

Planning Application – Evonik, Clayton Lane, Manchester, M11 4SR

Details of Materials and Finishes used Externally for the Development

A1 Building [Appendix A]

Roof – single ply membrane [Sarnafil]

Rainwater Fittings – uPVC [Swish building products]

External Walls – No new work – existing brickwork retained

Windows – white uPVC [Rehau]

External Doors – white uPVC [Rehau]

New Modular Building [Appendix B]

Roof – pre finished steel roof [Kingspan]

Rainwater Fittings - white uPVC

External Walls – ‘Goosewing Grey’ and ‘Merlin grey’ Platisol coated steel

Windows - white uPVC

External Doors – white uPVC

External Masonry

All brickwork used for the development is reclaimed brick to match the existing

New IBC Storage Building

To date, this element of the development is on hold. Materials will be confirmed at a later date if this aspect of development is commenced.

APPENDIX A – A1 BUILDING

Sika Limited

Target Market – Roofing
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Agrément Certificate

08/4531

Product Sheet 1

SARNAFIL WATERPROOFING MEMBRANES

SARNAFIL ADHERED ROOF WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet⁽¹⁾ relates to Sarnafil Adhered Roof Waterproofing Membranes, comprising single-ply polymeric sheets for use on flat or pitched roofs with limited access.

(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

Weathertightness — the membranes will resist the passage of moisture into the building (see section 6).

Properties in relation to fire — the membranes can enable a roof to be unrestricted under the national Building Regulations (see section 7).

Resistance to wind uplift — the membranes will resist the effects of any wind suction acting on the roof (see section 8).

Resistance to mechanical damage — the membranes will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions, Sarnafil G410 and Sarnafil TG76 membranes will provide durable roof waterproofings with service lives in excess of 35 and 25 years respectively (see section 11).



The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Fifth issue: 10 April 2018

John Albon – Head of Approvals
Construction Products

Originally certificated on 28 March 2008

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément

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Regulations

In the opinion of the BBA, Sarnafil Adhered Roof Waterproofing Membranes, 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:	B4(2)	External fire spread
Comment:	The use of the products in a suitable roof specification can be unrestricted under this Requirement. See section 7 of this Certificate.	
Requirement:	C2(b)	Resistance to moisture
Comment:	The products, including joints, will enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.	
Regulation:	7	Materials and workmanship
Comment:	The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.	



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The use of the products satisfies the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards applicable to construction
Standard:	2.8	Spread from neighbouring buildings
Comment:	When used in a suitable roof specification, the products are classified as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard and will enable a roof to be unrestricted under this Standard, with reference to clauses 2.8.1 ⁽¹⁾⁽²⁾ and 2.8.2 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.	
Standard:	3.10	Precipitation
Comment:	The products, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.	
Standard:	7.1(a)(b)	Statement of sustainability
Comment:	The products can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.	
Regulation:	12	Building standards applicable to conversions
Comment:	Comments in relation to the products 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(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:	The products, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.	

Regulation:	36(b)	External fire spread
Comment:	The use of the products in a suitable roof specification can be unrestricted under this Requirement. See section 7 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: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate

Additional Information

NHBC Standards 2018

In the opinion of the BBA, Sarnafil Adhered Roof Waterproofing Membranes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 7 *Roofs*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the products, in accordance with harmonised European Standard BS EN 13956 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Registered Contractors Scheme⁽¹⁾

The Certificate holder operates a Registered Contractors Scheme for these products under which contractors are trained, registered and regularly reviewed by the Certificate holder to demonstrate that they are competent to carry out installation in accordance with this Certificate. Details of Registered Contractors are available from the Certificate holder. Registered Contractors are responsible for each installation of the products they undertake.

(1) The Certificate holder's records relating to their Registered Contractors Scheme will be audited annually by the BBA as part of its programme of surveillance.

Technical Specification

1 Description

1.1 Sarnafil Adhered Roof Waterproofing Membranes comprise:

- Sarnafil G410-EL — a multi-layer roof waterproofing membrane based on plasticised PVC incorporating UV- and flame-retardant stabilisers and a non-woven glassfibre inlay. The product is available in standard (G410-EL), self-adhesive (G410-EL SA), fleece-backed (G410-ELF) and with a self-adhesive polyester fleece backing (G410-EL FSA)
- Sarnafil TG76 — a multi-layer synthetic roof waterproofing membrane based on flexible polyolefins (FPO) with a non-woven glassfibre inlay.

