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Agreement Certificate

00/3772

Product Sheet 1

FLOPLAST WHITE PVC-UE CLADDING SYSTEMS

FLOPLAST PVC-UE CLADDING SYSTEM

This Agreement Certificate Product Sheet⁽¹⁾ relates to the FloPlast PVC-UE Cladding System, comprising white PVC-UE cladding planks, rigid PVC-U trims and ancillary items, for use as a protective/decorative cladding over external brick or block masonry and timber stud walls (with or without sheathing) of new or existing domestic and non-domestic buildings with height restrictions.

(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 — the system can withstand dynamic wind pressures not exceeding 1750 Pa (see section 6).

Performance in relation to fire — the Certificate holder has not declared a reaction to fire classification for the system to BS EN 13501-1 : 2018 and its use is restricted (see section 7).

Durability — the system will have a service life in excess of 35 years, with only minor changes in surface appearance (see section 11).

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: 1 September 2020

Originally certificated on 19 March 2001

Hardy Giesler
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agreement Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

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Regulations

In the opinion of the BBA, the FloPlast PVC-UE Cladding 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: | A1 | Loading |
| Comment: | | The system is acceptable for use as set out in section 6 of this Certificate. |
| Requirement: | B3(4) | Internal fire spread (Structure) |
| Requirement: | B4(1) | External fire spread |
| Comment: | | The system is restricted by these Requirements. See sections 7.1 and 7.2 of this Certificate. |
| Requirement: | C2(b)(c) | Resistance to moisture |
| Comment: | | The system can contribute to satisfying this Requirement. See section 8 of this Certificate. |
| Regulation: | 7(1) | Materials and workmanship |
| Comment: | | The system is acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 7(2) | Materials and workmanship |
| Comment: | | The system is restricted by this Regulation. See sections 7.1 and 7.2 of this Certificate. |



The Building (Scotland) Regulations 2004 (as amended)

| | | |
|--------------------|----------------|---|
| Regulation: | 8(1)(2) | Durability, workmanship and fitness of materials |
| Comment: | | The system is acceptable. See sections 10 and 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 system can contribute to satisfying this Standard, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ , as set out in section 6 of this Certificate. |
| Standard: | 2.4 | Cavities |
| Comment: | | The system is restricted by this Standard, with reference to clause 2.4.2 ⁽¹⁾⁽²⁾ . See section 7.1 of this Certificate. |
| Standard: | 2.6 | Spread to neighbouring buildings |
| Comment: | | The system is restricted by this Standard, with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 7.1, 7.3 and 7.4 of this Certificate. |
| Standard: | 2.7 | Spread on external walls |
| Comment: | | The system is restricted by this Standard, with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 7.1, 7.3 and 7.4 of this Certificate. |
| Standard: | 3.10 | Precipitation |
| Comment: | | The system can contribute to satisfying this Standard. See section 8 of this Certificate. |

| | | |
|-------------|--------|--|
| Standard: | 3.15 | Condensation |
| Comment: | | The system can contribute to satisfying this Standard, with reference to clauses 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See section 8 of this Certificate. |
| Standard: | 7.1(a) | 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. |
| Regulation: | 12 | Building standards applicable to conversions |
| Comment: | | All comments given for the 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 section 11.1 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 28(b) | Resistance to moisture and weather |
| Comment: | | The system can contribute to satisfying this Regulation. See section 8 of this Certificate. |
| Regulation: | 29 | Condensation |
| Comment: | | The system can contribute to satisfying this Regulation. See section 8 of this Certificate. |
| Regulation: | 30 | Stability |
| Comment: | | The system is acceptable for use as set out in section 6 of this Certificate. |
| Regulation: | 35(4) | Internal fire spread — Structure |
| Regulation: | 36(a) | External fire spread |
| Comment: | | The system is restricted by these Regulations. See sections 7.1 and 7.2 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* (3.1 and 3.2) and 13 *General* (13.5) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, the FloPlast PVC-UE Cladding 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*, Chapters 6.1 *External masonry walls* (section 6.1.16 — *Cladding*) and 6.2 *External timber framed walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with harmonised European Standard BS EN 13245-2 : 2008.

Technical Specification

1 Description

1.1 The FloPlast PVC-UE Cladding System comprises protective and decorative white PVC-UE cladding planks with a shiplap joint and matching rigid PVC-U trims (see Figures 1 and 2).

Figure 1 FloPlast PVC-UE Cladding

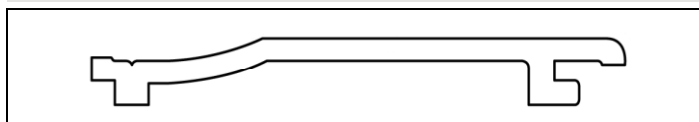
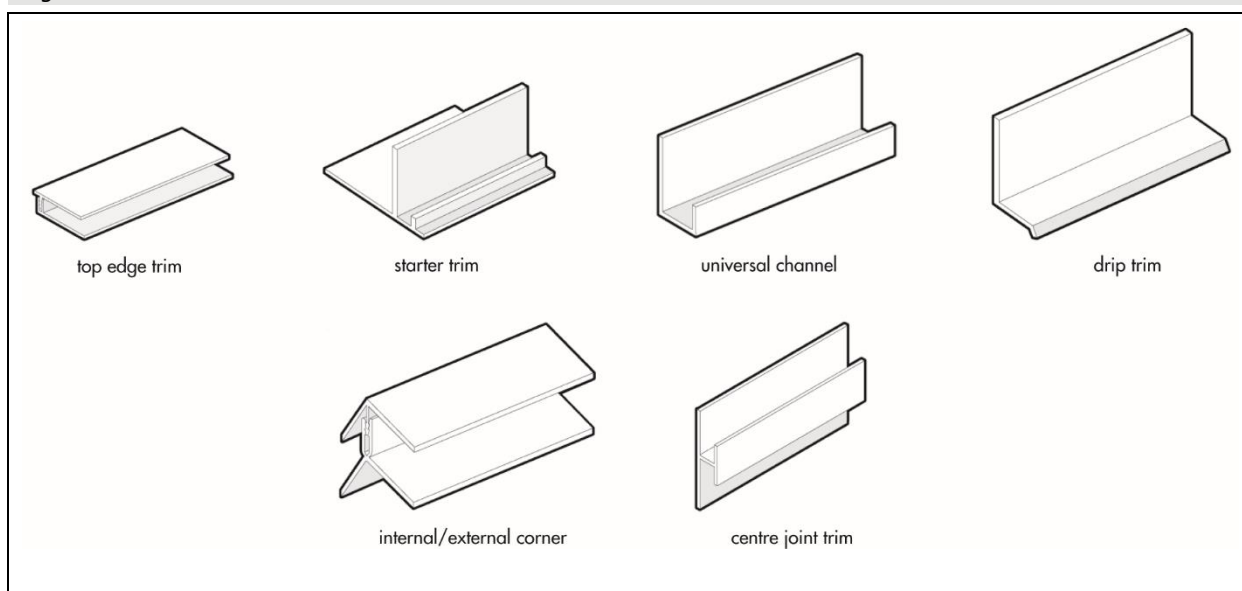


