

Prodema SA

Barrio San Miguel, s/n
20.250 Legorreta – Guipúzcoa
Spain

Tel: 00 34 943 807 000 Fax: 00 34 943 807 130
e-mail: prodema@prodema.com
website: www.prodema.com



Agrément Certificate
12/4917
Product Sheet 1

PRODEMA CLADDING SYSTEMS

PRODEX FAÇADE WALL CLADDING PANELS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the ProDEX Façade Wall Cladding Panel, high pressure laminate panels fixed to a timber battens or an aluminium or galvanised steel support frame, for use as a protective/decorative façade over the external walls of buildings.

AGRÉMENT 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

Strength and stability — the product can be incorporated in a cladding system designed to resist wind loads normally encountered in the UK (see section 6).

Behaviour in relation to fire — the product can be incorporated in a construction meeting regulatory requirements (see section 7).

Air and water penetration — baffled vertical and horizontal joints between the panels will minimise water entering the cavity. Any water collecting in the cavity will be removed by drainage and ventilation (see section 8).

Durability — in normal UK conditions, the product should have a service life in excess of 30 years (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. This product 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 First issue: 15 June 2012

Handwritten signature of Brian Chamberlain in black ink.

Brian Chamberlain

Head of Approvals — Engineering

Handwritten signature of Greg Cooper in black ink.

Greg Cooper

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.

British Board of Agrément
Bucknalls Lane
Garston, Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

©2012

Regulations

In the opinion of the BBA, the ProdEX Façade Wall Cladding Panel, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting 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)

Requirement: A1	Loading
Comment:	The product is acceptable for use as set out in sections 4.2 and 6 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The product is judged to meet the Class 0 requirements. See section 7 of this Certificate.
Requirement: C2(b)(c)	Resistance to moisture
Comment:	The product will meet the stated requirements. See section 8 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The use of the product satisfies the requirements of the Regulation. See sections 10.1, 10.2 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 1.1(a)(b)	Structure
Comment:	The product is acceptable, with reference to clauses 1.1.1 ⁽¹⁾⁽²⁾ , 1.1.2 ⁽¹⁾⁽²⁾ and 1.1.3 ⁽¹⁾⁽²⁾ . See sections 4.2 and 6 of this Certificate.
Standard: 2.4	Cavities
Comment:	The panels, when used in conjunction with fire-resistant materials, can meet this Standard, with reference to clauses 2.4.1 ⁽¹⁾⁽²⁾ , 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.5 ⁽¹⁾⁽²⁾ and 2.4.9 ⁽¹⁾⁽²⁾ . See section 7.6 of this Certificate.
Standard: 2.6	Spread to neighbouring buildings
Comment:	The product can contribute to satisfying this Standard, with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See section 7 of this Certificate.
Standard: 2.7	Spread on external walls
Comment:	The product can contribute to satisfying this Standard, with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The product will contribute to meeting this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ to 3.10.3 ⁽¹⁾⁽²⁾ , 3.10.5 ⁽¹⁾⁽²⁾ and 3.10.6 ⁽¹⁾⁽²⁾ . See section 8 of this Certificate.
Standard: 7.1(a)(b)	Statement of sustainability
Comment:	The product can contribute to meeting 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.
Regulation: 12	Building standards – conversions
Comment:	All comments given for these systems under Regulation 9, 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) 2000 (as amended)

Regulation: B2	Fitness of materials and workmanship
Comment:	The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation: B3(2)	Suitability of certain materials
Comment:	The product is acceptable. See section 9 of this Certificate.
Regulation: C4	Resistance to ground moisture and weather
Comment:	The product will contribute to meeting this Regulation. See section 8 of this Certificate.
Regulation: D1	Stability
Comment:	The product is acceptable as set out in sections 4.2 and 6 of this Certificate.
Regulation: E5	External fire spread
Comment:	The product is judged to meet the Class 0 requirements. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2007

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

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

See section: 3 *Delivery and site handling* (3.3) of this Certificate.