1.2 The membranes are manufactured to the nominal characteristics given in Tables 1 and 2.

Table 1 Nominal characteristics — Sarnafil G410-EL membranes

Characteristics (unit)	Sarnafil G410-EL									
	standard G410-EL				G410-ELF				G410-EL FSA	G410- EL SA
Thickness* (mm)	1.2	1.5	1.8	2.0	1.2	1.5	1.8	2.0	1.5	1.5
Roll length (m)	20	20	15	15	20	15	15	15	15	15
Roll width (m)	2.3	2.3	2.3	2.3	2	2	2	2	2	2
Mass per unit area	1.6	2.0	2.3	2.6	1.9	2.3	2.7	3.1	2.0	2.7
Colour upper face lower face	A range of colours is available								Lead grey as standard	Light grey as standard
Tensile stress* (N per mm ²) longitudinal transverse	≥9.5 ≥9.0	≥10 ≥9.0	≥10 ≥9.0	≥10 ≥9.0	— —	— —	— —	— —	— —	— —
Elongation* (%) longitudinal transverse	≥200 ≥180	≥200 ≥180	≥230 ≥210	≥230 ≥210	— —	— —	— —	— —	— —	— —
Tensile strength* (N per 50 mm) longitudinal transverse	— —	— —	— —	— —	≥650 ≥650	≥700 ≥700	≥750 ≥750	≥750 ≥750	≥600 ≥600	≥700 ≥700
Elongation* (%) longitudinal transverse	— —	— —	— —	— —	≥ 65 ≥ 65	≥ 65 ≥ 65	≥ 65 ≥ 65	≥ 65 ≥ 65	≥ 300 ≥ 300	≥ 65 ≥ 65
Joint peel resistance* (N·50 mm ⁻¹)	≥300	≥300	≥300	≥300	≥300	≥300	≥300	≥300	≥300	≥300
Joint shear resistance* (N·50 mm ⁻¹)	≥600	≥600	≥600	≥600	≥600	≥600	≥600	≥600	≥600	≥600
Foldability at low temperature (°C)	≤-25	≤-25	≤-25	≤-25	≤-25	≤-25	≤-25	≤-25	≤-20	≤-25
Watertightness*	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Table 2 Nominal characteristics — Sarnafil TG76 membranes

Characteristics (unit)	Sarnafil TG76	
Thickness* (mm)	1.2	1.5
Roll length (m)	20	20
Roll width (m)	2	2
Mass per unit area (kg·m ⁻²)	1.5	1.8
Colour upper face lower face	Grey as standard	
Tensile strength* (N per 50 mm) longitudinal transverse	≥800 ≥600	≥800 ≥600
Elongation* (%) longitudinal transverse	≥50 ≥50	≥50 ≥50
Joint peel resistance* (N·50 mm ⁻¹)	≥300	≥300
Joint shear resistance* (N·50 mm ⁻¹)	≥500	≥500
Foldability at low temperature (°C)	≤ -30	≤ -30
Watertightness*	Pass	Pass

1.3 Ancillary items necessary for installation of the products and included in this assessment are:

- Sarnacol 2170 — adhesive for bonding G410 membranes to the substrate
- Sarnacol 2142S — adhesive for bonding G410-ELF and TG76 membranes to the substrate
- Sarnacol 2172 Spray — adhesive for bonding G410 membranes to the substrate
- Primer 600 — for use on PIR insulation boards, OSB and insulated metal sandwich panels
- Primer 610 — spray primer for use on PIR insulation boards, plywood, OSB and insulated metal sandwich panels.

1.4 Other items or components which may be used with the products, but which are outside the scope of this Certificate, are:

- Sarnacol 2162 — a one-component polyurethane adhesive for bonding insulation boards
- Sarnafil T Clean — a cleaning agent for the TG76 membrane
- Sika C-250 Spray — adhesive for bonding insulation boards
- Sarnafil G445 — a protection sheet for G410 membranes
- Sarnafil T Prep — a seam preparation for use prior to hot-air welding Sarnafil TG76 membrane and degreasing metal
- SarnaVap 500E, 1000E and 2000E — polyethylene vapour control layers (VCLs)
- SarnaVap 5000E SA — a self-adhered, bituminous VCL
- SarnaVap HD SA — a self-adhered bituminous VCL
- SarnaTred Walkway Pads — for roof maintenance/access
- Sarnatherm — a range of thermal insulations comprising rigid urethane foam, expanded polystyrene and extruded polystyrene.

2 Manufacture

2.1 The products are manufactured by extrusion coating plasticised PVC and FPO into sheets. The sheets are then reinforced with a scrim in between.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken

- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Sika Limited has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008 and EN ISO 14001 : 2004 by SQS (Certificate 31982).

2.4 The products are manufactured in Switzerland and marketed in the UK by the Certificate holder.

3 Delivery and site handling

3.1 The products are delivered to site in rolls packaged in polythene bearing a label with product identification, stock number, lot number, bulk roll number, area, date code and the BBA logo incorporating the number of this Certificate.

3.2 Rolls should be stored in a cool, dry area on a clean, level surface, and kept under cover. They should only be unwrapped from packaging at the time of installation and unused membrane should be returned to its packaging until required.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the products under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheets.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Sarnafil Adhered Roof Waterproofing Membranes.

