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Agrément Certificate
01/3784
Product Sheet 1

EUROCELL CLADDING SYSTEMS

EUROCELL 125 SHIPLAP CLADDING

This Agrément Certificate Product Sheet⁽¹⁾ relates to Eurocell 125 Shiplap Cladding, PVC-UE cladding planks for use as protective/decorative cladding over external brick or block masonry walls and timber stud walls (with or without sheathing) of new and existing domestic and non-domestic buildings.

(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

Strength and stability — when installed in accordance with the requirements of this Certificate, the cladding can withstand dynamic wind pressures not exceeding 1750 Pa (see section 6).

Behaviour in relation to fire — when tested to BS 476-6 : 1989, the cladding material achieved a fire propagation index (I) of 13.9 with sub-indices (i_1), (i_2) and (i_3) of 5.5, 7.4 and 1.0 respectively. When tested in accordance with BS 476-7 : 1997, the co-extruded material achieved a Class 1Y rating and when tested in accordance with BS EN 13501-1 : 2009, the material achieved a Class D-s3, d2/AHM (see section 7).

Durability — the product will retain its decorative qualities for a period of up to 20-years with only minor changes in surface appearance (see section 11).

The BBA has awarded this 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

John Albon — Head of Approvals
Energy and Ventilation

Claire Curtis-Thomas
Chief Executive

Date of First issue: 19 June 2014

Originally certificated on 18 January 2001

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, Eurocell 125 Shiplap Cladding, if installed, used and maintained in accordance with this Certificate, will 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: A1	Loading
Comment:	The product is acceptable for use as set out in sections 4.2 to 4.4 and 6.1 to 6.5 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The product has a fire propagation index (I) of 13.9 and is acceptable for use as set out in sections 7.1 to 7.6 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The product does not form a watertight or airtight facing. To achieve a waterproof barrier, a breather membrane must be provided. See sections 8.1 to 8.4 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The product is acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Durability, workmanship and fitness of materials
Comment:	The product is acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 1.1(a)(b)	Structure
Comment:	The product can contribute to satisfying this Standard, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ , as set out in sections 4.2 to 4.4 and 6.1 to 6.5 of this Certificate.
Standard: 2.4	Cavities
Standard: 2.6	Spread to neighbouring buildings
Standard: 2.7	Spread on external walls
Comment:	The product can contribute to satisfying these Standards, with reference to clauses 2.4.1 ⁽¹⁾⁽²⁾ , 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.6 ⁽¹⁾ , 2.4.7 ⁽¹⁾ , 2.4.8 ⁽²⁾ , 2.4.9 ⁽²⁾ , 2.6.4 ⁽¹⁾⁽²⁾ and 2.7.1 ⁽¹⁾⁽²⁾ , as set out in sections 7.1 to 7.6 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The product does not form a watertight or airtight facing. To achieve a waterproof barrier, a breather membrane must be provided. See sections 8.1 to 8.4 of this Certificate.
Standard: 3.15	Condensation
Comment:	Provided there is provision for adequate drainage and ventilation behind the cladding, and a breather membrane is incorporated as required, the product can contribute to satisfying this Standard, with reference to clauses 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 4.7 and 8.1 to 8.4 of this Certificate.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for this product 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

Regulation: 23	Fitness of materials and workmanship
Comment:	The product is acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	The product does not form a watertight or airtight facing. To achieve a waterproof barrier, a breather membrane must be provided. See sections 8.1 to 8.4 of this Certificate.
Regulation: 30	Stability
Comment:	The product is acceptable for use as set out in sections 4.2 to 4.4 and 6.1 to 6.5 of this Certificate.
Regulation: 36(a)	External fire spread
Comment:	The product has a fire propagation index (I) of 13.9 and its acceptability for use is as set out in sections 7.1 to 7.6 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: 12 *General* (12.5) of this Certificate.

NHBC Standards 2014

NHBC accepts the use of Eurocell 125 Shiplap Cladding, provided it is installed, used and maintained in accordance with this Certificate in relation to *NHBC Standards*, Chapter 6.1 *External Masonry Walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in association with harmonised European Standard BS EN 13245-2 : 2008. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification 1 Description

1 Description

1.1 Eurocell 125 Shiplap Cladding comprises protective and decorative white cellular polyvinyl chloride (PVC-UE) cladding planks and matching trims, for external use (see Figures 1 and 2).