NHBC Standards 2011

NHBC accepts the use of the ProdEX Façade Wall Cladding Panel, when installed and used in accordance with this Certificate, in relation to *NHBC Standards, Chapter 6.9 Curtain walling and cladding*.

Technical Specification

1 Description

1.1 The ProdEX Façade Wall Cladding Panel is a composite panel comprising a cellulosic fibre core with a wood veneer impregnated with thermosetting resin on either side (see Figure 1). Panels can be fixed to a timber or metal sub-frame to provide a decorative/protective façade over the external walls of buildings.

Figure 1 Panel details



1.2 The panel is manufactured in standard dimensions of 1220 mm by 2440 mm in 6 mm, 8 mm, 10 mm, 12 mm and 14 mm thicknesses⁽¹⁾, and is available in a variety of natural timber finishes.

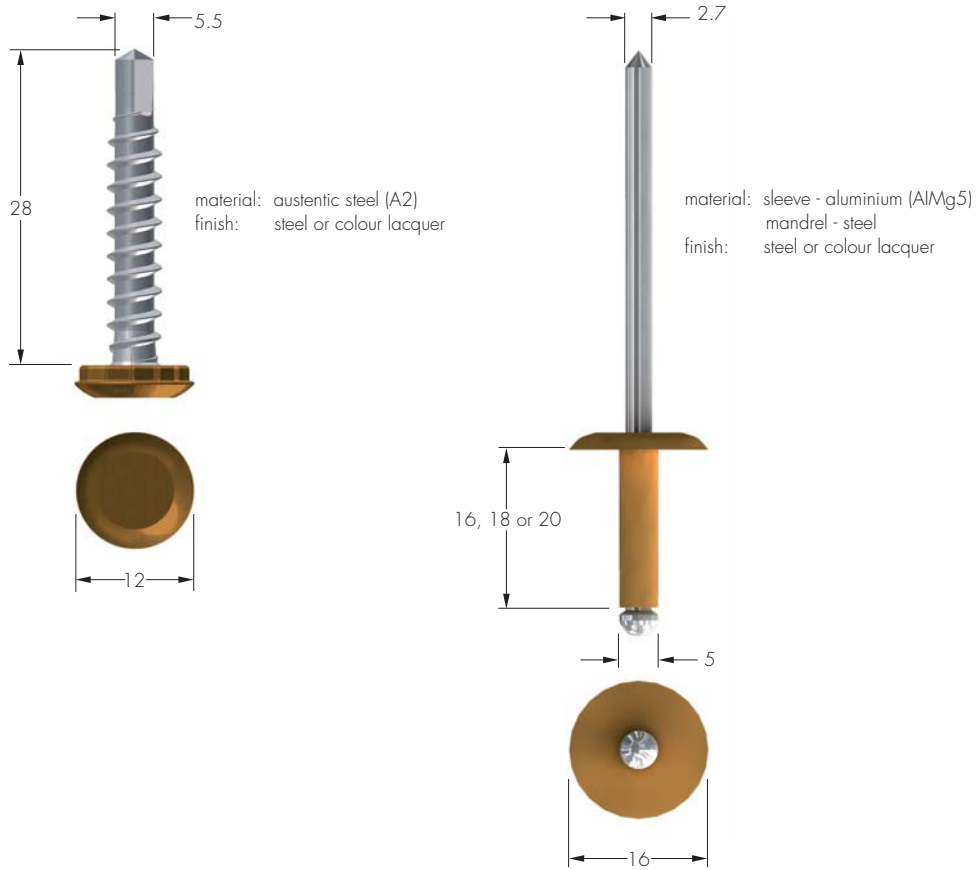
(1) Other thicknesses available to order.

1.3 Two panel grades are available: the standard panel (ProdEX) and a fire retardant panel (ProdEX IGN).

1.4 The panels have a mean density of $1416 \text{ kg}\cdot\text{m}^{-3}$, mean flexural strength of 145 MPa and modulus of elasticity of 12129 MPa.

