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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
07/4476
Product Sheet 2

NORDAN TIMBER DOOR RANGE

NORDAN TIMBER SLIDING PATIO DOOR SYSTEM

This Agrément Certificate Product Sheet[1] relates to the NorDan Timber Sliding Door System, for external use as secondary access doors in new and existing dwellings or similar habitable 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 patio doors can contribute to meeting the national Building Regulations (see section 6).

Weathertightness — the patio doors can be used in the exposure situations described in the *Weathertightness* section of this Certificate (see section 7).

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

Access — the patio doors are fitted with a low threshold which meets the Buildings Regulations (see section 11).

Durability — the timber frames and aluminium cladding sections will have a life of at least 25 years (see section 17) provided they are maintained in accordance with the requirements of this Certificate (see section 16).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 31 August 2017

Originally certificated on 21 March 2013

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.

Regulations Edition 27

In the opinion of the BBA, the NorDan Timber Sliding Patio Door System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the 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 system has adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards satisfying this Requirement. See section 7.1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The system will not constitute a significant condensation risk and so can contribute towards satisfying this Requirement. See section 12.1 of this Certificate.
Requirement:	F1(1)	Means of ventilation
Comment:		The system can contribute to natural purge ventilation. See section 8.1 of this Certificate.
Requirement:	K4(a)(b)	Protection against impact with glazing (applicable to England only)
Comment:		Patio doors fitted with safety glass can satisfy this Requirement. See Section 13.1 of this Certificate.
Requirement:	K5.2	Manifestation of glazing (applicable to England only)
Comment:		Patio doors used in non-dwellings can satisfy this Requirement when the glazing incorporates features which make it apparent. See section 13.2 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The system can contribute to satisfying this Requirement. See sections 6.1 to 6.3 of this Certificate.
Requirement:	M1	Access and use
Comment:		Patio doors fitted with accessible (low) thresholds will satisfy this Requirement. See section 11 of this Certificate.
Requirement:	M2	Access to extensions to buildings other than dwellings
Comment:		Patio doors fitted with accessible (low) thresholds will satisfy this Requirement. See section 11 of this Certificate.
Requirement:	N1	Protection against impact with glazing (applicable to Wales only)
Comment:		Patio doors fitted with safety glass can satisfy this Requirement. See section 13.1 of this Certificate.
Requirement:	N2	Manifestation of glazing (applicable to Wales only)
Comment:		Patio doors used in non-dwellings can satisfy this Requirement when the glazing incorporates features which make it apparent. See section 13.2 of this Certificate.
Requirement:	Q1	Unauthorised access (applicable to England only)
Comment:		The doors, as described in the additional Enhanced Security Sheet (ES2) for Product Sheet 2, can satisfy this Requirement for new dwellings (see section 9.1 of this Certificate).
Regulation:	7	Materials and workmanship
Comment:		The system is acceptable. See sections 17.1 to 17.3 and the *Installation* part of this Certificate.
Regulation:	26	CO_2 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 energy efficiency rates for new dwellings (applicable to Wales only)
Comment:		The system can contribute to satisfying these Regulations. See sections 6.1 to 6.3 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		The patio doors satisfy the requirements of this Regulation. See sections 16.1 to 16.3 and 17.1 to 17.4 and the *Installation* 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 13.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The patio doors have adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards satisfying this Standard, with reference to clause 3.10.1[1][2]. See section 7.1 of this Certificate.
Standard:	3.14	Ventilation
Comment:		The patio door can contribute to natural ventilation, with reference to clauses 3.14.2[1][2] and 3.14.3[1] of this Standard. See section 8.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The system will not constitute a significant condensation risk and so can contribute to satisfying this Standard, with reference to clauses 3.15.1[1] and 3.15.5[1]. See section 12.1 of this Certificate.
Standard:	3.16	Natural lighting
Comment:		In calculating the contribution of the systems to natural lighting, with reference to clauses 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:		Patio 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 :	4.13	Security
Comment :		The doors, as described in the additional Enhanced Security Sheet (ES2) for Product Sheet 2, can satisfy this Standard with reference to clause 4.13.1(c)[1]. See section 9.1 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The system 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 sections 6.1 to 6.3 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The system 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 systems 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 this system 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 system is acceptable. See sections 17.1 to 17.3 and the *Installation* part of this Certificate.
Regulation:	28(b)	**Resistance to moisture and weather**
Comment:		The patio door has adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	33	**Means of escape**
Comment:		Patio doors fitted with a thumbturn lock can satisfy this Regulation with reference to Technical Booklet E, clause 2.87. See section 13.4 of this Certificate.
Regulation:	39(a)(i)	**Conservation measures**
Regulation:	40(2)	**Target carbon dioxide emission rate**
Comment:		The patio doors can contribute to satisfying these Regulations. See sections 6.1 to 6.3 of this Certificate.
Regulation:	65(1)	**Means of ventilation**
Comment:		When calculating the area of patio door openings for rapid ventilation purposes, see section 8.1 of this Certificate.
Regulation:	91	**Access and use**
Regulation:	92	**Access to extensions**
Comment:		Patio doors fitted with accessible (low) thresholds can satisfy this Regulation. See section 11 of this Certificate.
Regulation:	96	**Impact with glazing**
Comment:		Patio doors fitted with safety glass can satisfy this Regulation. See section 13.1 of this Certificate.
Regulation:	97	**Transparent glazing**
Comment:		Patio doors used in non-dwellings can satisfy this Regulation when the glazing incorporates features which make it apparent. See section 13.2 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.3), 13 *Safety* (13.5) and 20 *Procedure* (20.4) of this Certificate.