Figure 1 Eurocell 125 Shiplap Cladding

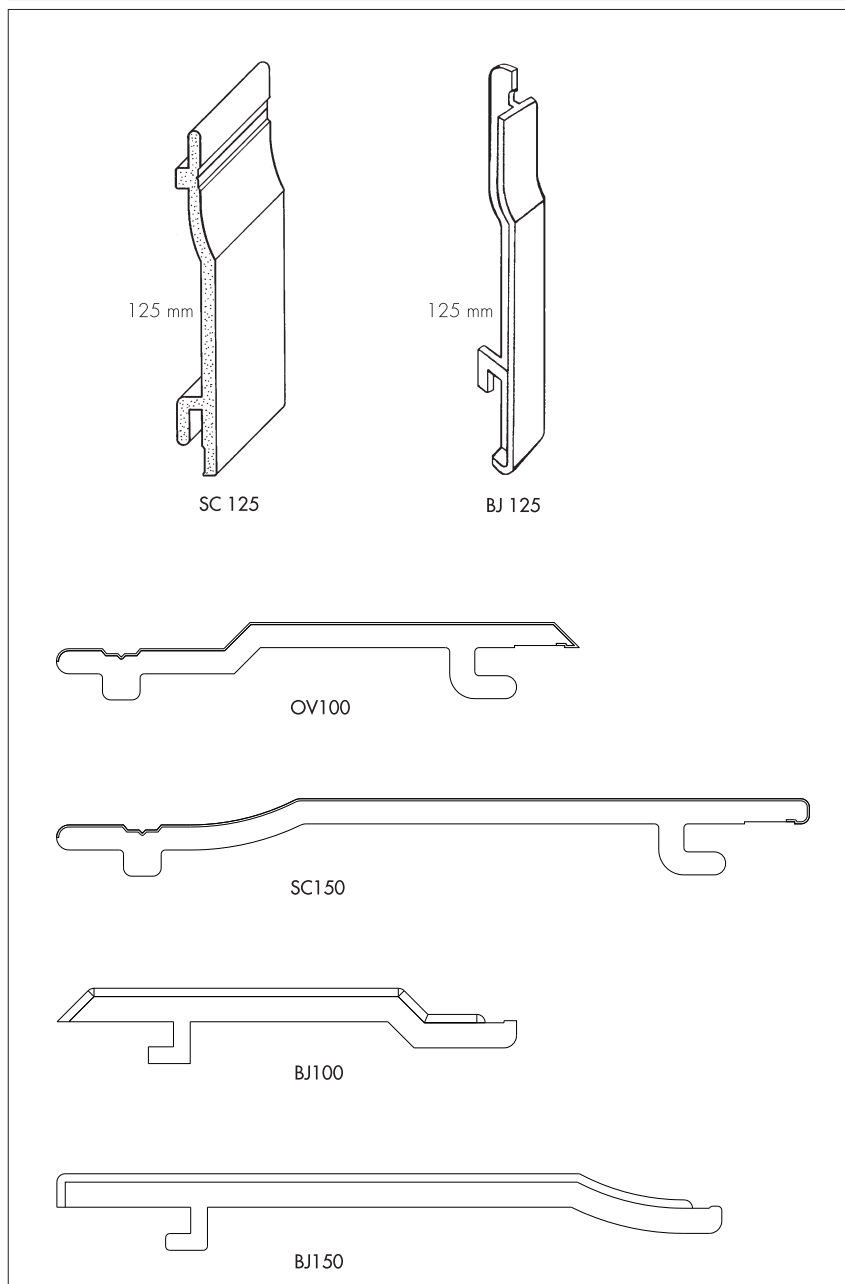
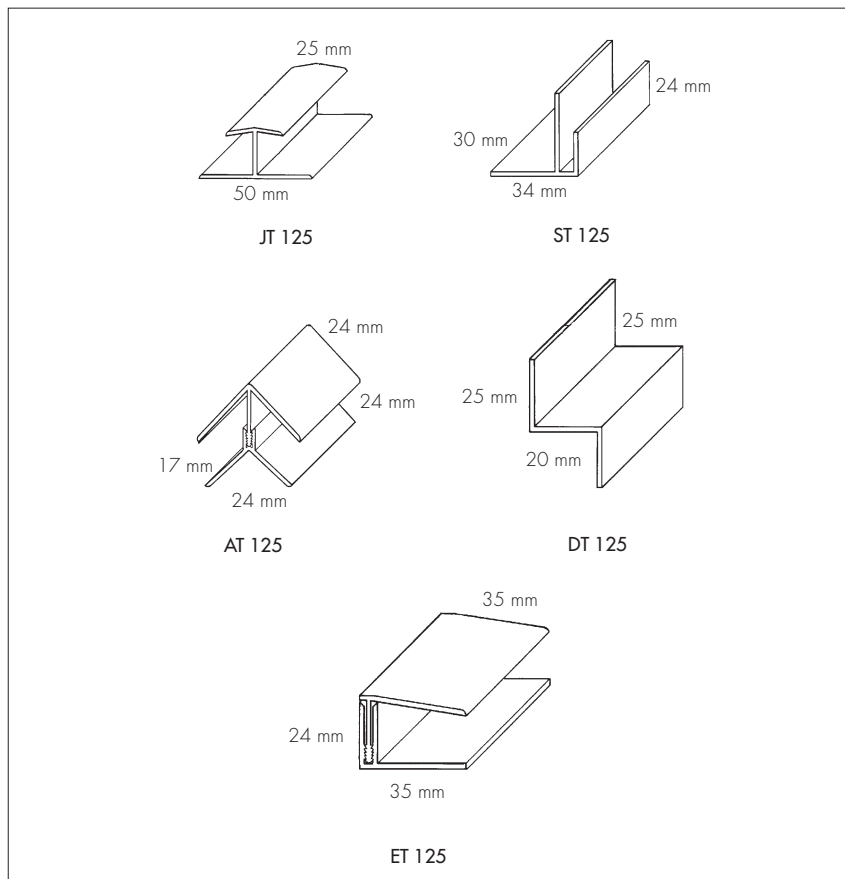


