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Agrément Certificate  
**91/2620**  
Product Sheet 1

## SWISH ROOFLINE SYSTEM

## SWISH CELLULAR PVC-U ROOFLINE SYSTEM

### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the Swish Cellular PVC-U 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 one shade of white.

### 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

**Ventilation** — the ventilated soffit board can contribute towards providing the necessary roof space ventilation (see section 3).

**Strength and stability** — in terms of wind loading resistance, the system can be used in all areas of the UK (see section 5).

**Performance in relation to fire** — the cellular boards achieve a Class 1 and Class 1Y surface spread of flame for white PVC-U profiles when tested in accordance with BS 476-7 : 1997 (see section 6).

**Durability** — the system will retain its decorative qualities for a period in excess of 20 years with only minor changes in surface appearance (see section 8).



The BBA has awarded this Agrément Certificate to the company named above for the system described herein. The 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

Chris Hunt  
Head of Approvals — Physics

Greg Cooper  
Chief Executive

Date of First issue: 9 February 2009

Originally certificated on 27 March 1991

*The BBA is a UKAS accredited certification body — Number 1113. 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](http://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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# Regulations

In the opinion of the BBA, the Swish Cellular PVC-U Roofline System, 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 Building Regulations 2000 (as amended) (England and Wales)

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 3.1 of this Certificate
Requirement:	C2(c)	Resistance to moisture
Comment:		When used in accordance with this Certificate, the soffit ventilators can contribute to enabling a roof to meet this Requirement. See sections 3.4 to 3.14 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The components of the system are acceptable. See section 8.1 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 system is acceptable. See sections 7.1, 7.2 and 8.1 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.10	Precipitation
Comment:		The system will contribute to satisfying this Standard, with reference to clause 3.10.1 <sup>(1)(2)</sup> by giving protection against the penetration of moisture to the inner surface of the building on which it is installed. See section 3.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The soffit ventilators can contribute to enabling a roof to meet this Standard, with reference to clauses 3.15.1 <sup>(1)</sup> , 3.15.3 <sup>(1)</sup> , 3.15.5 <sup>(1)</sup> and 3.15.7 <sup>(1)</sup> . See sections 3.4 to 3.13 of this Certificate. (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 system is acceptable. See section 8.1 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The system is acceptable. See sections 7.1 and 7.2 of this Certificate.
Regulation:	C4(b)	Resistance to ground 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 3.1 of this Certificate.
Regulation:	C5	Condensation
Comment:		The soffit ventilators can contribute towards enabling a roof to meet the requirements of this Regulation. See sections 3.4 to 3.14 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: 2 *Delivery and site handling* (2.2) and 9 *General* (9.3).

# Non-regulatory Information

## NHBC Standards 2008

NHBC accepts the use of the Swish Cellular PVC-U Roofline System, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.2 *Pitched roofs*.

## Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, the Swish Cellular PVC-U Roofline System, when installed and used in accordance with this Certificate, satisfies the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, Sub-section *Pitched roofs – Condensation control* (pages 265-267).

# General

This Certificate relates to the Swish Cellular PVC-U Roofline System and is for external use at the roofline as a substitute for timber and other conventional materials.

It is essential that the system is installed in accordance with the manufacturer's instructions and the *Design Considerations* and *Installation* parts of this certificate.

# Technical Specification

## 1 Description











1.1 The Swish Cellular PVC-U Roofline System comprises a range of cellular PVC-U (PVC-UE) boards and ancillary components including extruded trims, injection moulded joints and end caps.

1.2 The boards are for use at the roofline as fascia, soffit and barge boards in place of timber or other conventional materials.

1.3 The system's components are available in one shade of white.

1.4 The fascia boards are available in thicknesses of 9 mm, 16 mm, 20 mm and 25 mm (see Figure 1). The 20 mm and 25 mm fascia boards are also called Jumbo boards.