Additional Information

NHBC Standards 2017

In the opinion of the BBA, NorDan Timber Sliding Patio Door System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6.7 *Doors, windows and glazing*.

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with harmonised European Standard BS EN 14351-1 : 2006 + A2 : 2016. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 The NorDan Timber Sliding Patio Door System is factory-finished painted or externally clad in aluminium with a polyester-powder coating in any standard RAL colour. Doors can be supplied uncoated on request, and subject to the manufacturer's approval, but the durability of these has not been assessed.

1.2 The patio doors are available in a range of approved colours and comprise a sliding and a fixed leaf (sliding leaf on the outside) mechanically jointed to the timber frame as shown in Figures 1 and 2, and are subject to the size restrictions given in Table 1.

Table 1 Size restriction

	Dimension (mm)	
	Width	Height
Glazed patio doors		
Maximum overall size	2988	2388

(1) Patio doors are available up to a maximum size of 3988 mm wide x 2388 mm high but these doors have not been assessed by the BBA and are outside the scope of this Certificate.

1.3 The patio doors are glazed with external aluminium glazing beads and are available in the same range of approved colours.

1.4 Framing members comprise profiled North European Redwood sections formed by cutting the required profiles from engineered timber. The timber is preservative treated using a vacuum-impregnation technique to BS EN 351-1 : 2007. The frames can be supplied with or without polyester-powder-coated aluminium cladding on the external face.

1.5 All doorsets are supplied, as standard, factory-glazed using sealed triple-glazed units[1] (see Figures 1 and 2).

(1) Outside the scope of this Certificate.