Figure 2 Trims



1.2 The planks are composed of a closed cell cellular PVC-UE core beneath an outer weathering impact-modified PVC-U skin. The extruded trims are composed of impact-modified PVC-U, and the injection mouldings of PVC-U.

1.3 The planks' characteristics are given in Table 1.

Table 1 Characteristics

Characteristic (unit)	Nominal value
Standard length (m)	5
Cover width (mm)	125
Thickness (mm)	6
Thickness of rigid outer surface (mm)	0.5
Nominal weight ($\text{kg}\cdot\text{m}^{-1}$)	0.64
Average density ($\text{kg}\cdot\text{m}^{-3}$)	0.55

2 Manufacture

2.1 The planks are manufactured by co-extruding a high-impact PVC-U compound on to a foamable PVC-UE compound, cooling and forming to section. Cellular PVC-U (PVC-UE) is formed in the process by evolution of gas from sodium bicarbonate. A clear, protective polyethylene film is applied to the outer face of the extrusion before the board is cut to length.

2.2 The trims are manufactured by conventional extrusion and injection moulding techniques.

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 Eurocell Profiles Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 (Certificate FM 45551) and BS EN ISO 14001 : 2004 (Certificate 25110/A/0001/UK/En) by BSI.

3 Delivery and site handling

3.1 Standard five metre lengths of the extrusions are delivered to site sealed in polyethylene sleeves. Pack quantities vary according to profile size.

3.2 All packaging bears the Eurocell product code.

3.3 Unloading should be carried out by hand to avoid damage to the planks, which should be stored flat in their protective wrapping on a clean, level surface. Stacks must not exceed one-metre in height and should be restrained to prevent collapse. To avoid damage, it is recommended that additional protection be provided when the planks are stored in the open.


Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Eurocell 125 Shiplap Cladding.

Design Considerations

4 General

4.1 Eurocell 125 Shiplap Cladding is suitable for fixing horizontally as a decorative and protective external facing over a timber stud or masonry wall.

 4.2 The designer should ensure that the strength and integrity of the intended substrate is commensurate with that required of the cladding (see sections 4.3 and 4.4).

4.3 Brickwork or blockwork walls should be constructed in the conventional manner, in accordance with BS EN 1996-3 : 2006 or the appropriate parts of the national Building Regulations:

England and Wales — Approved Document A1/2, Part C, Section 1

Scotland — Mandatory Standard 1.1, clause 1.1.1⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).