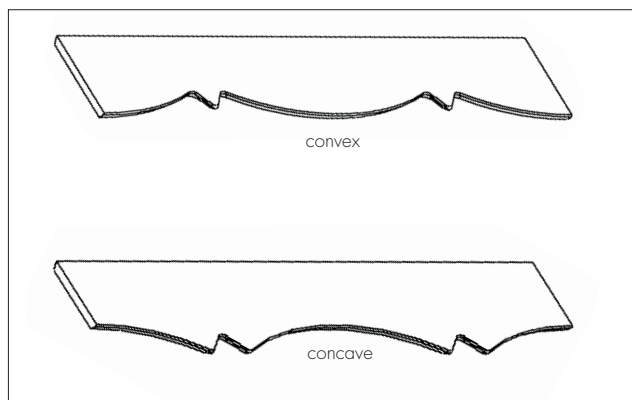
Figure 1 Fascia boards

Fascia board	Overall thickness (mm)	Width (mm)	Fascia board	Overall thickness (mm)	Width	Fascia board	Overall thickness (mm)	Width
 Cappit	9	150-605	 Ogee Cappit	9	150-405	 Cappair	9	163-405
 square fascia	16	150-455	 flat board	16	150-405	 Bullnose fascia	16	150-455
 Ogee fascia	16	150-405	 standard jumbo	20	150-405	 Bullnose jumbo	25	150-405
			 Ogee jumbo	20	150-405			

1.5 The discontinuous ribs running along the unexposed face of the 9 mm Cappair and Ogee Cappit boards are intended to allow the air circulation over the backing board.

1.6 The 16 mm fascia board is also available with a decorative chamfered cut edge, either convex or concave (see Figure 2). The decorative chamfered edge of the board is achieved by routing along the edge of a 16 mm board. The purpose of the chamfer is to reduce the visibility of the cut edge. The minimum width of the decorative board is 160 mm (concave) and 165 mm (convex).

Figure 2 16 mm fascia board with decorative cut edge



1.7 All fascia profiles are available as double ended boards in widths of 355 mm, 405 mm and 455 mm.

1.8 PVC-UE soffit boards are available both unvented (see Figure 3) and for ventilating the roof void, as vented Polo boards (see Figure 4).

Figure 3 Soffit boards (unvented)


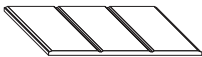
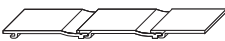


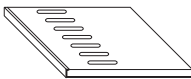

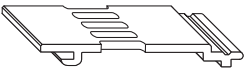
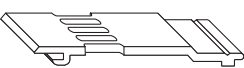
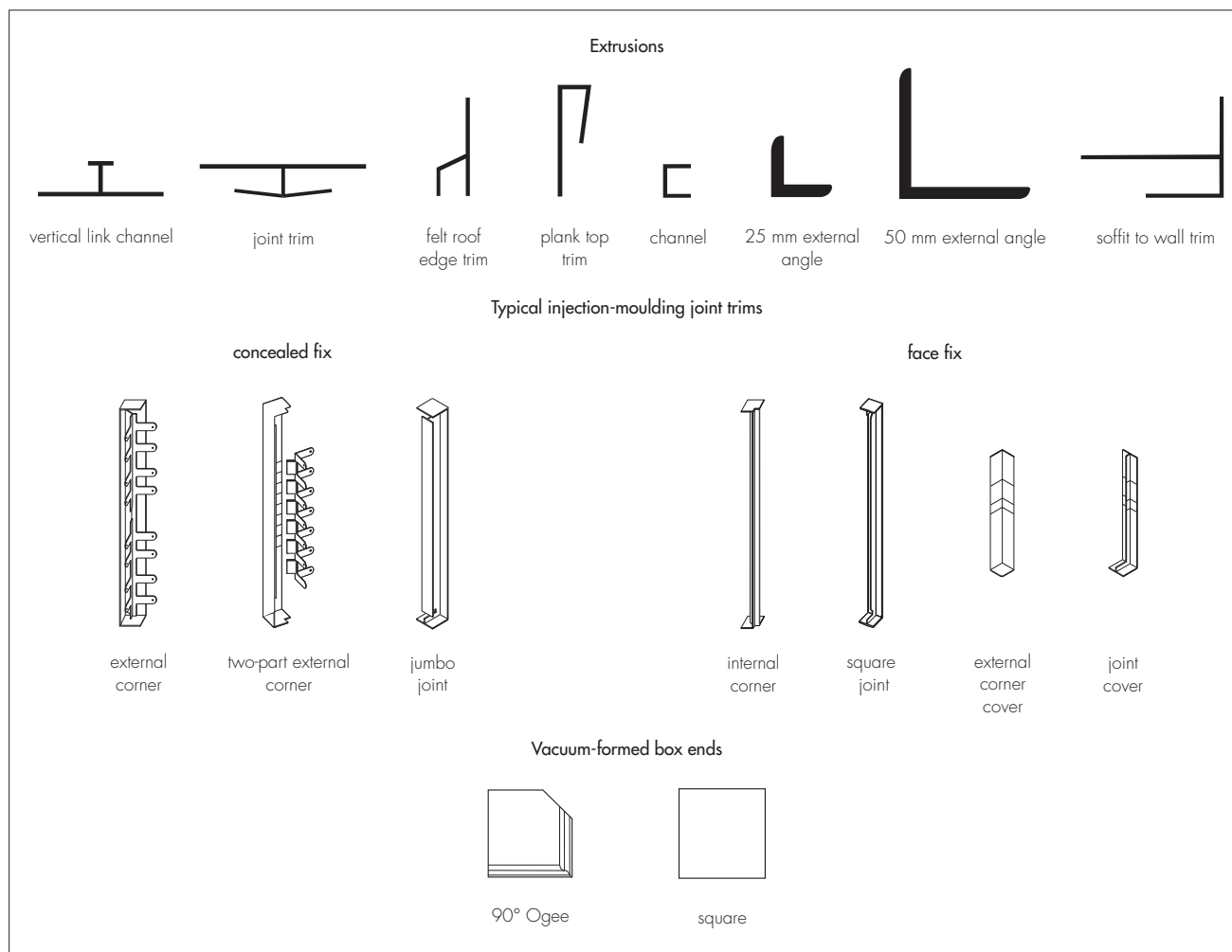
Soffit board	Overall thickness (mm)	Width (mm)
Gee Pee boards 	9	100-605
Fluted soffit 	9	300
<b>Cladding soffits</b>		
Shiplap 	6 or 7	100 or 150
Open 'V' 	7 or 7.5	100 or 150
Tee Gee 	6	125