Figure 1 Patio door vertical section with low threshold of aluminium

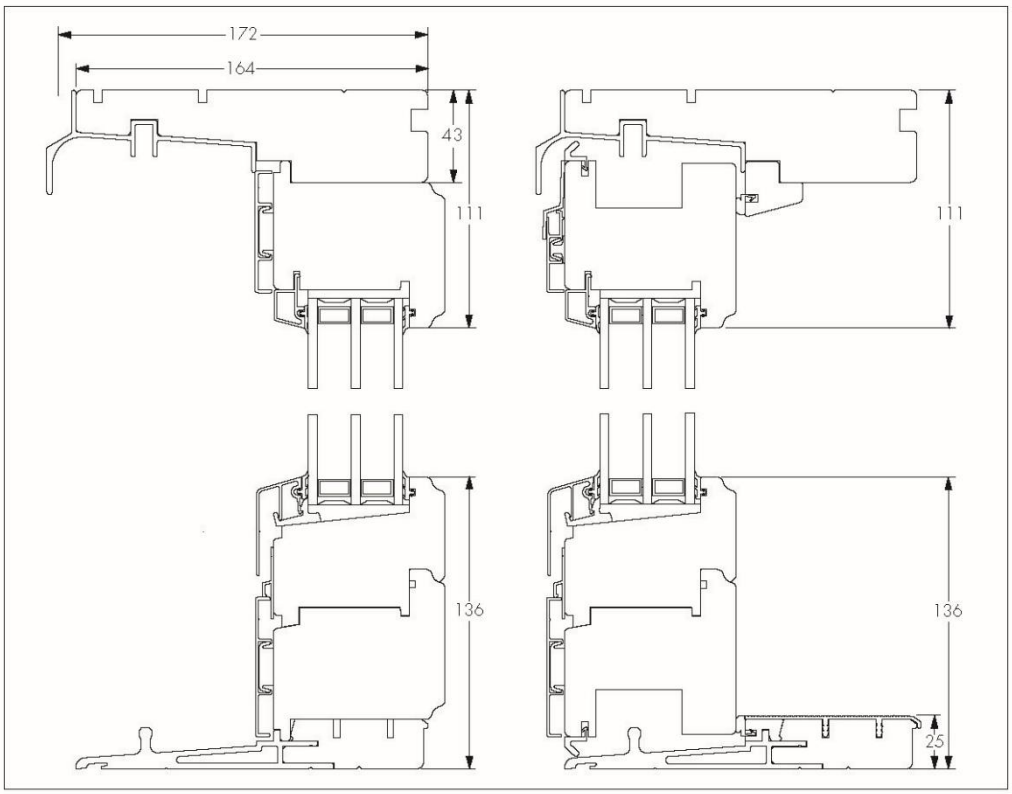
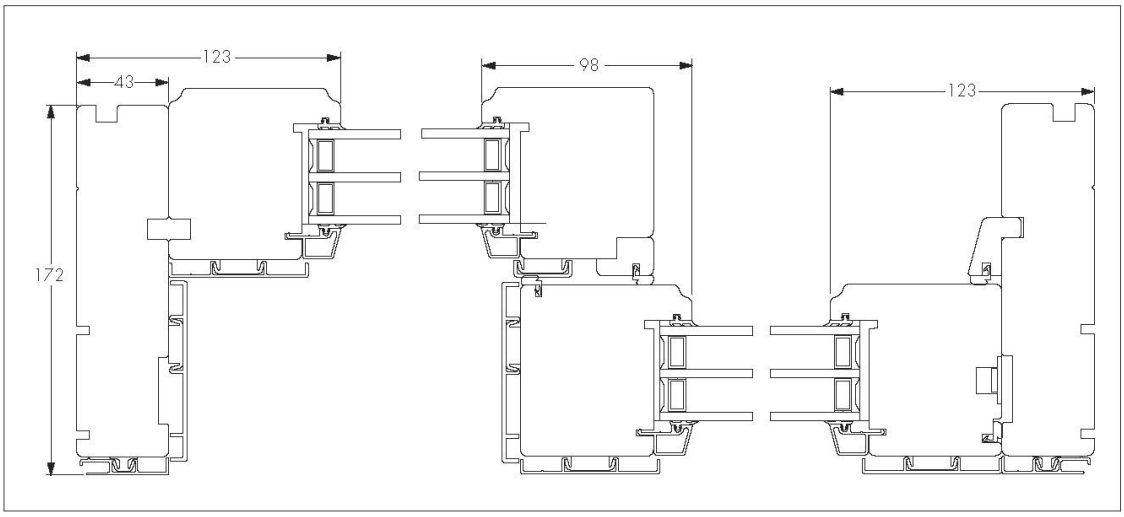


Figure 2 Patio door horizontal section (showing aluminium cladding present)



Furniture and fittings

1.6 Sliding door leaves have two low-friction rollers fitted at either end of the bottom rail.

1.7 The patio doors are secured with a multi-point locking mechanism operated by a handle available as a lever type on both sides. Handles are available with an anodised alloy finish. The lock is supplied with adjustable keeps and is fitted with a two-part cylinder mechanism designed to resist intrusion. Optional powder-coated handles are available from the Certificate holder but these have not been assessed by the BBA.

1.8 An aluminium alloy profile is fitted at the threshold (see Figure 4).

1.9 Details of currently approved locks and other fittings can be obtained from the BBA.

Glazing

1.10 Glazed units are sealed into the wooden sash using a polyurethane adhesive sealant.

1.11 The patio doors are supplied, as standard, factory glazed or ready for glazing using sealed triple-glazed units with glass thicknesses in accordance with BS EN 12600 : 2002 or, if required by the national Building Regulations, with toughened or laminated glass in accordance with BS EN 12600 : 2002. All glass used is safety glass (see section 13) and is positioned by polyethylene setting blocks and packing pieces. The triple-glazed unit is secured by an extruded aluminium glazing bead with integral EPDM gasket.