Figure 2 Trims



1.2 The interlocking planks are available in shiplap design, with the characteristics given in Table 1. The planks are composed of a cellular PVC-UE core beneath a rigid outer weathering impact-modified PVC-U skin.

Table 1 Characteristics of planks

| Characteristic (unit) | Nominal value |
|---|---------------|
| Standard length (m) | 5 |
| Cover width (mm) | 150 |
| Nominal thickness (mm) | 7 |
| Nominal thickness of rigid outer surface (mm) | 0.6 |

1.3 The trims consist of extrusions and injection mouldings of impact-modified PVC-U.

1.4 Ancillary items specified for use with the system, but outside the scope of this Certificate, include:

- stainless steel (marine grade), flat-headed nails — A4 (steel number 1.4401 to BS EN 10088-2 : 2014), used to secret-fix cladding planks and extruded trims to timber battens. Sizes: 30 or 50 mm long
- breather membrane — for use with the system on non-weathertight substrates
- timber battens — measuring not less than 19 by 38 mm (25 by 38 mm recommended by the manufacturer) preservative-treated battens, to provide support for cladding.

2 Manufacture

2.1 The PVC-UE planks are manufactured by co-extruding the high-impact PVC-U skin compound onto a foamable core compound, and cooling and forming to section. A transparent polyethylene film is applied to the outer face of the extrusion before the plank is cut to length.

2.2 The trims are manufactured from rigid PVC-U using 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.

3 Delivery and site handling

3.1 Standard 5 m lengths of planks and rigid extruded trims are delivered to site in packs sealed in polythene sleeves bearing the Certificate holder's product code and the BBA logo incorporating the number of this Certificate. Pack quantities vary depending on the type of profile. Mouldings are generally supplied in bags.

3.2 The packs should be unloaded by hand to avoid damage and stored flat on a clean, level surface in their protective wrapping. Stacks must not exceed one metre in height and should be restrained to prevent collapse. If stored externally, the packs should be stored under cover.

3.3 Care must be taken when handling the planks and trims to avoid contact with solvents or materials containing volatile organic components.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the FloPlast PVC-UE Cladding System.

Design Considerations

4 General

4.1 The FloPlast PVC-UE Cladding System is suitable for fixing horizontally as a back-ventilated, decorative and protective external facing over timber-frame or masonry wall constructions of new or existing domestic and non-domestic buildings.

4.2 The system is restricted for use in buildings with no storey more than 18 m above the ground in England, Wales and Northern Ireland, and 11 m in Scotland.

4.3 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 national Building Regulations and Standards.

4.4 Brickwork or blockwork walls should be constructed in the conventional manner, in accordance with the national Building Regulations and BS EN 1996-1-1 : 2005 and BS EN 1996-3 : 2006, and their UK National Annexes.

4.5 Timber stud walls should be designed and constructed in accordance with the UK National Annex to BS EN 1995-1-1 : 2004. Studding and framing should be adequately supported by noggings to ensure rigidity.

4.6 When used over a sheathed timber stud frame or a masonry substrate, the cladding should be fixed to preservative-treated, good-quality timber battens (see section 1.4) rigidly fixed to the studding (not the supported sheathing) or masonry substrate at 600 mm centres or closer.

4.7 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 (see the relevant sections of the *Installation* part of this Certificate).

4.8 To comply with the NHBC requirement (see *NHBC Standards 2020*, Chapter 6.9.18), a minimum 38 mm drained and vented cavity behind the cladding is required.

4.9 Ventilation slots of a minimum 5000 mm² per metre run at the top and bottom of the installation is recommended.

5 Practicability of installation

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

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. Wind loads should be calculated by a suitably competent and experienced individual in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex.

6.2 When installed in accordance with the requirements of this Certificate, onto 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 check the adequacy of the fixing of battens to the substrate, which is not covered by this Certificate.

6.4 When designing a timber stud wall to resist racking forces, the cladding should not be taken into account.

Impact resistance



6.5 The cladding is not recommended for use at ground-floor level where severe impacts may occur. It is suitable for use above ground-floor level in locations where it is unlikely to be subjected to impact from thrown or kicked objects, and at ground floor level in private areas where there is some incentive to exercise care.

7 Performance in relation to fire



7.1 The Certificate holder has not declared a reaction to fire classification for the system to BS EN 13501-1 : 2018.



7.2 In England, Wales and Northern Ireland, the system is not classified as 'non-combustible' or 'of limited combustibility' and may be used on buildings with no storey 18 m or more above the ground and 1 m or more from a boundary. Additional restrictions apply for assembly and recreational buildings. With minor exceptions, the system should be included in calculations of unprotected areas.



7.3 In Scotland, the system is not classified as 'non-combustible' and may be used on buildings more than 1 m from a boundary. With minor exceptions, the system should be included in calculations of unprotected areas.