Design Considerations

4 Use

4.1 Sarnafil Adhered Roof Waterproofing Membranes are satisfactory for use as adhered waterproofing installations on flat and pitched roofs with limited access.

4.2 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters etc. Where traffic in excess of this is envisaged, additional protection to the membrane must be provided (see section 9).

4.3 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. Pitched roofs are defined for the purpose of this Certificate as those having a fall greater than 1:6 or 10°. For design purposes, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection and direction of falls etc.

4.4 Decks to which the membranes are to be applied must comply with the relevant requirements of BS 6229 : 2003 or BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2018, Chapter 7.1.

4.5 Insulation materials to be used in conjunction with the membranes must be in accordance with the Certificate holder's instructions and be:

- as described in the relevant clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and be used in accordance with, and within the scope of, that Certificate, or
- included in the Certificate holder's *Adhered Systems Insulation List*. The insulation must be attached independently to the substrate.

4.6 Sarnafil G410 membrane must not be laid directly onto expanded polystyrene or on timber substrates impregnated with substances containing solvents or oil (eg oil-based preservatives), and can be adversely affected by contact with bituminous or coal tar products, or polystyrene insulation boards. In these situations the fleece-backed membrane or a suitable separation layer must be used. Where doubt arises, the advice of the Certificate holder should be sought.

5 Practicability of installation

The membranes should only be installed by members of the Certificate holder's Registered Contractors Scheme (see the *Additional Information* part of this Certificate).

6 Weathertightness



6.1 The membranes, including joints, when completely consolidated, will adequately resist the passage of moisture into the building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 The membranes are impervious to water and will provide a weathertight roof capable of accepting minor structural movement without damage.

7 Properties in relation to fire



7.1 The following systems will be unrestricted by the national Building Regulations:

- an 18 mm thick OSB deck, one layer of SarnaVap 5000E SA VCL, one layer of 100 mm thick PIR insulation and one layer of Sarnafil G410-12EL fully bonded using Sarnacol 2170
- an 18 mm thick OSB deck, one layer of bitumen VCL, one layer of 100 mm PIR insulation and one layer of Sarnafil G410-12EL fully bonded using Sarnacol 2170
- an 18 mm thick OSB deck, one layer of SarnaVap 500E VCL, one layer of 150 mm thick EPS insulation and one layer of Sarnafil G410-12EL fully bonded using Sarnacol 2142S
- an 18 mm thick OSB deck, one layer of SarnaVap 5000E SA VCL, one layer of 100 mm thick PIR insulation and one layer of Sarnafil G410-12EL fully bonded using Sarnacol 2170
- an 18 mm thick plywood deck and one layer of Sarnafil G410-12EL fully bonded using Sarnacol 2170
- an 18 mm thick OSB deck, one layer of SarnaVap 5000E SA VCL, one layer of 100 mm PIR insulation and one layer of Sarnafil G410-12EL fully bonded using Sarnacol 2142S
- an 18 mm thick plywood deck, one layer of bitumen VCL, one layer of 75 mm thick mineral wool insulation and one layer of polyester fleece-backed Sarnafil TG76 fully bonded using Sarnacol 2142S
- an 18 mm thick plywood deck, one layer of bitumen VCL, one layer of 100 mm thick PIR insulation and one layer of polyester fleece-backed Sarnafil TG76 fully bonded using Sarnacol 2142S
- an 18 mm thick plywood deck, one layer of Sarnavap 500E VCL, one layer of 100 mm thick PIR insulation board primed with Primer 600, and one layer of Sarnafil G410-15EL FSA
- an 18 mm thick plywood deck, one layer of SarnaVap 5000E SA VCL, one layer of 120 mm thick tissue-faced PIR Insulation board, and one layer of Sarnafil G410-12EL fully bonded with Sarnacol 2172
- an 18 mm thick plywood deck, one layer of Sarnavap 500E VCL, one layer of 120 mm thick PIR Insulation board, and one layer of Sarnafil G410-15EL SA.

7.2 When tested and classified in accordance with EN 13501-5 : 2005, the following systems achieved a B_{ROOF} t(4) classification:

- an 18 mm thick plywood deck, one layer of Sarnavap 500E VCL, one layer of 100 mm thick PIR insulation board primed with Primer 600, and one layer of Sarnafil G410-15EL FSA
- an 18 mm thick plywood deck, one layer of SarnaVap 5000E SA VCL, one layer of 120 mm thick tissue-faced PIR Insulation board, and one layer of Sarnafil G410-12EL fully bonded with Sarnacol 2172
- an 18 mm thick plywood deck, one layer of Sarnavap 500E VCL, one layer of 120 mm thick PIR Insulation board, and one layer of Sarnafil G410-15EL SA.