1.5 The panels are fixed to the timber sub-frame using 4.8 mm diameter by 38 mm long stainless steel screws and to the aluminium sub-frame using 5.5 mm diameter by 28 mm long screws or 5 mm diameter aluminium rivets with a stainless steel mandrel (see Figure 2). Panels can also be fixed to the sub-frame via concealed mechanical and adhesive methods (outside the scope of this Certificate). Details of panel fixing can be seen in Figure 3.

Figure 2 Fixings (all dimensions in mm)



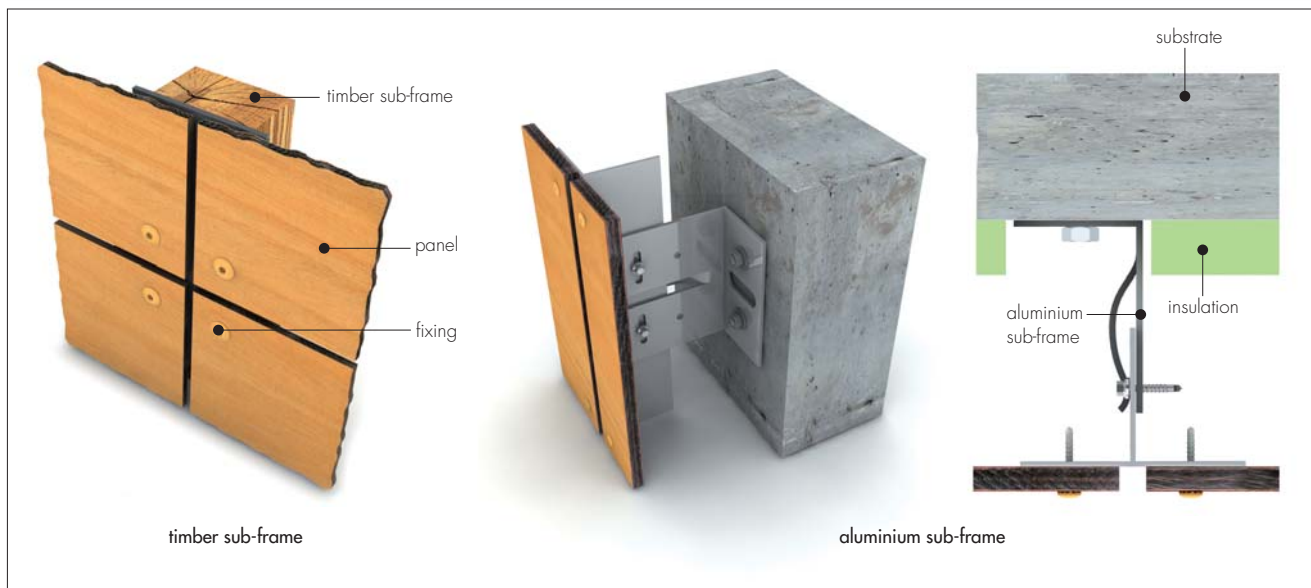
fixing to aluminium sub-frame



fixing to timber sub-frame

dimensions in mm (not to scale)

Figure 3 Panel mounting details



1.6 The sub-frame and its attachment to the substrate wall are outside the scope of this Certificate as are other miscellaneous construction details.

1.7 Production control is regularly monitored by CSTB who are ultimately responsible for ensuring that product quality is maintained.

2 Manufacture

2.1 The panel is produced by compressing wood-fibre layers and thermosetting resins at high temperatures and pressures to form a 'high pressure laminate' (HPL) panel.

2.2 To ensure product quality is consistently maintained to the required specification, the BBA has:

- agreed with the Certificate holder/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 confirm with the CSTB on a regular basis that standards are maintained and that the product or system remains as Certificated.

2.3 The product is manufactured in Spain and marketed in the UK by Prodema UK and Ireland Limited, Commerce House, Telford Road, Bicester, Oxfordshire OX26 4LD. Tel: 01869 255766, Fax: 01869 255767, e-mail: infoukireland@prodema.com, website: www.prodema.com.

3 Delivery and site handling

3.1 The panels are delivered on pallets with the external face protected with a layer of polyethylene film. Every panel carries an imprint bearing the manufacturer's name and production batch number and a label bearing the BBA identification mark incorporating the number of this Certificate.