(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet D *Structure*.

4.4 Timber stud walls should be constructed in accordance with BS EN 1995-1-1 : 2004. Studding and framing should be adequately supported by noggings to ensure rigidity.

4.5 When used over a sheathed timber stud frame or a masonry substrate, the cladding should be fixed to preservative-treated, good-quality timber battens (measuring not less than 25 mm by 38 mm) rigidly fixed to the studding (not the supported sheathing) or masonry substrate at 600 mm centres or closer.

4.6 Cellular PVC-UE has a similar coefficient of thermal expansion to that of conventional rigid PVC-U. To avoid distortion in service, care should be taken not to install the cladding in extremes of temperature (ie below 5°C or above 25°C) and to allow adequate gaps for expansion.

 4.7 A continuous ventilation pathway, minimum 10 mm wide (25 mm recommended by the manufacturer), must be maintained behind the cladding, with ventilation slots giving a minimum of 5000 mm² per metre run at the top and bottom of the installation. This will also satisfy the NHBC requirement (*NHBC Standards 2014*, Chapter 6.1) for a minimum 10 mm cavity behind cladding installed over timber sheathing.

5 Practicability of installation

The cladding is designed to be installed by a competent builder, or a contractor, experienced with this type of product. It can be installed easily under normal site conditions, provided the work is carried out according to the guidance given in sections 12 and 13. Care is needed when installing long lengths of cladding above ground floor level.

6 Strength and stability

Wind loading

 6.1 Under wind loading, the most likely mode of failure of the cladding will be by nail withdrawal under wind suction.

6.2 When installed in accordance with the requirements of this Certificate, on to battens at 600 mm spacings, the cladding can withstand dynamic wind pressures up to 1750 Pa.

6.3 The permissible dynamic wind pressure may be increased by reducing batten spacing. This is particularly recommended at the corners of buildings and in exposed locations. In common with all cladding, the adequacy of a proposed installation should always be checked by a suitably qualified and experienced individual, who should include in the check the adequacy of the fixing of battens to the substrate, but this is outside the scope of this Certificate.

6.4 The cladding should not be taken into account when designing a timber stud wall to resist racking forces.

Impact Resistance

6.5 Above ground-floor level, the cladding is suitable for use in locations where it is unlikely to be subjected to impact from thrown or kicked objects. It is not recommended to use the cladding at ground-floor level, where severe impacts may occur.

7 Behaviour in relation to fire



7.1 When tested to BS 476-6 : 1989, the cladding material achieved a fire propagation index (I) of 13.9 with sub-indices (i_1), (i_2) and (i_3) of 5.5, 7.4 and 1.0 respectively.

7.2 When tested in accordance with BS 476-7 : 1997, the co-extruded material achieved a Class 1Y rating.

7.3 When tested in accordance with BS EN 13501-1 : 2009, the material achieved a Class D-s3, d2/AHM*.

7.4 Although the spread-of-flame across the surface of PVC is limited, the material does tend to char and may fall away when exposed to fire. Due consideration should always be given to any combustible materials behind the cladding, which may become exposed in the event of fire. Where necessary, cavity barriers should be incorporated behind the cladding, as required under the relevant national Building Regulations.

7.5 When determining the minimum distance between the sides of a building and the relevant boundary, any area of wall (with appropriate fire resistance) covered by cellular PVC-UE cladding is counted as an unprotected area amounting to half the actual area of the cladding.

7.6 Subject to the provisions given in section 7.5, the cladding is suitable for use on external walls other than those requiring a Class 0 external surface (eg external walls less than one metre from a relevant boundary).

8 Air and water penetration



8.1 The cladding is not airtight, watertight or water-vapourtight. When used on timber stud walls, the product must be backed by a breather membrane acting as a vapour-permeable water barrier, incorporated behind the cladding under the supporting battens. This barrier must have a vapour resistance of less than $0.6 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ when calculated from the results of tests carried out at 25°C and a relative humidity of 75%, in accordance with BS 3177 : 1959.

8.2 Where cladding is used as a decorative facing attached to weathertight masonry walls, a water barrier is not necessary as the amount of water that will penetrate the cladding will be small and will not have an adverse effect on the wall.