7.4 In Scotland, the system should not be used on any building with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than 500 m², or on any hospital or residential care building with a total storey area more than 200 m².

7.5 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of the requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall wall construction (for example, thermal insulation).

8 Air and water penetration



8.1 The cladding is not airtight, watertight or water-vapour tight. When used on exposed substrates, such as timber stud walls, the system must be backed by a breather membrane (incorporated behind the cladding under the supporting battens) acting as a vapour-permeable-water barrier. This barrier must satisfy the requirements of BS 5250 : 2011 and have a vapour resistance of less than 0.6 MN·s·g⁻¹.

8.2 Where the cladding is used as a decorative facing attached to weathertight masonry walls, a vapour-permeable 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, in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2006, the cavity between the system and the wall should be treated as a 'well ventilated' air layer, and the thermal insulating value of the cavity, and everything between it and the external environment, should be taken as equivalent to an internal boundary layer (ie a total of 0.13 m²·K·W⁻¹).

10 Maintenance



10.1 The cladding can be washed with water and mild detergent. Abrasive or solvent-based cleaners must not be used. For the removal of more resistant stains, the Certificate holder's advice must be sought. If repairs are required, the material can be cut and drilled, using normal woodworking tools.

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 Paint must not be applied as it can cause premature embrittlement of PVC-U products and the application of dark colours to PVC-UE cladding could lead to a risk of thermal distortion.

11 Durability



11.1 The system will have a service life in excess of 35 years.

11.2 The cladding will retain its decorative function with only minor changes in surface appearance. However, staining will result from contact with certain materials or substances (eg creosote or bitumen).

12 Reuse and recyclability

The PVC-U and the PVC-UE profile material can be recycled.

Installation

13 General

13.1 The substrate for the system should be checked to ensure that it is as prescribed in section 4.3. Installation must be carried out in accordance with the Certificate holder's instructions and the requirements of this Certificate.

13.2 On non-weatherproof substrates (eg timber-frame walls), a vapour-permeable water barrier must be installed behind battens and cladding.

13.3 Installation should not be carried out in extremes of temperature. For installation, a temperature range of between 5 and 25°C is recommended by the Certificate holder.

13.4 The system components can be worked 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 for timber.

13.5 When using power tools to cut or shape the components, eye protection and a coarse-particle dust mask should be used.

13.6 Expansion gaps of 5 mm should be provided at the ends of each 5 m plank.

13.7 Adequate provision should be made for ventilation and drainage behind the cladding (see sections 4.8, 4.9 and 8.4).

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

13.9 Flat-headed, stainless steel (marine grade) A4 cladding nails (30 or 50 mm long) are used to fix cladding planks to timber battens (secret fixing); fixing trims are required.

13.10 Window heads and other protrusions should be protected by a suitable weatherproof membrane or flashing.

14 Procedure

Preparation

14.1 Before installation commences, the cladding operation should be thoroughly planned and prepared.

14.2 Appropriate cladding planks and trims should be selected and assembled (see Figure 3).

14.3 The appropriate battens (selected and treated in accordance with section 4.6) should be fixed at centres not exceeding 600 mm. Additional batten sections are required at jointing positions.

14.4 Vertical battens are required at the ends of each section, at the sides of windows and at joints between planks. Horizontal battens should not be used at the top/bottom of either the installation or window/door openings, where they may restrict ventilation and drainage. Similarly, it is recommended that the use of horizontal trims at the base of the cladding must not reduce the ventilation opening below 5000 mm² (see sections 4.8 and 4.9).

14.5 Working from the base to a level line, a starter trim is fixed to the timber studs or battens. Care should be taken to ensure that the starter trim does not obstruct the opening required for drainage and ventilation at the base of the cladding.

14.6 All vertical trims, followed by top trims, are then fixed to perimeter battens (including battens around windows).

14.7 Where two-part trims are required, only the back half is fixed at this stage.

14.8 The bottom cladding plank is located firmly in the starter trim and vertical trims, and fixed into place using the specified stainless steel nails, starting at one end or working from the centre outwards, nailing into each batten in turn. At the end of each plank, a 5 mm gap should be allowed for expansion (ie 10 mm between two board ends).

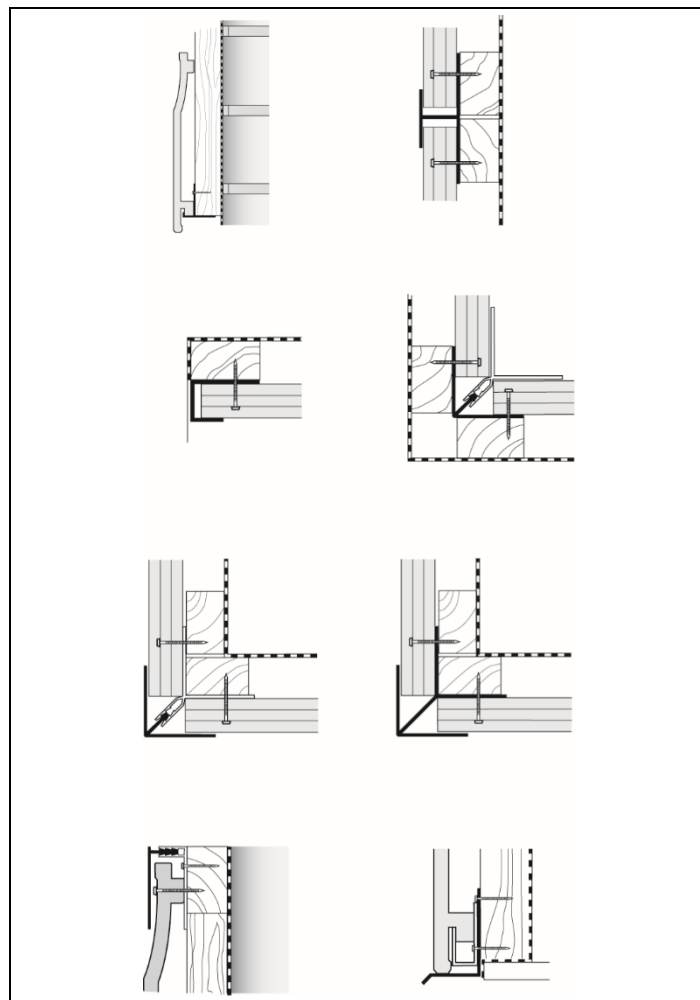
14.9 Subsequent planks are fitted into the preceding planks, ensuring that the shiplap joint is firmly closed, and nail heads are concealed by the overlap.