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

Weatherstripping and gaskets

1.13 Silicone weatherstripping is located in grooves around the periphery of the door leaf.

1.14 Patio doors are fitted with an EPDM gasket between the frame and the triple-glazed unit. The glazing unit is secured by an extruded glazing bead with an integral EPDM gasket.

1.15 Aluminium glazing beads are polyester-powder coated in any standard RAL colour, to match the coloured timber or aluminium cladding.

Quality control

1.16 Quality control checks are carried out on the incoming materials, during production and on the finished products.

2 Manufacture

2.1 The doors are manufactured by NorDan Sp. Z o. o., ul. Powodowo 54, 64-200 Wolsztyn, Poland and NorDan AS, Tengsareidv 1, 4370 Egersund, Norway.

2.2 The door framing members are profiled from engineered North European redwood. After machining, each wooden component is treated with a vacuum-impregnation preservative to BS EN 351-1 : 2007. Doors with or without aluminium cladding can be supplied in colours according to the RAL colour scale.

2.3 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.

2.4 The management system of NorDan AS has been assessed and registered as meeting the requirements BS EN ISO 9001 : 2008 by Nemko Certification AS (Certificate 800003)

3 Delivery and site handling

3.1 The patio doors are delivered to site, as standard, factory glazed. For transportation, they are set securely on timber pallets, shrink-wrapped and steel-banded to provide protection against surface damage. Care must be taken during all subsequent handling processes to avoid the risk of damage. Each door is marked with the customer's reference, production serial number and glass size and make-up for easy identification on site.

3.2 The patio doors should be stored in accordance with the manufacturer's recommendations.

3.3 The weight of the unglazed frame, and of the glazing, can be obtained from the Certificate holder. The weight of the unglazed frame, and of the glazing, and their ease of handling, must 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 NorDan Timber Sliding Patio Door System.

Design Considerations

4 Use

The NorDan Timber Sliding Patio Door System is satisfactory for use where doors are installed vertically into the external walls of dwellings or similar applications as secondary access doors.

5 Practicability of installation

5.1 The patio doors are designed to be installed by a competent general builder, or a contractor, experienced with this type of system.

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

6 Thermal properties

6.1 When considering doorset requirements, designers should refer to the detailed guidance contained in the documents supporting the national Building Regulations. The U value derived in accordance with section 6.2 of this Certificate indicates that typical design U values referred to in those supporting documents can be met.

6.2 The following aluminium-clad timber sliding patio door, 2180 mm high by 2000 mm wide, achieved a U value of 0.92 $W \cdot m^{-2} \cdot K^{-1}$ when calculated by computer simulation in accordance with BS EN ISO 10077-2 : 2012:

— 4/16/4/16/4 triple-glazed unit
— 16 mm argon-filled cavities (90%)
— external pane: 4 mm Climaguard A 1.1
— centre pane: 4 mm float
— internal pane: 4 mm Climaguard A 1.0
— spacer: Chromatech Ultra F spacer

6.3 The overall thermal insulation of the doors will be dependent on the performance of the triple-glazed units. For units other than that described above, the indicative U values shown in SAP 2012 *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 or BS EN ISO 10077-2 : 2012, should be used in preference.

6.4 Design U values are detailed in the documents supporting the national Building Regulations.

7 Weathertightness

7.1 Selected samples from the system were tested in accordance with BS EN 14351-1 : 2007. Assessment of the results shows that the system, within the range, is suitable for use where the test pressure classes defined in BS EN 12207 : 2016, BS EN 12208 : 2000 and BS EN 12210 : 2016 (and indicated in Table 2 of this Certificate) are applicable. 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 2 Test pressure class

	Classification according to:			UK exposure category according to BS 6375-1 : 2015
	Resistance to wind loading according to BS EN 12210	Watertightness according to BS EN 12208	Air permeability according to BS EN 12207	
Sliding patio doors up to maximum size	Class C3*	Class E1200*	Class 4*	1200

(1) The weathertightness performance is dependent upon the doors being correctly fitted and adjusted, following the manufacturer's recommendations.