7.3 The designation of other specifications (eg on combustible substrates) should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, Clause A1

Scotland — test to conform to Mandatory Standard 2.8, clauses 2.8.1 and 2.8.2

Northern Ireland — test or assessment by a UKAS-accredited laboratory or an independent consultant with appropriate experience.

8 Resistance to wind uplift

The adhesion of the membranes will be limited by the cohesive strength of the substrate. On substrates with high cohesive strength, the adhesion of the membranes or of a fleece-backed version of the membranes is sufficient to resist the effect of wind suction, thermal cycling or minor structural movements likely to occur in service. The Certificate holder assumes liability for the calculations for the adhered system and provides a project specific design service which takes into account all the relevant information supplied.

9 Resistance to mechanical damage

The membranes can accept the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment, a walkway should be provided using SarnaTred Walkway Pads or concrete slabs on paving support pads.

10 Maintenance



10.1 The products must be the subject of annual inspections and maintenance to ensure continued performance. Exposed membrane must be free from the build-up of silt, unwanted vegetation and other debris.

10.2 A planned maintenance cycle, including inspections by the Certificate holder at minimum intervals of five years, should be introduced if an extended service life is required. The Certificate holder can advise on methods of extending the service life. This could include the use of thicker membranes, specific maintenance requirements or localised replacement and repair.

10.3 Where damage has occurred, it should be repaired in accordance with section 16 and the Certificate holder's instructions.

11 Durability



11.1 The durability of all roofing materials is dependent on the roof design, installation, immediate environment, maintenance and use. Other specific factors assessed by the BBA relating to the durability of individual products include formulation, thickness, and life to first maintenance.

11.2 Sarnafil G410 will have a service life in excess of 35 years and this can be extended to in excess of 40 years with periodic maintenance as stated in section 10.

11.3 Sarnafil TG76 will have a service life in excess of 25 years.

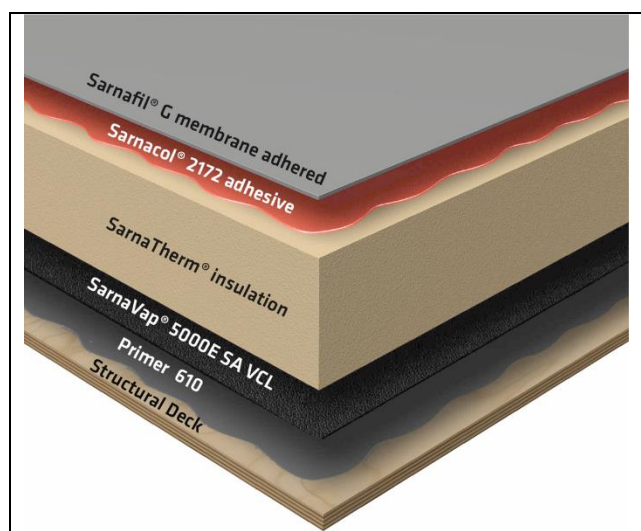
12 Reuse and recyclability

The products comprise polyvinyl chloride, flexible polyolefins, polyester and glass, which can be recycled.

13 General

13.1 Installation of Sarnafil Adhered Roof Waterproofing Membranes (see Figure 1) must be carried out by trained and approved installers working in accordance with this Certificate, the relevant clauses of the Certificate holder's instructions and BS 8217 : 2005, BS 8000-0 : 2014 and BS 8000-4 : 1989.

Figure 1 Typical installation



13.2 Substrates to which the membranes are to be applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs.

13.3 Installation should not be carried out during wet weather (eg rain, fog or snow) or when the temperature is below 5°C.

14 Procedure

Sarnafil G410

14.1 Sarnacol 2170 is applied to the substrate and allowed to dry. The membrane is unrolled onto the surface and approximately one-third of its length folded back to expose the underside. Sarnacol 2170 is applied to the membrane, at a coverage rate of $200 \text{ g}\cdot\text{m}^{-2}$, and substrate, at a coverage rate of 300 to $800 \text{ g}\cdot\text{m}^{-2}$ depending on texture. When the adhesive has dried, the two adhesive-coated surfaces are brought into contact and the surface of the membrane is rolled with a water-filled roller. This is then repeated over the rest of the sheet.

14.2 When the adhered membrane is used over insulation products, the resistance to wind uplift will be limited by the cohesive strength of the insulation, and the method of attachment. These factors should be taken into account when selecting the insulation material. Insulation boards can be either fully adhered, using Sarnacol 2162 or hot bitumen, or mechanically fastened. Sarnacol 2170 must not be used directly on polystyrene products.

14.3 The membrane is mechanically fixed at the perimeter and then lap jointed.

14.4 Sarnafil G410-ELF can be fully adhered using Sarnacol 2170 or Sarnacol 2142S adhesives, depending upon the substrate.