14.10 If necessary, the top plank is cut to fit the remaining space. Where this occurs, packing pieces taken from cladding offcuts should be placed behind the cut plank at each fixing centre.

14.11 Where sections longer than 5 m are to be clad, butt joints of adjacent cladding planks should be concealed by either a centre joint trim fixed to a batten or a butt joint trim fitted to the planks above and below the joint. A 10 mm expansion gap should be allowed between the planks, both ends of which should be securely fixed to battens. Where butt joint trims are used, the joints should be staggered, with a continuous plank above and below the joint. The positioning of these trims should be taken into account during the planning stage.

14.12 Where two-part trims have been used, the installation is completed by fastening the front part of the trim.

Figure 3 Typical installation details



15 Tests

Tests were carried out to determine:

- voidage
- density
- Vicat softening point
- weight per linear metre
- ash content
- impact resistance
- impact resistance at -10°C
- flexural strength
- dimensional stability
- resistance to splitting and delamination (acetone)
- nail pull-through
- natural weathering
- accelerated weathering
- colour stability
- stress relief (heating)
- water absorption
- resistance to wind action.

16 Investigations

16.1 An examination was made of existing data relating to reaction to fire performance.

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

16.3 The practicability of installation was assessed.

16.4 An assessment was made of the ease of cleaning and of damaged profile replacement.

Bibliography

BRE Report BR 443 : 2006 *Conventions for U-value calculations*

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 + A1 : 2010 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Wind actions*

NA to BS EN 1995-1-1 : 2004 + A2 : 2014 UK National Annex to *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

NA to BS EN 1996-1-1 : 2005 + A1 : 2012 UK National Annex to *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

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

NA + A1 : 2012 to BS EN 1996-3 : 2006 UK National Annex to *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

BS EN 10088-2 : 2014 *Stainless steels — Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

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 : 2018 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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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Agrément Certificate

00/3771

Product Sheet 1

FLOPLAST ROOFLINE SYSTEMS

FLOPLAST PVC-UE ROOFLINE SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the FloPlast PVC-UE Roofline System, comprising fascia, soffit and barge boards, soffit ventilator and accessories, for external use at the roofline as a substitute for timber or other conventional materials. The components of the system are available in white and are suitable for new or 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

Ventilation — the ventilated soffit board can contribute towards providing the necessary roof space ventilation (see section 6).

Strength and stability — in terms of wind loading resistance, the system can be used in all areas of the UK (see section 7).

Performance in relation to fire — the Certificate holder has not declared a reaction to fire classification for the system to BS EN 13501-1 : 2018 (see section 8).

Durability — the system will retain adequate impact resistance and its decorative function for a period in excess of 35 years, with only minor changes in surface appearance (see section 11).

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 Second issue: 21 October 2020

Originally certificated on 19 March 2001

Hardy Giesler
Chief Executive Officer



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Regulations

In the opinion of the BBA, the FloPlast PVC-UE Roofline 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 will contribute to providing protection against the penetration of moisture to the inner surface of the building on which it is installed. See section 9 of this Certificate. |
| Requirement: | C2(c) | Resistance to moisture |
| Comment: | | The soffit ventilators can contribute to enabling a roof to satisfy this Requirement. See sections 6.1 to 6.6 of this Certificate. |
| Regulation: | 7(1) | Materials and workmanship |
| Comment: | | The components of the system are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 7(2) | Materials and workmanship |
| Comment: | | The system is restricted by this Regulation. See section 8.1 of this Certificate. |



The Building (Scotland) Regulations 2004 (as amended)

| | | |
|--------------------|----------------|--|
| Regulation: | 8(1)(2) | Durability, workmanship and fitness of materials |
| Comment: | | The system is acceptable. See sections 10 and 11.1 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 9 | Building standards applicable to construction |
| Standard: | 3.10 | Precipitation |
| Comment: | | The system will contribute to satisfying this Standard, with reference to clause 3.10.1 ⁽¹⁾⁽²⁾ , by giving protection against the penetration of moisture to the inner surface of the building on which it is installed. See section 9 of this Certificate. |
| Standard: | 3.15 | Condensation |
| Comment: | | The system can contribute to enabling a roof to satisfy this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.3 ⁽¹⁾⁽²⁾ , 3.15.5 ⁽¹⁾⁽²⁾ , 3.15.6 ⁽¹⁾⁽²⁾ and 3.15.7 ⁽¹⁾⁽²⁾ . See sections 6.1 to 6.6 of this Certificate. |
| Regulation: | 12 | Building standards applicable to conversions |
| Comment: | | All comments given for the 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 section 11.1 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 28(b) | Resistance to moisture and weather |
| Comment: | | The system will contribute to providing protection against the penetration of moisture to the inner surface of the building on which it is installed. See section 9 of this Certificate. |

| | |
|-----------------------|--|
| Regulation: 29 | Condensation |
| Comment: | The soffit ventilators can contribute towards enabling a roof to satisfy the requirements of this Regulation. See sections 6.1 to 6.6 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* (3.2) and 13 *General* (13.3 and 13.7) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, the FloPlast PVC-UE Roofline 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*, Chapters 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

Technical Specification

1 Description

1.1 The FloPlast PVC-UE Roofline System comprises a range of white cellular unplasticized polyvinyl chloride (PVC-UE) boards including fascia/barge boards (see Figure 1) and plain and vented soffits (see Figure 2), together with ancillary components including extruded trims and injection-moulded joints and end caps (see Figure 3). The cellular boards comprise a closed-cell cellular PVC-U core beneath an outer weathering impact-modified PVC-U skin.