8.3 If the cladding is used in the renovation of a masonry wall which is structurally sound but not fully weathertight, the use of a vapour-permeable water barrier is advisable.

8.4 Provision must always be made to allow water that has penetrated behind the cladding to drain away.

9 Thermal insulation

For the purpose of U value calculations, the thermal resistance of the cavity/battens and cladding may be taken as an enhanced external surface resistance (R_{se}) of $0.13 \text{ m}^2\cdot\text{K}\cdot\text{W}^{-1}$ as described in BR 443 : 2006 section 4.8.6.

10 Maintenance

10.1 The cladding can be washed with water and detergent. Solvent-based cleaners should not be used.

10.2 Replacement of a damaged section can be carried out but may require the temporary removal of undamaged planks above the damaged area.

10.3 Paints can cause premature embrittlement of PVC-U products and the application of dark colours to PVC-U cladding could lead to a risk of thermal distortion. Therefore, painting of the product is not recommended.

11 Durability



11.1 Accelerated weathering tests and limited natural exposure trials indicate that the cladding is as durable as conventional rigid PVC and will retain adequate impact resistance for a period of 20-years.

11.2 The cladding will retain its decorative function for the service life of the product with only minor changes in surface appearance. However, staining will result from contact with creosote or bitumen.

Installation

12 General

12.1 Flat-headed, stainless steel A4 cladding pins (30 mm long by 2.2 mm shank diameter) are used to fix cladding planks to timber battens (secret fixing) and fixing trims are required. Stainless steel nails (25 mm long) are also used for fixing trims.

12.2 The substrate for Eurocell 125 Shiplap Cladding should be checked to ensure that it is as prescribed in section 4.2 of this Certificate.

12.3 On non-weatherproof substrates, a vapour-permeable water barrier must be installed behind the battens and cladding (see sections 8.1 and 8.3).

12.4 Installation should not be carried out in extremes of temperature (between 5°C and 25°C is recommended).

12.5 The components are easy to work using normal woodworking tools for cutting, drilling and shaping. Handsaws should have a fine-toothed blade. Hand-held and bench-mounted power tools with a carbide-tipped blade should be run at speeds similar to, or higher than, those normally used with timber (see also section 5).

12.6 When using power tools to cut or shape the product, it is recommended that eye protection and a coarse-particle dust mask is used.

12.7 Expansion gaps of 5 mm should be provided at the ends of each five-metre plank.

12.8 Adequate provision should be made for drainage and ventilation behind the cladding (see sections 4.7 and 8.4). For horizontal cladding, horizontal battens are not recommended at the top/bottom of either the installation or window/door openings, where they may restrict ventilation and drainage. Similarly, the use of horizontal trims at the base of the cladding must not reduce the ventilation opening below 5000 mm² per metre run (see section 4.7).