Figure 4 Soffit boards (vented)

Soffit board	Overall thickness (mm)	Width (mm)
Polo board with a single row of vents 	9	100-605
Polo board with a double row of vents 	9	150-450
Tee Gee Polo cladding 	6	125
open V Polo cladding 	7.5	150

1.9 A range of impact modified PVC-U extruded trims, square and Ogee box ends, vacuum formed from PVC-U sheet and acrylate styrene acrylonitrile (ASA) injected-moulded joint covers are available for use with the cellular boards. Typical examples are shown in Figure 5.

Figure 5 Trims



1.10 The cellular boards comprise a closed-cell cellular PVC-U core beneath an outer weathering impact-modified PVC-U skin. Both core and skin formulations include a tin-based stabiliser. The boards are manufactured by co-extruding the skin compound onto a foamable core compound, cooling and forming to section. Cellular PVC-U is formed during the process by the evolution of gas from sodium bicarbonate in the core compound.

1.11 Polo ventilated soffit boards are produced by punching 4 mm by 35 mm slots into Gee Pee, Tee Gee cladding or Open 'V' cladding soffit boards at regular intervals. All boards are available with a single row of slots, suitable for providing ventilation to satisfy the requirement for ventilation equivalent to a continuous air gap of at least 10 mm wide, at the eaves. The Gee Pee boards are also available, with a double row of slots, providing ventilation equivalent to a continuous air gap at least 25 mm wide at the eaves.

1.12 The boards are extruded in standard 5 m lengths with a nominal density of 550 kgm<sup>-3</sup> and skin thickness of 0.5 mm.

1.13 The overall thickness and width of the soffit boards are given in Figure 3. The ventilated (Gee Pee) Polo boards, shown in Figure 4, are available in widths of 150 mm to 605 mm.

1.14 Continuous quality control is undertaken during manufacture. Checks include:

- appearance
- impact strength
- heat reversion
- dimensions
- stress relief
- weight per metre.

1.15 A range of stainless steel<sup>(1)</sup> screws with white cover caps and stainless steel<sup>(1)</sup> annular ring shank nails with white plastic heads are specified and supplied by the manufacturer for fixing the boards to sound roof timbers.

(1) A4 (steel No 1.4401, BS EN 10088-2 : 2005).

1.16 A low modulus silicone sealant specified and supplied by the manufacturer is available for fixing cover trims to boards at corners and abutments.