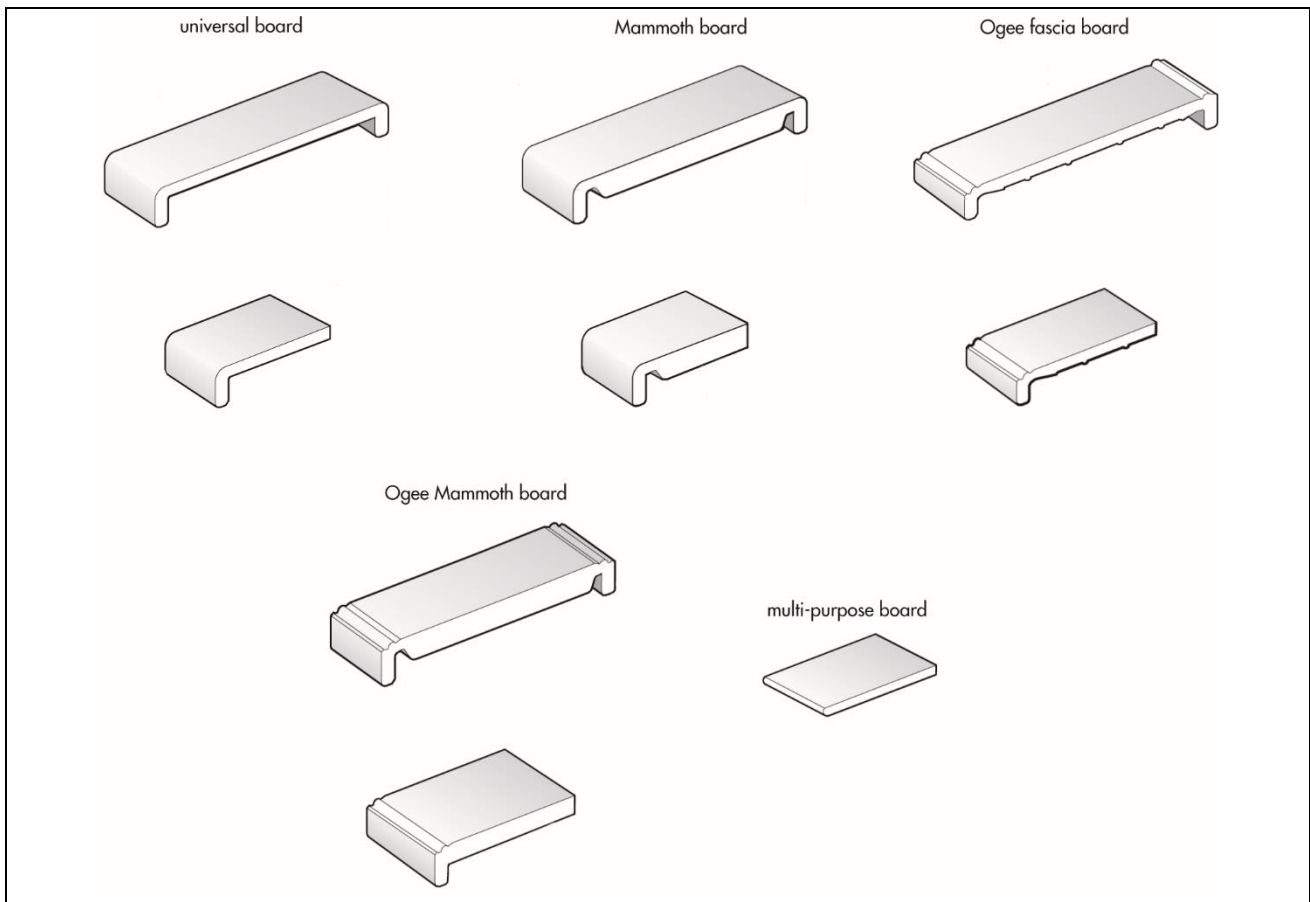
Fascia boards

1.2 The fascia boards are available in thicknesses of 10 and 18 mm (see Table 1 and Figure 1). The boards are extruded in standard 5 m lengths with a nominal density of 420 kg·m⁻³ and a nominal skin thickness of 0.6 mm.

Table 1 Characteristics

| | Universal board | Ogee board | Multi-purpose board | Mammoth board (including Ogee) | Hollow soffit board |
|---------------------------------------|-----------------|------------|---------------------|--------------------------------|---------------------|
| Standard length (m) | 5 | 5 | 5 | 5 | 5 |
| Nominal thickness (mm) | 10 | 10 | 10 | 18 | 10 |
| Minimum thickness of outer skin (mm) | 0.6 | 0.6 | 0.6 | 0.6 | – |
| Average density (kg·m ⁻³) | 420 | 420 | 420 | 420 | – |

Figure 1 Fascia boards

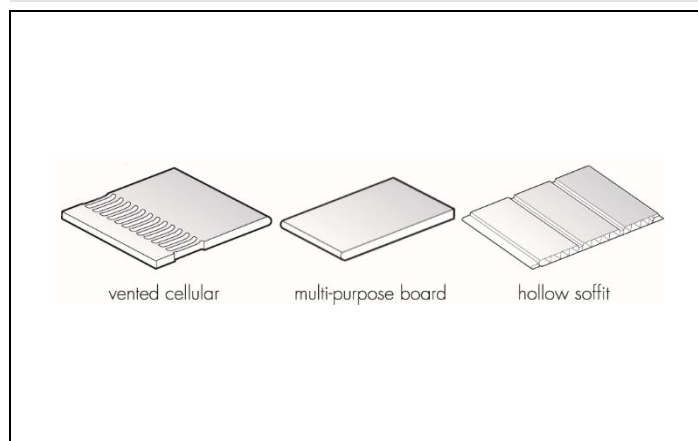


Soffit boards

1.3 The soffit ventilators, which include ventilated cellular boards and a ventilator strip, provide a means of ventilating the roof void (see Figure 2).