3.2 The pallets should be stored on a dry, flat and level surface and protected from the weather at all times. To prevent distortion, panels should not be stacked upright or angled to one side except for a short period of time as a temporary measure.

3.3 The panels should be handled with care to avoid damage. They should be lifted off rather than slid across each other.

3.4 The protective film on the panels should not be exposed to extremes of temperature and should be removed immediately after installation.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on ProdEX Façade Wall Cladding Panel.

4 General

4.1 The ProdEX Façade Wall Cladding Panel can be incorporated in back ventilated and drained cladding systems. The cavity behind the cladding should be at least 50 mm, with a minimum ventilation area of 1 m² per metre run of cladding (see section 8). The ventilation openings should be suitably protected, or baffled, to prevent the ingress of birds, vermin and rain.



4.2 The wall and the sub-frame to which the cladding is fixed should be structurally sound and constructed in accordance with the requirements of the relevant building regulations and national standards.

4.3 The wall to which the cladding is fixed should be watertight and resistant to the transmission of sound.

4.4 Where required, insulation behind the cladding should be suitably fixed to the supporting wall, and protected, to resist the forces of wind suction. Insulation should be of a rigid type (eg boards or batts). The ventilation pathway behind the cladding must not be allowed to become blocked nor the insulation dislodged where it may be vulnerable to wetting.

4.5 To allow for expansion, a minimum gap of 2.5 mm per metre length between adjacent boards should be provided. For the standard panel size, a minimum gap of 8 mm between boards should be adequate.

4.6 All design aspects of the installation should be checked by a suitably qualified chartered engineer or other appropriately qualified person.

5 Practicability of installation

The product should only be installed by installers who have been trained and approved by the Certificate holder.

6 Strength and stability



6.1 Design wind resistance (positive or negative) for two different stud spacings, using rivets specified in Figure 2 at 20 mm to 25 mm edge distance, are presented in Tables 1 to 3. For other fixings, the pull-through resistance must be determined in order to calculate the design wind resistance.

Table 1 Fixing pull-through values⁽¹⁾ (N)

Panel thickness (mm)	Fixing centres ⁽²⁾ (mm)	Fixing positions		
		middle	edge	corner
6 and 8	≤ 400	500	260	110
	≤ 600	400	235	110
10, 12 and 14	≤ 600	600 (815)	410	245
	≤ 800	600 (760)	380	230

(1) These pull-through values are factored with a minimum factor of safety of 2.0 and are valid only for the rivets specified in Figure 2.

(2) For intermediate fixing centres, linear interpolation may be used.

Table 2 Design wind resistance (kN·m⁻²) — 400 mm stud spacing

Fixings layout ⁽¹⁾⁽²⁾ V x H	Panel thickness (mm)	Fixing centres along studs (mm)				
		300	400	500	600	800
2 x 2	6	2.08	1.51	–	–	–
	8	2.94	2.27	–	–	–
	10, 12 and 14	≤ 3.00	≤ 3.00	–	–	–
n x 2	6	2.08	2.08	1.81	1.08	–
	8	≤ 3.00	2.27	1.81	1.52	1.13
	10, 12 and 14	≤ 3.00	≤ 3.00	2.98	2.48	1.86
2 x n	6	≤ 3.00	1.51	–	–	–
	8	≤ 3.00	2.27	–	–	–
	10, 12 and 14	≤ 3.00	≤ 3.00	–	–	–
n x n	6	2.50	1.91	1.23	1.03	–
	8	2.50	1.91	1.23	1.03	0.77
	10, 12 and 14	≤ 3.00	2.29	1.85	1.55	1.16

(1) V = vertical, H = horizontal, n = number of fixings ≥ 3.

(2) The minimum number of vertical fixings where V > 400 mm is 3.

