2002 *Glass in building — Insulating glass units — Long term test method and requirements for gas leakage rate and for gas concentration tolerances*

BS EN 10327 : 2004 *Continuously hot-dip coated strip and sheet of low carbon steels for cold forming — Technical delivery conditions*

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

BS EN 12208 : 2000 *Windows and doors — Watertightness — Classification*

BS EN 12210 : 2000 *Windows and doors — Resistance to wind load — Classification*

BS EN 12600 : 2002 *Glass in building — Pendulum test — Impact test method and classification for flat glass*

BS EN 12608 : 2003 *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors — Classification, requirements and test methods*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 10077-1 : 2006 *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance — General*

BS EN ISO 10077-2 : 2012 *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance — Numerical method for frames*

BS EN ISO 12567-1 : 2010 *Thermal performance of windows and doors — Determination of thermal transmittance by the hot box method — Complete windows and doors*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

BRE Report (BR 262 : 2002) *Thermal insulation: avoiding risks*

PAS 23-1 : 1999 *General performance requirements for door assemblies — Single leaf, external door assemblies to dwellings*

Conditions of Certification

22 Conditions

22.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

22.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

22.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

22.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

22.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

22.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.