8 Ventilation

8.1 The opening area for natural ventilation may be calculated by subtracting 183 mm for aluminium-clad timber, or 166 mm for timber, from half the overall width, and 101 mm from the height of the sliding leaf.

8.2 The background ventilation requirements of the various Buildings Regulations can be met by the incorporation in the patio door of a suitably sized trickle ventilator by the Certificate holder. The ventilator may be glazed-in or fitted in a supplementary head member. The weathertightness of particular ventilators has not been assessed. Details of ventilators covered by an Agrément Certificate can be found on the BBA website.

9 Unauthorised access

9.1 Doors according to Enhanced Security Sheet (ES2) for Product Sheet 2 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 The patio doors are fitted with locking mechanisms and features as described in section 1.7 of this Certificate. When fastened in the closed position, the opening leaf cannot be opened by manipulation from the outside (for example, by the insertion of a thin blade). Where relevant, reference should be made to *NHBC Standards* 2017, 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 Externally fitted glazing beads can be removed but subsequent removal of the glass without breakage and noise is extremely difficult due to the glazing being additionally secured with polyurethane sealant.

9.5 Anti-lift devices are fitted to the top of the sliding door leaf.

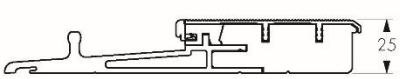
10 Glass area

The approximate unobstructed glass area of the doors is determined by deducting from the overall width and height the appropriate profile dimensions. Typical profile dimensions can be obtained from the Certificate holder. Alternatively, the glazed area of the door can be measured.

11 Access

Two-plane sliding patio doors are fitted with a thermally broken aluminium low threshold designed to meet the requirements of the relevant Buildings Regulations when suitably installed (see Figure 3).

Figure 3 Typical aluminium low-threshold section



12 Condensation risk

12.1 Experience has shown that, in normal domestic or similar applications, timber doors do not constitute significant condensation risk when correctly installed.

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

13 Safety

13.1 Patio doors are fitted 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 In buildings other than dwellings, the glazing must incorporate features that make it apparent and therefore prevent people who are unaware of the doors or visually impaired from colliding with the glass.

13.3 The patio doors do not have an established fire-resistance rating and must not be used where fire resistance requirements apply.

13.4 When the door is fitted in an escape route, it must be fitted only with a lock or fastening which is readily operated, with a key, from the side approached by people making an escape; a thumbturn option is available from the Certificate holder that meets this requirement.

13.5 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

Without considering the glass, patio doors will be unaffected by the soft or hard body impacts likely to be encountered in dwellings or similar applications.

15 Ease of operation

The patio doors can be operated without difficulty when correctly installed.

16 Maintenance

16.1 The patio doors can be re-glazed and the gaskets and weatherstripping replaced. Should damage occur to the glazing unit, the damaged unit should be removed by cutting through the polyurethane adhesive sealant with a sharp knife. This process should only be carried out by specialist operatives using the materials recommended by the Certificate holder and approved by the BBA. Details of replacement units are available from the Certificate holder.

16.2 If the gasket is damaged on a glazing bead, for example during re-glazing, the gasket may be replaced. This operation should be carried out by specialist operatives using the materials recommended by the Certificate holder and approved by the BBA.

16.3 If damage occurs, the furniture and fittings can be replaced.

16.4 The painted coating can be cleaned using a soft sponge and soapy water. Solvent-based, corrosive or abrasive cleaners must not be used. If dirt is allowed to build up on the coating over long periods, it may become more difficult to restore the surface appearance.

16.5 If damage occurs to the painted coating, repairs should be carried out as described in the manufacturer's instructions, using paints as recommended by the Certificate holder.

16.6 The rollers and the locking mechanism should be periodically cleaned and lubricated in accordance with the manufacturer's instructions to minimise wear and to ensure smooth operation. More frequent lubrication may be required depending on the environmental conditions.

16.7 The seal to the building structure will need to be replaced within the life of the door.

17 Durability

17.1 Evidence indicates that the patio doors will have a life of at least 25 years.

17.2 The timber members of the frame are preservative pre-treated with an effective fungicidal to BS EN 351-1 : 2007.

17.3 Fittings, including the locking mechanism, rollers and operating handles, as described in this Certificate, will have similar durability except where patio doors are to be installed in areas subject to particularly aggressive conditions. These conditions can prevail in coastal locations or near sources of industrial pollutants and replacement of fittings may be necessary within the life of the patio doors.