## 2 Delivery and site handling

2.1 Standard 5 m lengths of boards are delivered to site in packs sealed in polythene sleeves bearing the Certificate holder's marking and the BBA identification mark, incorporating the number of this Certificate. Pack quantities vary dependent upon the type of profile.

2.2 The packs should be unloaded by hand to avoid damage, stored on a clean, level surface in stacks not exceeding one metre in height and restrained from collapse. If stored externally, the packs should be kept undercover.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Swish Cellular PVC-U Roofline System.

## Design Considerations

### 3 General



3.1 The Swish Cellular PVC-U Roofline System is suitable for use externally to provide a protective and decorative trim at the roofline where timber or other conventional materials would normally be used. The system will provide adequate protection to the interior of the building from the penetration of moisture.

3.2 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/or constructed in accordance with the relevant Building Regulations and as appropriate, in compliance with one of the following technical specifications:

- BS 5268-2 : 2002
- BS 5268-3 : 2006
- The Building Regulations 2000 (as amended) (England and Wales), Approved Document A1/2, section 2A
- The Building Regulations (Northern Ireland) 2000, Part D Structure.

3.3 The system components have a similar coefficient of thermal expansion to that of conventional solid PVC-U. An 8 mm gap should be provided between abutting fascia 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°C and 25°C.

#### Ventilation



3.4 The Swish Polo ventilated soffit boards can contribute towards providing the necessary roof space ventilation. Guidance on the provision of adequate ventilation is given in the 2004 edition of the Approved Document C2 Resistance to moisture to The Building Regulations 2000 (as amended) (England and Wales), and in BS 5250 : 2002, Clause 8.4. Guidance for Northern Ireland towards the provision of roof space ventilation is given in 'deemed to satisfy' Technical Booklet C : 1994 and BS 5250 : 2002.

3.5 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 BBA approved insulation retainer producing an air passage with a geometric free area at least equal to that of the ventilated soffit board used.

3.6 The ventilated soffit boards with a double row of slots have an effective ventilated area of approximately 25946 mm<sup>2</sup> per metre run (which is equivalent to a continuous slot of approximately 25.9 mm wide at eaves level) and are suitable for the applications given in sections 3.8 to 3.10).

3.7 The ventilated soffit boards with a single row of slots have an effective ventilated area of 12973 mm<sup>2</sup> per metre run (equivalent to a continuous slot 13.0 mm wide at eaves level) and are suitable for the applications given in section 3.8.

3.8 For roofs with a pitch of 15° or more, where both the ceiling and insulation are horizontal, soffit ventilators with a minimum area of 10000 mm<sup>2</sup> per metre run, if used in accordance with section 3.5, can provide adequate ventilation to insulated loft spaces as set out in BS 5250 : 2002, Clause 8.4. The soffit ventilators should run along the eaves of the longest opposite sides of a rectangular roof to provide adequate cross-ventilation. The ventilators are suitable for use with traditional (semi-permeable) and high-performance (impermeable) sarking felts. Consideration should be given to the use of high-level ventilation openings to increase the ventilation rate for roofs as referred to in BS 5250 : 2002, Clause 8.4. The use of high-level ventilation openings is strongly recommended in roofs with a pitch greater than 35° or roof spans in excess of 10 m.

3.9 For roofs where the ceiling follows the pitch of the roof, soffit ventilators with a minimum effective area of 25000 mm<sup>2</sup> per metre run, if used in conjunction with suitable high-level ventilation, can provide adequately for roof voids as set out in BS 5250 : 2002, Clause 8.4. It is essential that a minimum unrestricted air space of 50 mm is maintained between the underside of the roof deck and the top of the insulation. Consideration should be given to the probability of the sarking felt bowing between rafters and it should be ensured that this does not reduce the gap between felt and insulation to less than 50 mm. Where there is an obstruction to the ventilation, eg rooflights or a change in pitch of roof, adequate ventilation, in accordance with the requirements of BS 5250 : 2002, Clause 8.4, should be provided above and below the obstruction using suitable ventilators. The required ventilation at high level and around obstructions may be achieved by using a suitable BBA approved ventilator.