Table 3 Design wind resistance ($kN \cdot m^{-2}$) — 600 mm stud spacing

Fixings layout ⁽¹⁾⁽²⁾ $V \times H$	Panel thickness (mm)	Fixing centres along studs (mm)				
		300	400	500	600	800
2 x 2	8	1.31	1.31	—	—	—
	10, 12 and 14	2.56	2.56	—	—	—
$n \times 2$	8	1.31	1.31	1.21	1.01	0.75
	10, 12 and 14	2.56	2.56	2.05	1.70	1.18
2 x n	8	1.84	1.42	—	—	—
	10, 12 and 14	≤ 3.00	2.48	—	—	—
$n \times n$	8	1.42	1.07	0.85	0.71	0.53
	10, 12 and 14	2.14	1.60	1.28	1.07	0.80

(1) V = vertical, H = horizontal, n = number of fixings ≥ 3.

(2) The minimum number of vertical fixings where $V > 400$ mm is 3.

6.2 The panels should be fixed to timber sub-frames using the specified screws or an aluminium or galvanised steel sub-frames using the specified screws or rivets (see Figure 2). When checking the design, pull-out values shown in Table 1 should be used. Fixings should be positioned at not less than 15 mm or greater than 40 mm from the panel edge.

6.3 When calculating wind loads at corners, higher pressure coefficients should be used, as recommended in the appropriate Standards.

6.4 The design of the sub-frame should be in accordance with the relevant codes and standards and should be such as to limit mid-span deflections to $L/200$ and cantilever deflections to $L/150$.

6.5 A suitably qualified chartered engineer or other appropriately qualified person must check the design and installation of the cladding system.

6.6 The designer must ensure that:

- the system attachment to the substrate has adequate fixing pull-out capacity for the calculated loads
- thermal expansion effects of both the support system and the cladding to be supported are taken into consideration in the design and detailing.

6.7 The supporting wall must be able to take the full wind, as well as any racking, loads on its own. No contribution from the cladding may be assumed in this regard.

6.8 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005 or BS 6399-2 : 1997.

Impact loading

6.10 Impact resistance is generally a function of the support frame arrangement and the panel thickness. A 6 mm, 12 mm and 14 mm thick test sample, on battens at 600 mm centres, when subjected to 'soft and hard body impact' loads in accordance with ETAG 034, performed satisfactorily. The product, therefore, can be used in cladding systems designed for use in category I – IV as defined in ETAG 034 : 2011 Table 4 or categories B to F, as defined in BS 8200 : 1985, Table 2.

7 Behaviour in relation to fire



7.1 A 6 mm thick sample of ProdEX panel, when tested for reaction to fire, achieved a classification of C-s2, d0 in accordance with BS EN 13501-1 : 2002.

7.2 A 6 mm thick sample of ProdEX IGN panel, when tested for reaction to fire, achieved a classification of B-s2, d0 in accordance with BS EN 13501-1 : 2002.

7.3 For reaction to fire, a cladding system incorporating the product may be regarded as having a Class 0 surface or as being a 'low risk' material in accordance with:

England and Wales — Approved Document B

Scotland — Annex 2C⁽¹⁾ and Annex 2E⁽²⁾

Northern Ireland — Technical Booklet E.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

7.4 For resistance to fire, the performance of a wall incorporating the product can only be determined by tests from a suitably accredited laboratory, and is not covered by this Certificate.

7.5 The incorporation of combustible material behind the cladding should be avoided where possible; any insulation should be non-combustible.

7.6 Cavity barriers (not covered by this Certificate) should be incorporated behind the cladding as required under the national Building Regulations, but should not block essential ventilation pathways.

8 Air and water penetration



8.1 The product is suitable for use in back ventilated and drained cladding systems.

8.2 The supporting wall must be watertight and reasonably airtight.

8.3 Providing the joints between panels are adequately baffled, the amount of water entering the cavity by wind-driven rain will be minimal. Any water collecting in the cavity due to rain or condensation will be removed by drainage and ventilation.

8.4 The air space between the back of the panels and the supporting wall or insulation must be a minimum of 50 mm allowing for normal building tolerances. Guidance on recommended cavity widths is given in *NHBC Standards 2011*, Chapter 6.9 *Curtain walling and cladding*.

9 Maintenance



9.1 For routine cleaning down, surface stains may be removed using water/non-abrasive detergents applied with a suitable cleaning pad or sponge. For more difficult stains, the manufacturer's specialist advice must be sought on suitable method of cleaning.