1.4 Boards are available with a single row of slots, suitable for providing ventilation to satisfy the requirement for a ventilation area which has a continuous air gap at least 10 mm wide at the eaves. The soffit ventilator strips are suitable for providing a ventilation area which has a continuous air gap at least 25 mm wide at the eaves.

Figure 2 Soffit boards



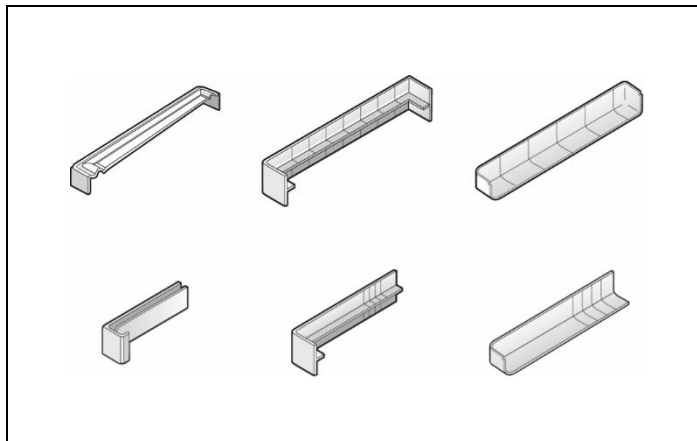
Trims and ancillaries

1.5 A range of impact-modified PVC-U extruded trims is available. Injection-moulded PVC-U joint covers are available for use with the cellular boards (see Figure 3).

1.6 Ancillary items specified by the Certificate holder for use with the system but outside the scope of this Certificate include:

- stainless steel nails and screws — a range of stainless steel nails and screws for fixing the boards to sound roof timbers
- PVC solvent adhesive — for fixing cover trims to boards at corners and abutments.

Figure 3 Injection-moulded trims and end caps



2 Manufacture

2.1 Cellular PVC-U is formed by the evolution of gas from sodium bicarbonate present in the foamable PVC-U compound. The PVC-UE boards are manufactured by co-extruding the skin compound onto a foamable core compound, and cooling and forming to section. A transparent protective polythene film is applied to the outer face of the extrusion before the board is cut to length.

2.2 The trims are extruded from rigid PVC-U using conventional extrusion techniques. Joint covers are manufactured from PVC-U using conventional 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.

3 Delivery and site handling

3.1 Standard 5 m lengths of boards and rigid extruded trims are delivered to site in packs sealed in polythene sleeves bearing the Certificate holder's marking. Pack quantities vary depending on the type of profile. Mouldings (fascia joints and corners) are generally supplied in bags and boxes.

3.2 The packs should be unloaded by hand to avoid damage and stored flat on a clean, level surface in their protective wrapping. Stacks must not exceed one metre in height and must be restrained to prevent collapse. If stored externally, the packs should be kept under cover.

3.3 Care must be taken when handling PVC-UE boards and trims to avoid contact with solvents or materials containing volatile organic components.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the FloPlast PVC-UE Roofline System.

Design Considerations

4 Use

4.1 The FloPlast PVC-UE Roofline System is suitable for use externally to provide a protective and decorative trim at the roofline as fascia, soffit and barge boards where timber or other conventional materials would normally be used.

4.2 The soffit ventilated products provide a means of ventilating the roof void.

4.3 The system must be fixed only to structurally sound building substrates, at centres not exceeding 600 mm. Rafter feet and gable ladders should be adequately supported by noggings to ensure rigidity. Replacement, rather than over fixing of existing fascia, is recommended. Timber roof structures to which the system is fixed, must be designed and constructed in accordance with the relevant national Building Regulations and BS EN 1995-1-1 : 2004 and its UK National Annex.

4.4 The system's components have a similar coefficient of thermal expansion to that of conventional solid PVC-U. A 5 mm gap should be provided at the end of each board and at the joint trim (ie 10 mm between boards), to allow for movement. Care should be taken not to install the system in extremes of temperature. The recommended temperature for installation is between 5 and 25°C.

5 Practicability of installation

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

6 Ventilation



6.1 The FloPlast ventilated soffit boards can contribute towards providing the necessary roof space ventilation (see Table 2). Guidance on the provision of adequate ventilation is given in the documents supporting national Building Regulations and BS 5250 : 2011, Annex H. Designers should take into account roof size, complexity and air permeability of roof coverings when determining the location and size of ventilation openings.

Table 2 Ventilation products' open area

| Product name | Open area (mm ² per metre run) | Width of a continuous slot with the same area ⁽¹⁾ (mm) |
|--------------------------|--|---|
| Ventilated soffit boards | 10 200 | 10.2 |
| Soffit ventilator strip | 25 000 | 25 |

(1) At eaves level.

Cold flat roofs

6.2 The soffit ventilator strips are suitable. For roof spans up to 5 m, reference may be made to BRE Report BR 262 : 2002.

Cold pitched roofs > 10° and < 75° with an LR type underlay

6.3 The ventilated soffit boards are suitable.

Cold pitched roofs > 15° and < 75° with an HR type underlay

6.4 The ventilated soffit boards are suitable. For pitches exceeding 35°, spans exceeding 10 m or lean-to or monopitch roofs, additional high level ventilation will also be required.

Warm pitched roofs

6.5 The soffit ventilator strips are suitable. For lean-to or monopitch roofs, additional high level ventilation will also be required.

Hybrid pitched roofs

6.6 The soffit ventilator strips are suitable. Additional ventilation openings should be provided either side of any interruptions such as dormers, rooflights, etc. and at high level.

6.7 When providing roof space ventilation, it is essential that the airway should not be allowed to become blocked by the loft insulation. This may be achieved by the use of a suitable insulation retainer producing an air passage with a geometric free area at least equal to that of the ventilated soffit ventilator used.

7 Strength and stability

7.1 When installed in accordance with this Certificate and taking into account the site-specific circumstances, the system will withstand, without damage or permanent deflection, the wind loads likely to be encountered in the UK. In exposed locations, care should be taken to ensure that all profiles are adequately fixed.