14.5 When using Sarnacol 2170 adhesive, a primer coat of the adhesive is applied to the substrate and allowed to dry. The membrane is unrolled onto the surface and approximately half of its length folded back to expose the underside. Sarnacol 2170 is applied to the previously primed area. The membrane is immediately unrolled directly onto the wet

adhesive and the surface of the membrane is rolled with a water-filled roller. The other half of the membrane is folded back and the procedure is repeated.

14.6 When using Sarnacol 2142S, the membrane is unrolled onto the substrate and approximately half of its length is rolled back to expose the underside. A coat of Sarnacol 2142S is applied to the substrate, covering only the area where the membrane is to be laid. The membrane is immediately unrolled onto the wet adhesive, ensuring that the weld area is kept adhesive free, and the surface of the membrane is rolled with a water-filled roller. The other half of the membrane is folded back and the procedure repeated.

14.7 When using Sarnacol 2172 adhesive, a primer coat of the adhesive is applied to the substrate and allowed to dry. The membrane is unrolled onto the surface and approximately half of its length folded back to expose the underside. Sarnacol 2172 is applied to the underside of the membrane. Once the adhesive is tacky, the membrane is laid on the substrate and pressed down with a heavy roller. The other half of the membrane is folded back and the procedure repeated.

14.8 When using Sarnafil G410-EL FSA and G410-EL SA membranes, the substrate is cleaned if required and the membrane is unrolled and laid in position. The substrate may require preparing with Primer 600 or Primer 610. The protective liner is removed from the self-adhesive backing and the surface of the membrane is brushed with a broom for full contact with the substrate. The surface is then pressed down with a roller of approximately 50 kg in weight to ensure full surface bond to the substrate. Adjoining sheets are overlapped by 60 mm. Seams overlaps are welded by hot air (see section 15).

Sarnafil TG76

14.9 Sarnafil TG76 is unrolled onto the substrate and approximately half its length rolled back to expose the underside.

14.10 A coat of Sarnacol 2142S is applied to the substrate, covering only one area where the membrane is to be laid.

14.11 The membrane is immediately unrolled onto the wet adhesive, ensuring that the weld area is kept adhesive free, and the surface of the membrane is rolled with a water-filled roller. The other half of the membrane is folded back and the procedure repeated.

15 Jointing and flashing

15.1 Jointing is achieved by hot-air welding with the temperature set in accordance with the Certificate holder's instructions.

15.2 The welding area must be dry and clean. If the membrane in the welding area is oxidised, owing to prolonged outdoor exposure, or contaminated, it must be cleaned in the prescribed manner. When installing Sarnafil TG76 only, Sarnafil T Prep should be allowed to totally flash off prior to welding.

15.3 The welded width of the joint must be a minimum of 25 mm. Care must be taken to ensure that overheating of the membrane does not occur, as scorching and carbonisation of the membrane will result.

15.4 The seam must be tested with a suitable metal probe and any weakness immediately repaired.

15.5 Flashing and detailing are formed in accordance with the Certificate holder's instructions.

16 Repair

Any damage must be repaired by cleaning the affected area and applying a patch, as described in the Certificate holder's instructions.

17 Tests

Tests were carried out and the results assessed to determine:

- on Sarnafil G410-EL series membranes
 - tensile strength*
 - elongation at break*
 - tear resistance
 - dimensional stability*
 - heat ageing (56 days at 80°C) followed by tensile strength and elongation
 - UV ageing (500 light hours using UVB 313 lamps cycling 4 hours UV at 45°C and 4 hours condensation at 40°C) followed by tensile strength and elongation
 - apparent density
 - water vapour permeability
 - ash content
 - static indentation on hard and soft substrate*
 - low temperature flexibility*
 - thickness*
 - resistance to root penetration*
 - peel resistance of joints*
 - shear resistance of joints*
 - dynamic indentation on perlite board and expanded polystyrene*
 - resistance to wind uplift
 - thermal shock
 - water vapour resistance
 - resistance to sliding at 90°C
 - resistance to water pressure (6 m head)
 - peel resistance when applied to chipboard, concrete, perlite and polyisocyanurate substrates (using Sarnacol 2170 adhesive applied to Sarnafil G410-12EL)
 - peel resistance from a concrete substrate without ageing, after 56 days heat ageing at 80°C and after 28 days water soak at 20°C (using Sarnacol 2170 adhesive)
 - resistance to cyclic movement
 - air pressure resistance of joints
 - tensile strength of welded joint after 28 days heat ageing at 80°C
 - tensile strength of welded joint (longitudinal and transverse) after 7 days water soak at 60°C
- on Sarnafil G410-18EL FSA
 - resistance to wind uplift
 - peel strength from concrete on controls and after 28 days ageing at 70°C
- on Sarnafil G410-15EL SA
 - resistance to wind uplift
 - peel strength from concrete on controls and after 28 days ageing at 70°C
- on Sarnafil TG76
 - tensile strength
 - elongation
 - dimensional stability
 - tear strength
 - static indentation on EPS and concrete
 - dynamic indentation on EPS and perlite board
 - water vapour permeability
 - water vapour resistance
 - resistance to cyclic movement
 - peel resistance
 - heat ageing (28 days at 80°C) followed by resistance to peel and resistance to cyclic movements (200 cycles)
 - water soak (28 days at 60°C) followed by resistance to peel.