3.10 For roofs with a pitch of less than 15°, soffit ventilators with a minimum vented area of 25000 mm<sup>2</sup> per metre run, if used in accordance with section 3.5, can provide adequate ventilation to roof voids as set out in BS 5250 : 2002, Clause 8.4. When providing roof space ventilation for flat roofs, it is essential that a minimum unrestricted air space of 50 mm is maintained between the underside of the roof deck and the top of the insulation. Ventilation should be provided along two opposite sides of the deck: where possible these should be the two longest sides to achieve maximum cross-ventilation. The recommendations contained in BS 5250 : 2002, Clause 8.4, should be followed when planning the provision of ventilation to flat roofs, especially where spans exceed 5 metres, or for concrete deck

roofs. Where a flat roof has a span of greater than 10 m, or is not of a simple rectangular plan, more ventilation will be required, totalling at least 0.6% of the total area of the roof. It should be noted that cold, flat roof construction is generally unacceptable in Scotland and not the preferred option elsewhere in the UK<sup>(1)</sup>.

(1) See BRE report (BR : 262) 2002 Thermal insulation : avoiding risks.

3.11 Where soffit ventilators are used in lean-to or mono-pitched roofs, high-level ventilation, in accordance with BS 5250 : 2002, Clause 8.4, must be provided.

3.12 Where a pitched roof abuts a wall, additional high-level ventilation must be arranged to provide an open area at least equal to a 5 mm slot running the full length of the abutment.

3.13 The ventilated soffit boards meet NHBC requirements for protection against the ingress of birds, rodents or large insects.

3.14 The dimensions of the slots in the ventilated soffit boards are such that the risk of blockage is limited. However, blockage by insects and debris would impair their performance as vents and they should be examined occasionally and cleared if necessary.

## 4 Practicability of installation

The system can be readily installed by operatives experienced with this type of product.

## 5 Strength and stability

5.1 When installed in accordance with this Certificate, the system will withstand, without damage or permanent deflection, the wind loads likely to be encountered in the United Kingdom. In exposed locations care should be taken to ensure that all profiles are adequately fixed.

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

5.3 PVC-U gutters, as specified in BS 4576-1 : 1989 may be screw-fixed directly to the 16 mm and Jumbo fascia boards. Gutter bracket spacings must not exceed one metre; reduced spacings are recommended in the Scottish Highlands. Other lightweight gutters may also be screw-fixed to the board provided the maximum bracket-loading, covered in BS 4576-1 : 1989, is not exceeded.

5.4 16 mm and Jumbo fascia boards will support all eaves tiles in common usage in the UK (up to 10 kg load per 1 m length of fascia), provided they are installed in accordance with the requirements of this Certificate.

5.5 Apart from the exception detailed in section 5.4, the fascia boards are not loadbearing and must not be used independently to support fixtures such as roof tiles, 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.

## 6 Performance in relation to fire

6.1 When tested in accordance with BS 476-7 : 1997 the 9 mm cellular boards achieve a Class 1Y surface spread of flame rating and the 16 mm and Jumbo cellular boards achieved a Class 1 rating.

6.2 On exposure to fire PVC-U tends to char and may fall away. The spread of flame along its surface is limited. It is unlikely that the roof trim system will significantly affect the overall fire performance of any roof in which it is installed.

6.3 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.

## 7 Maintenance



7.1 The system can be cleaned by washing with water and mild detergent. Solvent-based cleaners should not be used. For the removal of more resistant stains, the manufacturer's advice must be sought. The material can be cut and drilled, using normal woodworking tools, if repairs are required.

7.2 As with all PVC products, paint can adversely affect the impact strength of the cellular PVC-U sections, and the application of dark colours could lead to a risk of thermal distortion. Therefore painting is not recommended.

7.3 The slots of ventilated soffit boards should be examined periodically and if necessary, cleared (see section 3.14).

## 8 Durability



8.1 Accelerated weathering tests and limited natural exposure indicate that Swish Cellular PVC-U is as durable as conventional solid PVC-U and that boards will retain adequate impact resistance for a period in excess of 20 years.

8.2 The system will retain its decorative qualities for a period in excess of 20 years with only minor changes in surface appearance.