9.2 Annual maintenance inspections should be carried out to ensure that rain-ware is complete and in good order, that flashings, seals and fastenings are in place and are secure and to establish whether cleaning down is necessary.

9.3 Damaged panels should be replaced as soon as is practicable, following the manufacturer's instructions and observing all necessary health and safety regulations.

10 Durability



10.1 The durability and service life of the product will depend upon the building location, façade aspect, immediate environment, intended use of the building and general condition of the system components.

10.2 Providing regular maintenance is carried out as described in section 8 and in accordance with the Certificate holder's instructions, the product should have an ultimate service life in excess of 30 years.

10.3 In general, there will be a colour change. However, this will not be excessive and will be uniform on any one elevation.

10.4 When tested for artificial weathering, Prodex and Prodex IGN panels⁽¹⁾ achieved the minimum requirements for exterior grade laminates in accordance with BS EN 438-6 : 2005.

(1) Pale, Rustic, Light Brown, Dark Brown, Deep Brown, Mocca and Ice Grey coloured panels.

10.5 When tested for exposure to UV light in accordance with BS EN 438-2 : 2005, Prodex and Prodex IGN panels⁽¹⁾ achieved the minimum requirements for contrast and appearance in accordance with BS EN 438-6 : 2005.

(1) Rustic, Mocca, Ice Grey and Cream coloured panels.

10.6 When tested for impact resistance, a 10 mm and 12 mm Prodex IGN panel achieved the minimum requirements in accordance with BS EN 438-2 : 2005.

11 Re-use and recyclability

The cellulosic fibre core and thermosetting impregnated wood veneer can be readily recycled.

Installation

12 General

12.1 The ProdEX Façade Wall Cladding Panels must be installed in accordance with the manufacturer's recommendations, the requirements of this Certificate and specifications laid down by the consulting engineer.

12.2 Installers must be trained and approved by the Certificate holder who can provide technical assistance at the design stage and at the start of the installation.

12.3 As colour variations between batches is likely, it is necessary to mix the panels from different pallets so as to obtain a uniform shade over the façade.

13 Procedure

13.1 Based on preliminary survey of the wall, and architectural/structural design, a grid layout for the sub-frame is first prepared.

13.2 The timber or metal studs are fixed to the substrate wall either directly or via adjustable metal cleats.

13.3 Insulation is applied as required.

13.4 To protect the substrate wall or insulation from wind-driven rain, a vapour permeable membrane conforming to BS 4016 : 1997 should be applied (not covered by this Certificate). The timber or metal studs should be similarly protected using aluminium or EPDM strip.

13.5 The panels are fixed to the sub-frame using the appropriate fastener as specified.

13.6 To locate the panel accurately on the sub-frame, one fixing at the centre of the panel should be of close tolerance type. To allow for expansion, all other fixings should be in clearance holes 2 mm larger than the diameter of the screw or rivet used.

Technical Investigations

14 Investigations

14.1 A visit was made to an existing site to witness the installation process.

14.2 An assessment was made of the manufacturing process including a factory visit.

14.3 Based on the Spanish Technical Approval 522p/08, an assessment was made of the system's mechanical resistance, durability, behaviour in relation to fire and practicability of installation.

14.4 An examination was made of external test reports relating to:

- reaction to fire
- resistance to artificial weathering
- resistance to UV light
- impact resistance
- resistance to thermal shock
- graffiti resistance
- flexural strength
- modulus of elasticity
- density.

Bibliography

BS 4016 : 1997 *Specification for flexible building membrane (breather type)*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

BS EN 438-2 : 2005 *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called laminates) — Determination of properties*

BS EN 438-6 : 2005 *Decorative high-pressure laminates (HPL) sheets based on thermosetting resins — Classification and specifications for exterior-grade compact laminates of thickness 2mm and greater*

BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*

BS EN 13501-1 : 2002 *Fire classification of construction products and building elements. Classification using test data from reaction to fire*

15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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
- individual 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.

15.6 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.