18 Investigations

18.1 Tests were conducted on a material of similar formulation to Sarnafil TG76 and the results were assessed for:

- tensile strength and elongation
- resistance to water pressure
- resistance to nail tear
- resistance to folding at low temperatures
- resistance to leakage at joints
- tensile strength of joints
- peel strength of joints.

18.2 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.

18.3 An evaluation was made of existing data on fire performance.

18.4 A survey of known users was carried out to assess the performance in use of the products.

18.5 A reassessment of the *Durability* statement for Sarnafil G410 was based on visits to existing sites in Switzerland and in the UK and the results of tests conducted on unaged, naturally aged and accelerated-aged material.

18.6 A reassessment of the *Durability* statement for Sarnafil TG76 was based on visits to existing sites in Europe and on the results of tests conducted on a material of similar formulation in both unaged and naturally aged conditions.

Bibliography

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS EN 13956 : 2012 *Flexible sheet for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

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

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

EN 13501-5 : 2005 + A1 : 2009 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*

19 Conditions

19.1 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 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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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Swish®
BUILDING PRODUCTS



Range Guide

Design Options
for PVC

- Roofline
- Cladding
- Rainwater



The Specifier's Choice for
Cellular PVC Roofline & Cladding

About Swish

- The premier brand in cellular PVC roofline and cladding
- Most comprehensive system available
- Over 40 years experience in plastics technology
- Non-lead formulation complies with UK, EEC and PVC Industry guidance on removal of lead from PVC
- Non-lead formulation will not discolour
- 20 Year Product Guarantee on White cellular PVC and 10 Years on Coloured and Foiled profiles
- Technical Services team focus on specifier requirements, providing comprehensive support.
- BBA and BSI certification (Kitemarked)
- Manufactured under ISO9001
- Swish Building Products holds ISO14001 (Environmental) and OHSAS 18001 (Occupational Health & Safety) accreditation
- National network of Specialist stockists ensures expert local support