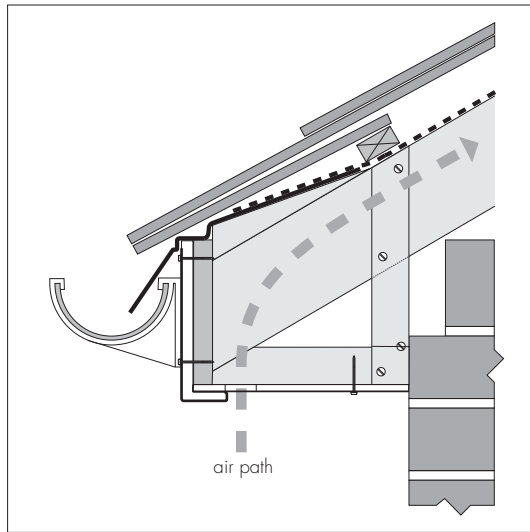
8.3 Where the timber substrate is preservative treated with copper/chrome/arsenic<sup>(1)</sup> or copper/chrome/boron, care must be taken to ensure that sufficient time is allowed for complete fixation of the preservative (approximately seven days) to avoid corrosion of screws and nails used to fix the components.

(1) CCA products should not be used in domestic applications according to European Union Restrictions.

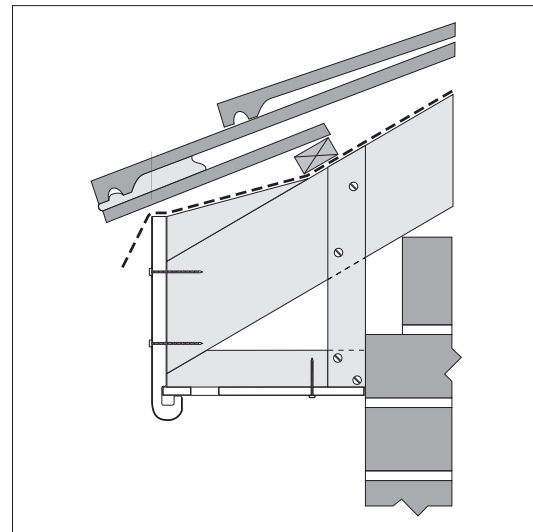
## 9 General

9.1 Installation of the Swish Cellular PVC-U Roofline System must be carried out in accordance with the manufacturer's instructions and the requirements of this Certificate (see Figure 6).

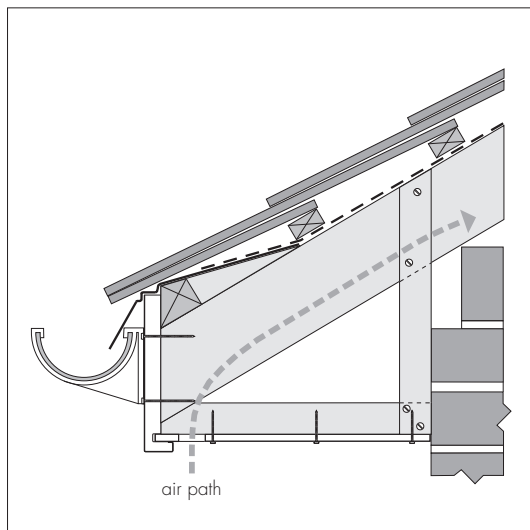
Figure 6 Typical installation details



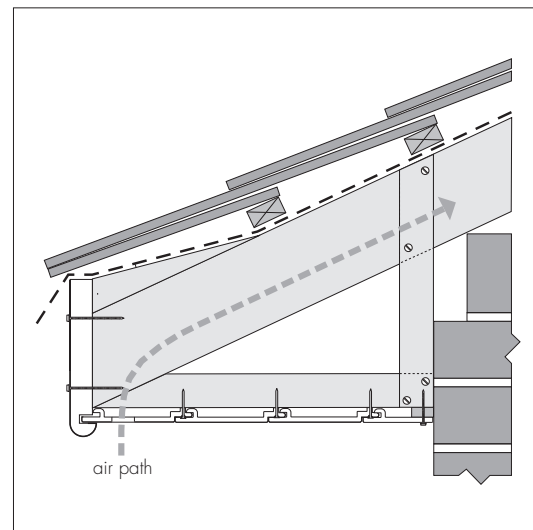
9 mm Cappit fascia with Polo board soffit



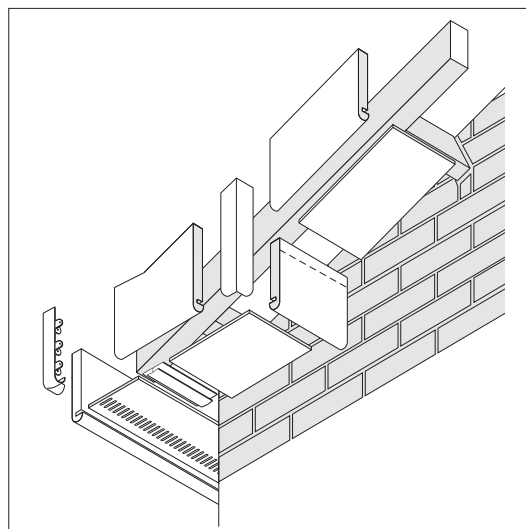
16 mm Bullnose fascia with Gee Pee board soffit