7.2 The system has adequate resistance to the hard and soft body impacts likely to occur in practice.

7.3 PVC-U gutters, as specified in BS EN 607 : 2004, may be screw-fixed directly to Mammoth boards. Gutter bracket spacings must not exceed one metre; reduced spacings are recommended in areas of high wind loading eg the Scottish Highlands, and the advice of a suitably experienced and competent individual should be sought in such situations. Other lightweight gutters may also be screw-fixed to the Mammoth board provided the maximum bracket-loading, covered in BS EN 1462 : 2004, is not exceeded. For other boards, the gutters should be fixed through the fascia to rafter ends or sound timber.

7.4 The fascia boards are not loadbearing and must not be used independently to support fixtures such as roof tiles, gutters, other roof structure components or television aerials. Suitably fixed telephone wires and power cables may be run along the boards but the main brackets for these services should be fixed through the fascia to structurally sound timber.

8 Performance in relation to fire



8.1 The Certificate holder has not declared a reaction to fire classification for the system to BS EN 13501-1 : 2018.

8.2 Where it is normal practice to carry the eaves box over between dwellings, it is important that the box is fire-stopped at compartment walls.

9 Resistance to moisture



The system will contribute to providing protection against the penetration of moisture to the inner surface of the building.

10 Maintenance



10.1 The system can be cleaned by washing with water and mild detergent. Abrasive or solvent-based cleaners must not be used. For the removal of more resistant stains, the Certificate holder's advice must be sought. If repairs are required, the material can be cut and drilled, using normal woodworking tools.

10.2 The dimensions of the slots in the ventilation products are such that the risk of blockage is limited. However, blockage by insects and debris would impair their performance as vents and the slots should be examined periodically and cleared if necessary.

11 Durability



11.1 The system is as durable as conventional solid PVC-U and the boards will retain adequate impact resistance for a period in excess of 35 years.

11.2 The system will retain its decorative function for the service life of the product with only minor changes in surface appearance.

11.3 Paint must not be applied as, with all PVC products, it can adversely affect the impact strength of the cellular PVC-U sections.

11.4 Where the timber substrate is preservative treated, care must be taken to ensure that sufficient time is allowed for complete fixation of the preservative to avoid corrosion of screws and nails used to fix the components.

12 Reuse and recyclability

The PVC-U and PVC-UE profile materials can be recycled.

Installation

13 General

13.1 Installation must be carried out in accordance with the Certificate holder's instructions and the requirements of this Certificate (see Figure 4).

13.2 The components of the system are worked 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 for timber.

13.3 When using power tools to cut or shape the components, eye protection and a coarse particle dust mask must be used.

13.4 Fascia, soffit and barge boards should be fixed to preservative-treated, structurally sound, solid timber at centres not exceeding 600 mm, using the nails recommended by the Certificate holder⁽¹⁾. The nails should be selected to give a minimum of 40 mm penetration into the support timber.

(1) Outside the scope of this Certificate.

13.5 Existing support timber should be checked for soundness and, where necessary, replaced. Existing fascia board should not be used as a support/backing board for a cover board.

13.6 Sarking felt should be checked to ensure that it is in good condition and extends onto the verge rafter and over the fascia and into the gutter at the eaves. A continuous fillet or eaves protection system should be installed at the eaves to prevent the felt sagging between the afters. Damaged or worn felt should be replaced in accordance with good practice.

13.7 Normal precautions should be taken when working at roof level. The use of protective goggles when cutting and nailing is recommended.

13.8 Ventilated boards should be selected and installed so that the roof ventilation conforms to the relevant national Building Regulations.

13.9 For the Mammoth board, gutter brackets may be fixed directly into the board at spacings no greater than 1 metre, using the screws recommended by the Certificate holder⁽¹⁾. The screws should penetrate the rear face of the board. For all other boards, gutter brackets are screwed through the fascia board into rafter feet or other timber support (see section 6.3).

(1) Outside the scope of this Certificate.

14 Procedure

14.1 Selected boards and accessories are assembled and cut to size.

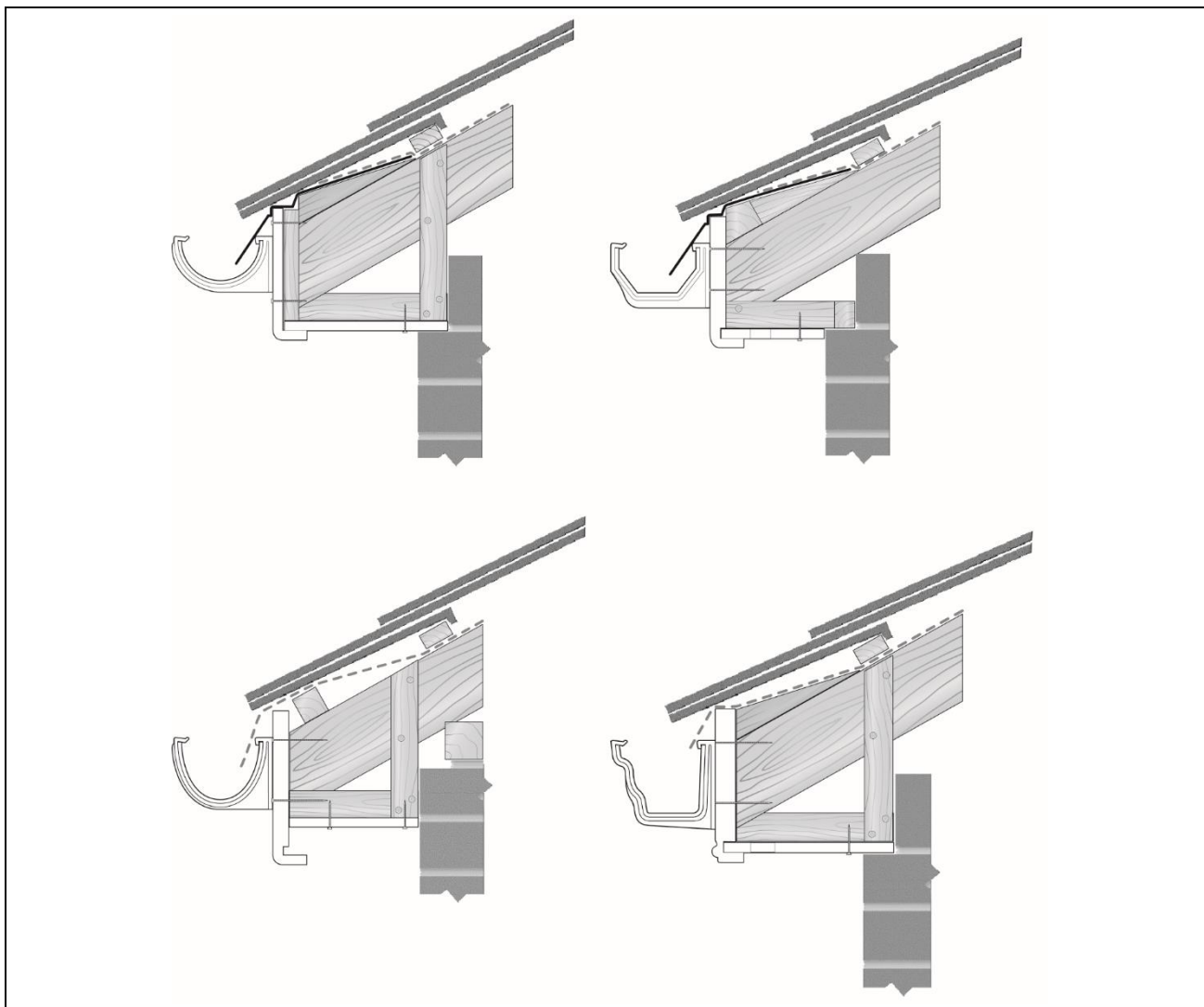
14.2 Rafter feet are cut to a line.