FM 09180



EMS 513947



OHSAS 523157



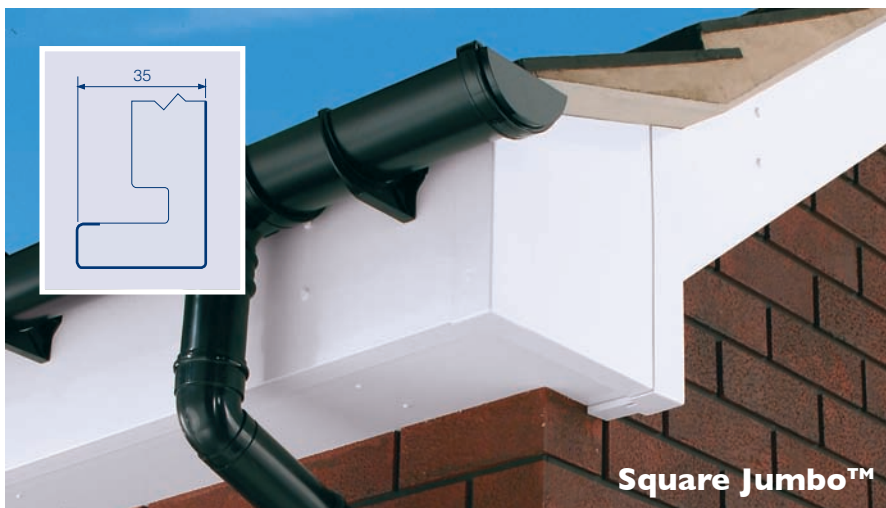
BS 7619
Licence No. KM33730

Swish
BUILDING PRODUCTS

Swish Fascias and

White

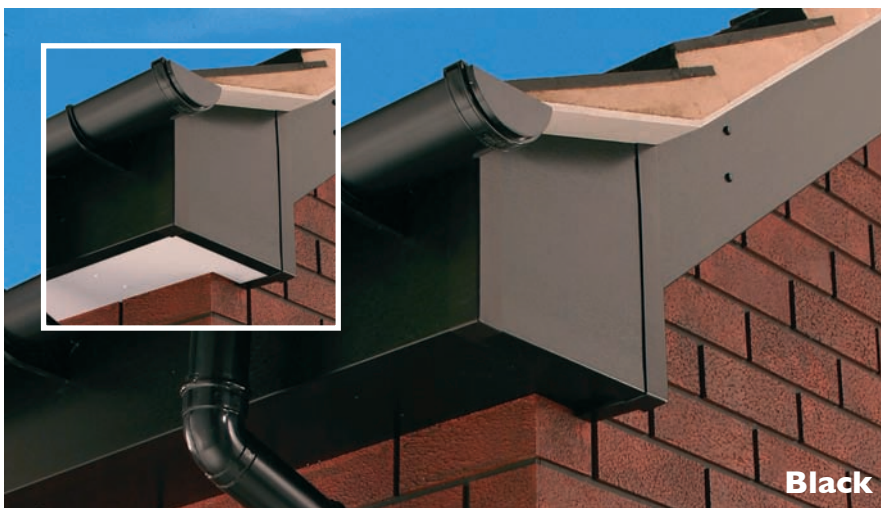
Swish Jumbo™ boards are strong, load bearing profiles. These boards are secured directly to the rafter foot and fully support the weight of eaves tiles and rainwater systems. A wide range of sizes ensures specifier requirements are met. Soffit boards are available in the form of vented and unvented flat boards and interlocking cladding profiles. A fluted (unvented) board is also available.



Bargeboards

Foiled

Swish 16mm fascia and 9mm vented and unvented soffit boards match most window and conservatory systems currently in use. Each foiled finish is accompanied by a full compliment of colour matched corners, joints and trims. Swish cladding profiles are also available in foiled finishes (see page 11).



Sustainability

Cellular PVC suits the exposed conditions on clad facades and at the roofline, especially as these areas are difficult and costly to access and maintain.

Swish cellular PVC requires no maintenance; it will last the life-time of the building and can be fully recycled at the end of its service life.

The BRE Green Guide (June 2008) recognises the sustainability of PVC building products. Under the Code for Sustainable Homes, PVC cladding over timber framework is classed as an A+ external wall system; the highest rating available.

Swish cellular PVC offers the potential of a 60+ year, maintenance-free working life, minimising maintenance costs for landlords and home owners alike. This low lifetime cost may free up maintenance budgets for the purchase of other CO₂ reduction materials such as loft insulation.

At the end of their working life, Swish profiles can be easily removed and recycled.

Colour Options

Swish 16mm Square Fascias and 9mm flat Gee Pee™ soffit boards are also available in three PLAIN colours, Anthracite, Light Grey and NEW Slate Grey. These profiles have a co-extruded self-coloured outer surface.



Anthracite



Light Grey



Slate Grey

Note: The above swatches are not an accurate representation of colour therefore it is recommended that a sample be requested to aid colour match.

Guarantees

All Swish White cellular PVC profiles carry a 20 Year Product Guarantee. All foiled and coloured cellular profiles carry a 10 Year Guarantee. Foiled and coloured PVC installations can suffer from excessive expansion and contraction due to heat absorption. Specifiers and installers MUST therefore satisfy themselves that sufficient provision has been made to avoid significant thermal movement with the introduction of adequate ventilation behind the installation.

M-Boss

Fascias

- Tough 16mm fascia boards do not require a timber backing board
- Will bear the weight of the guttering system and the lower row of tiles
- Use in conjunction with standard soffit boards
- Installation requirements are as standard white and coloured profiles
- May be worked with standard carpentry tools
- 10 Year Guarantee on all M-Boss cellular PVC profiles

Trims

- Matching joints and corners with textured surfaces

Soffits

- Use with standard Swish soffits
- For the full range of soffit styles and sizes please consult the Swish Trade Price List

Timber Effects

Swish foiled GeePee™ boards and Tudor Board may be used to create low maintenance timber effects to gable ends and dormers.

GeePee™ and Tudor boards are flat profiles. Tudor Boards are 20mm thick and GeePee™ boards 9mm thick. Both are available in Mahogany, Rosewood, Light Oak and Black foiled finishes.

All Swish foiled profiles carry a 10 year product guarantee.

Tudor Board



Swish M-Boss, Sof

M-Boss Roofline

Swish M-Boss fascia profiles provide the perfect combination of a traditional timber appearance, with the practical, low maintenance benefits of cellular PVC.

M-Boss fascias are available in a range of standard sizes including a 405mm double-ended board which enables easy box-end construction. The range is complemented by matching M-Boss corners and joints.

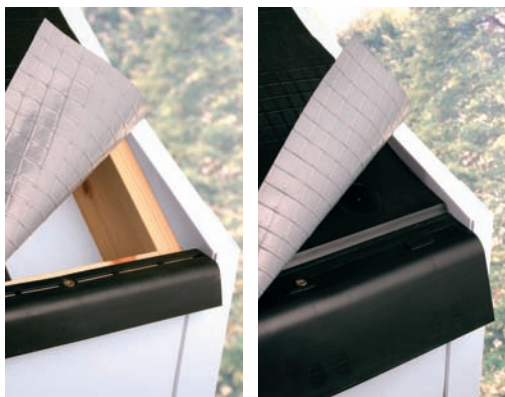
M-Boss fascias may be used in conjunction with plain vented or unvented soffits. Matching or contrasting soffit colours are available.