Standard Jumbo with Polo board soffit



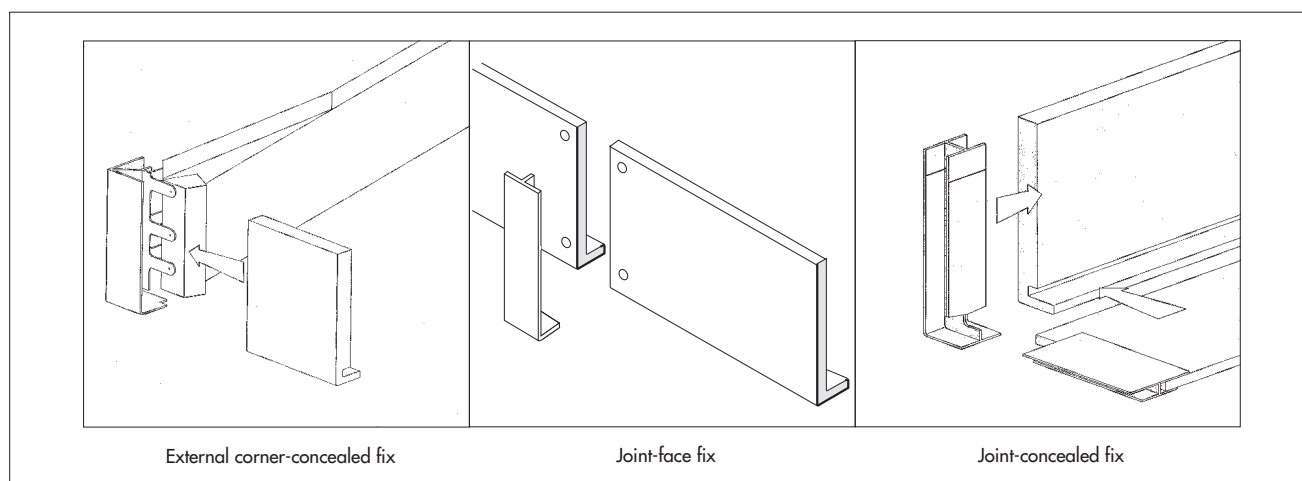
Bullnose jumbo with Tee Gee Polo cladding soffit



Box end detail (cut fascia board)



Figure 6 Typical installation details (continued)



9.2 The components of the system 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 for timber.

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

9.4 Fascia, soffit and barge boards should be fixed to preservative-treated, structurally sound, solid timbers at centres not exceeding 600 mm, using the fixings specified by the manufacturer.

9.5 Existing support timbers should be checked for soundness and, where necessary, replaced.

9.6 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 rafters. Damaged or worn felt should be replaced in accordance with good practice.

9.7 Care should be taken when handling boards at roof level.

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

9.9 It is recommended that the 9 mm fascia boards are fixed to rafter feet over a sound backing board. This may be an existing fascia providing that this is inspected thoroughly and found to be in sound condition. Otherwise the existing fascias should be removed and replaced by minimum 12 mm thick marine grade plywood or other equivalent backing board.

9.10 A minimum of two 50 mm nails or two 40 mm screws per maximum 600 mm centres are used for fixing 9 mm fascias.

9.11 16 mm and Jumbo fascia boards may be used directly to support PVC-U and other lightweight gutters (see section 5.3).

9.12 16 mm and Jumbo fascia boards may be used to support eaves tiles (see section 5.4). In certain geographical/topographical locations, the eaves tiles will need to be restrained in order to resist wind uplift. Guidance on this fixing should be sought from the manufacturer of the eaves tile.

9.13 A maximum of two 65 mm nails at maximum 600 mm centres are used for fixing 16 mm and Jumbo fascia boards to rafter feet.