14.3 Noggings, soffit bearers, battens, eaves fillets, brackets and other additional timber supports are fixed to a sound substrate.

14.4 Protective films should be removed prior to fixing by peeling off as nailing progresses along the board.

14.5 The summary for the installation details of fascia, soffit and barge boards (see sections 14.6 to 14.16) should be read with reference to the typical installation diagrams shown in Figure 4.

Figure 4 Typical installation details



Fascia boards

14.6 Fascia boards are fixed to rafter feet at centres not exceeding 600 mm (65 mm long nails⁽¹⁾ for Mammoth boards, 50 mm nails⁽¹⁾ for other boards). Mammoth boards are fixed directly to rafter ends; other boards should be fixed to the rafter ends through a sound fascia backing board. When the system is installed in particularly exposed locations, it is recommended that the fascia boards are fixed to support timbers at reduced centres.

(1) Outside the scope of this Certificate.

14.7 Butt joints between fascia boards should be made at the rafter end and covered with a butt joint trim. The trims are fixed to the end of one board only with a suitable low-modulus silicone sealant⁽¹⁾. Provision for expansion (minimum 10 mm between two 5 m boards) should be made between boards, both of which should be nailed to the rafter end.

(1) Outside the scope of this Certificate.

14.8 At corners, the joint is covered with a corner trim fixed to the end of one board with either the Certificate holder's recommended fixing⁽¹⁾ or low-modulus silicone sealant⁽¹⁾. Provision for thermal movement of the boards should be made, as detailed in section 14.7.

(1) Outside the scope of this Certificate.

14.9 Gutter brackets are fixed through the fascia into supporting timberwork, normally the rafter feet. Gutter brackets are fixed directly to the Mammoth fascia boards.

Soffit boards

14.10 Soffit board is used to construct the soffit.

14.11 The board is cut to size and fitted into the groove at the rear of the fascia or sat on the top of the capping board at the rafter end.

14.12 The boards are fixed to rafter feet, soffit bearers or other timber support at centres along their length, not exceeding 600 mm, and across their width, not exceeding 200 mm, using the nails⁽¹⁾ recommended by the Certificate holder.

(1) Outside the scope of this Certificate.

14.13 Where required, soffit boards may be joined along their length or width using a soffit jointing strip.

14.14 To comply with the requirements of the documents supporting the national Building Regulations, soffit ventilated boards should be used as required.

Barge boards

14.15 Barge boards are installed by fixing fascia boards to a gable ladder or noggings, using the procedure given for the fascia boards.

14.16 Barge boards meeting at a ridge should be mitred to the appropriate angle, allowing 5 mm for expansion between the ends of each board. To conceal the joint, a cover joint trim is fixed to the end of one board using a low-modulus neutral cure silicone⁽¹⁾. Further low-modulus neutral cure silicone sealant may be applied between the ends of the boards as an additional fixing.

(1) Outside the scope of this Certificate.

14.17 Eaves box ends are constructed using the appropriate fascia board and trims to suit the roof pitch and overhang requirement. Any timber framework required in the construction of the box end must be preservative treated.

Technical Investigations

15 Tests

Results of tests conducted on the FloPlast PVC-UE Roofline System were assessed to determine:

- dimensions
- voidage
- impact strength
- flexural strength.

16 Investigations

16.1 An examination was made of existing data relating to:

- weight per linear metre
- density
- dimensional stability
- resistance to impact
- resistance to impact at -10°C
- resistance to splitting and delamination
- nail pull-through
- natural weathering
- accelerated weathering
- colour stability
- stress relief (heating)

- water absorption
- Vicat softening point
- ash content
- reaction to fire performance.

16.2 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.

16.3 The practicability of the installation was assessed.

16.4 An assessment was made to establish the resistance of the system to wind action.

16.5 An assessment was made of the acceptability of soffit ventilators in satisfying ventilation requirements.

Bibliography

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

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS EN 607 : 2004 *Eaves gutters and fittings made of PVC-U — Definitions, requirements and testing*

BS EN 1462 : 2004 *Brackets for eaves gutters — Requirements and testing*

BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

NA to BS EN 1995-1-1 : 2004 + A1 : 2008 *UK National Annex to Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using data from reaction to fire tests*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.