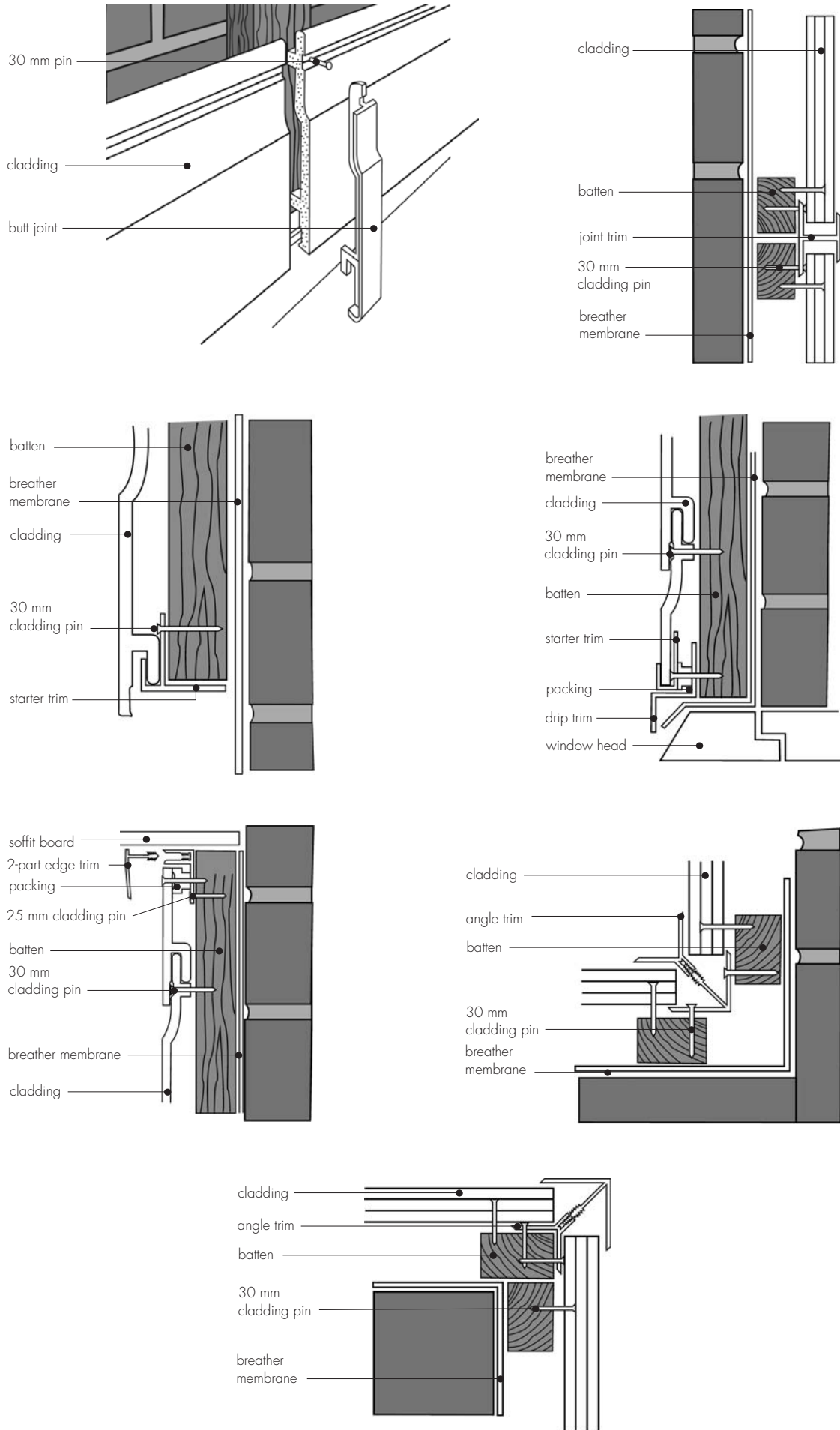
12.9 Where butt joints are made between planks, the ends of both planks should be fixed to battens.

12.10 Window head and other protrusions should be protected by a suitable weatherproof membrane or flashing.

13 Procedure

The cladding must be installed in accordance with the instructions given in the manufacturer's literature. Typical installation details are shown in Figure 3.

Figure 3 Installation details



14 Tests

Tests were carried out on the Eurocell PVC-U 125 Shiplap Cladding planks and trims to determine:

- voidage
- thickness of layers
- density
- overall thickness
- impact resistance (BS EN 13245-2 : 2008 and BS 7619 : 2010) of unaged and UV aged material
- appearance after UV ageing
- simulated wind-load bending
- impact resistance (cladding panel)
- flexural strength and modulus of elasticity
- hard body impact on 100 mm Open V Cladding.

15 Investigations

15.1 Permissible dynamic wind pressures were calculated from the simulated wind-load bending test and nail withdrawal data.

15.2 An examination was made of data relating to:

- behaviour of the cladding in fire
- colour stability.

15.3 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

15.4 The practicability of installation was assessed.

Bibliography

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*

BS 7619 : 2010 *Extruded cellular unplasticized PVC (PVC-UE) profiles — Specification*

BS EN 1995-1-1 : 2004 *Eurocode 5: Design of timber structures — General — Common rules and rules for buildings*

BS EN 1996-3 : 2006 *Eurocode 6. Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

BS EN 13245-2 : 2008 *Plastics. Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications. PVC-U profiles and PVC-UE profiles for internal and external wall and ceiling finishes*

BS EN 13501-1 : 2009 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

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

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

BR 443 : 2006 *Conventions for U value calculations*

16 Conditions

16.1 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.

16.2 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.

16.3 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.

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

16.5 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.

16.6 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.