## 10 Procedure

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

10.2 Rafter feet are cut to a line.

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

10.4 Protective films should be removed just prior to fixing, i.e. peeled off as nailing progresses along the board.

10.5 The summary for the installation details of fascia, soffit and barge boards (see sections 10.6 to 10.16) should be read with reference to the typical installation diagrams shown in Figure 6.

### Fascias

10.6 Fascia boards are fixed to rafter feet, or where relevant to support timber, at centres not exceeding 600 mm, using at least two fixings per rafter. When the product is installed in particularly exposed locations it is recommended that the fascia boards are fixed to support timbers at maximum 400 mm centres.

10.7 Where necessary, fascia boards are joined between rafters using the appropriate joint trim cut to size. The trim is fixed to one board only allowing 4 mm gap for expansion at the end of each board. Depending on the particular trim, either a low modulus silicone sealant or a nail through the spine of the trim into the end of the board is used to secure the trim in place.

10.8 At external corners, the appropriate corner joint trim, cut to size, is used. The trim is either nailed to timber work through the holes provided in the inner lug of the trim (including two-part push-fit trims) using the specified 25 mm nail of face-fixed to one board with a low modulus silicone sealant, depending on the particular trim. In each case a 4 mm gap for expansion is left at the end of each board.

10.9 Internal corner joint trims are available for some boards and these are fitted by the procedure described in section 10.8 for external corners.

### **Soffit Boards**

10.10 Soffit boards, fitted into or butted up against fascia boards, may be used in a variety of ways, as illustrated in Figure 6.

10.11 Soffit boards should be fixed into soffit bearers, battens secured to the wall, or the underside of the rafters at maximum 600 mm centres along their length, and 200 mm centres across their width, using 40 mm nails specified by the manufacturer.

10.12 Where cladding boards are used to construct a soffit, the instructions specified for this product should be followed, starting at the fascia and working towards the building using the specified secret-fix annular ring-shank nails.

10.13 For soffit runs in excess of 5 m board ends are fitted into a soffit joint trim.

10.14 Soffit corner returns are made by cutting the boards to the appropriate angle and joining with a soffit join trim.

### **Barge boards**

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

10.16 The barge board ridge joint should be made using an appropriate joint trim, depending on the barge board profile.

10.17 Eaves box ends should be made using either the appropriate fascia board of vacuum-formed box end, cut to suit the roof pitch, fascia and soffit detail. The fascia boards are nailed to the roof timbers and the box end trims fixed to the PVC-UE boards, with low modulus silicone sealant and, if necessary, additional nail trims.

10.18 Treated timber should be used to create the support framework required for the box end.

## **Technical Investigations**

### **11 Tests**

11.1 Tests were carried out on the cellular boards to determine impact strength.

11.2 As part of the original assessment, tests were carried out on the cellular boards and trims to determine:

- thickness of layers
- Vicat softening point
- density
- weight per linear metre
- ash content
- tensile impact strength
- IZOD impact strength (ISO 180 : 1982)
- impact resistance
- dimensional stability
- tensile strength/elongation
- modulus of elasticity
- impact strength/dehydrochlorination (DHC)/appearance after UV ageing
- impact strength/DHC/appearance after heat ageing
- impact strength/DHC/appearance after water soak ageing
- nail pull-through
- heat reversion
- acetone resistance
- stress relief
- resistance to tile and gutter loading (16 mm and Jumbo fascia boards only).

### **12 Investigations**

12.1 The dimensions of the cellular boards and trims were checked.

12.2 An examination was made of existing data relating to:

- behaviour of product in fire
- colour stability
- impact strength before and after UV ageing.

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

12.4 Assessments were made of the resistance of the products to wind suction, the practicability of installation and the compatibility and efficiency of the sealants specified for use with the product were assessed.

12.5 As part of the assessment relating to Swish ventilators for roof voids, the ventilation characteristics of the ventilated soffit boards were examined.

# Bibliography

- 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 4576-1 : 1989 *Specification for unplasticized polyvinyl chloride (PVC-U) rainwater goods and accessories*
- BS 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*
- BS 5268-3 : 2006 *Structural use of timber — Code of practice for trussed rafter roofs*
- BS EN 10088-2 : 2005 *Stainless steels — Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*
- ISO 180 : 1982 *Plastics — Determination of Izod impact strength*

# Conditions of Certification

## 13 Conditions

13.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

13.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

13.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

13.4 In granting this Certificate, the BBA is not responsible for:

- 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 the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

13.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