17.4 The gaskets, weatherstripping and fittings may need to be replaced within the life of the doorset.

17.5 The coloured coating system used on the aluminium cladding has good chemical resistance and colour stability and will retain its appearance for at least 10 years without decoration. The coating adheres well to the substrate and will retain its integrity for a similar period. The coloured coating system used on the wooden surfaces also has good chemical resistance and colour stability. However, the coating may need to be repainted within this period using paints as recommended by the Certificate holder.

17.6 Any slight colour change or surface dulling of the painted coating which might occur will be uniform over the visible surfaces of the doorsets.

18 Reuse and recyclability

The timber frame members and aluminium cladding sections of the system can be recycled.

Installation

19 General

19.1 The NorDan Timber Sliding Patio Door System must be fixed into the opening, in accordance with the manufacturer's installation instructions and BS 8213-4 : 2016, using appropriate fixing screws and/or proprietary expanding anchors through the frame or galvanized steel fixing lugs.

19.2 Openings in new walls should be formed making suitable allowances for fitting tolerances. As details may vary depending on the type of construction employed, tolerances should be discussed with the Certificate holder prior to establishing the manufacturing dimensions for the door.

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

20 Procedure

20.1 After checking the dimensions of the doorset, the sliding door leaf is lifted off its track and the frame positioned into the opening using rot-proof dense wedges, ensuring the frame is level and plumb without twist. The frame is fastened first at the fixed side at the top and bottom and then at the opening side.

20.2 The sliding leaf is lifted up and into the frame and the operation of the door checked.

20.3 The installation is completed by spraying all surfaces with water and applying a low-expansion polyurethane foam in the gap between the wall and door frame, whilst ensuring that the door frame is braced to resist overexpansion of the foam. This is followed by application of a silicone or similar durable sealant to the door/wall junction as required.

20.4 The lifting of the sliding leaf must not be carried out by one person: the weight of the door requires at least two people to carry out this operation.

Technical Investigations

21 Tests

21.1 Tests were carried out in accordance with the methods defined in BS EN 14351-1:2006 + A2 : 2016, BS 6375-2 : 2009 and BS 6375-3 : 2009 to determine:

- operating forces
- air permeability
- watertightness
- wind resistance
- resistance to soft and heavy body impact
- resistance to hard body impact
- cyclic operation
- basic security.

21.2 Tests to determine the durability of the painted coating are detailed in Product Sheet 1 *NorDan Timber Inward and Outward Opening Doorsets.*

21.3 Additional test work in accordance with BS EN 1670 : 2007, BS EN ISO 2409 : 2013 and BS EN ISO 4892-3 : 2016 was carried out on the door hardware to determine:

- resistance to salt spray corrosion
- cross-cut adhesion
- appearance after UV-ageing.

22 Investigations

Thermal simulations of the patio doors were carried out in accordance with BS EN ISO 10077-1 : 2006 and BS EN ISO 10077-2 : 2012.

Bibliography

BRE Report BR 262 : 2002 *Thermal insulation — Avoiding risks*

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

BS 6375-1 : 2015 + A1 : 2016 *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 + A1 : 2013 *Performance of windows and doors — Classification for additional performance characteristics and guidance on selection and specification*

BS 8213-4 : 2016 *Windows and doors — Code of practice for the survey and installation of windows and external doorsets*

BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*

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 1670 : 2007 *Building hardware — Corrosion resistance — Requirements and test methods*

BS EN 12207 : 2016 *Windows and doors — Air permeability — Classification*

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

BS EN 12210 : 2016 *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 14351-1 : 2006 + A2 : 2016 *Windows and doors — Product standard, performance characteristics — Windows and external pedestrian doorsets*

BS EN ISO 2409 : 2013 *Paints and varnishes — Cross-cut method*

BS EN ISO 4892-3 : 2016 *Plastics — Methods of exposure to laboratory light sources — Fluorescent UV lamps*

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*

PAS 24 : 2012 *Enhanced security performance requirements for doorsets and windows in the UK — External doorsets and windows intneded to offer a level of security suitable for dwellings and other buildngs exposed to comparable risk*

Conditions of Certification

23 Conditions

23.1 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.

23.2 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.

23.3 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.

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

23.5 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.

23.6 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.

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