Soffits and Vents

Soffit Boards and Ventilation

Swish GeePee™ plain soffit boards are 9mm thick and are suitable for either lay-on or angled soffit details. Swish Polo™ ventilated soffit boards are available with slot configurations in either single (10mm) or double rows (25mm). All Polo™ boards are 9mm thick, maximising structural integrity, eliminating bowing and minimising fixing requirements. Open V and Tee Gee tongue and groove boards are also available for wide 'feature' soffits.



Over Fascia Ventilator

Vented Eaves Protector

Over Fascia Ventilation

Where a 'clean' or unvented soffit is required, ventilation may be provided over the fascia using an Over Fascia Ventilator or a Vented Eaves Protector, fixed securely to the top of the fascia board. The support provided by the vented eaves protector eradicates 'ponding' which may occur behind the fascia board where there is a tendency for the sarking felt to sag. Over-fascia ventilation provides a continuous 10mm air path.

Through Fascia Ventilation

The Polo™ range of ventilated soffit boards provides the equivalent of a 10mm or 25mm air path as required.

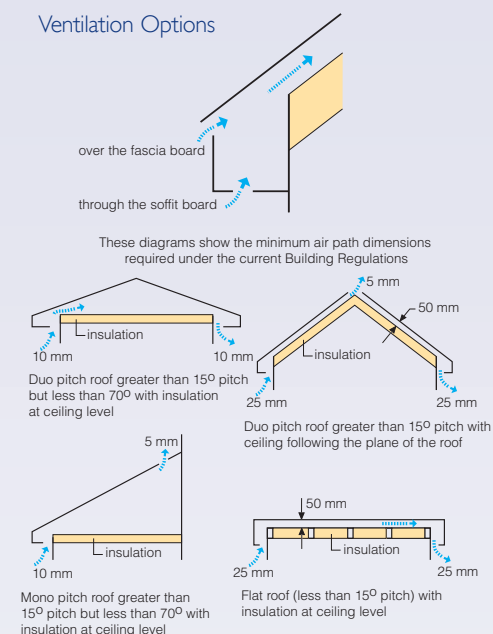
Strip ventilators allow additional or alternative means of ventilation to the roof void. These are designed to fit Swish 9mm GeePee™ soffits and are available in both 10mm and 25mm configurations.



Ventilation

Roof voids must be ventilated in order to stop warm air condensing on cold surfaces as condensation encourages rot and mould growth.

Ventilation Options



The air path dimensions shown above are the minimum widths required for clear, continuous air spaces.

Compliance with these ventilation standards is required on all buildings, except those constructed without ventilation provision or which pre-date Buildings Regulations. However, Swish recommend that adequate ventilation is provided on all refurbishment projects regardless of age.

Swish ventilators for roof voids are covered by British Board of Agrément Certificate No. 91/2620. When used in accordance with the Certification, Swish ventilators will satisfy all statutory Building Regulations in England, Wales, Scotland and Northern Ireland.

The Finishing Touches

The Swish Technical Support team have developed a number of detailing features that allow the designer to achieve an attractive and individual look without sacrificing the benefits of a standardised system.

Decorative Roofline

The decorative edge of these Concave and Convex profiles offers flexibility of design, particularly where the two boards join at the apex. These 16mm thick boards are available in standard 5m lengths and can be fixed direct to rafter ends with no requirement for additional backing timber.



Bespoke designs are possible subject to volume requirements. For further information please contact the Swish Technical Services Team.

Roofstyle

Swish Roofstyle moulded components can be fitted to the face of a bargeboard or to the first rafter. Joints between components self-align and fixings are hidden to enhance appearance. The system includes Concave, Convex and Straight clip-together components.



Swish Decorative

Bargeboards, Spires and Finials

These profiles add traditional character to any building. They combine the high performance, low maintenance characteristics of PVC with lasting good looks and are ideal for both new build and refurbishment projects.

Convex



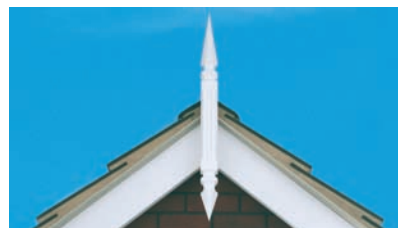
Concave



Ball Finial & Bracing Bar



Roof Spires - 3 designs



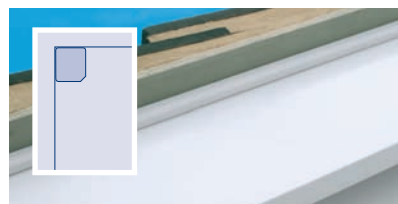
Enhancing the Installation

Swish offers a range of trim profiles that can be used to enhance the look of the installation. A small selection is featured here. Typical applications are at the gable eaves and under the fascia/soffit.

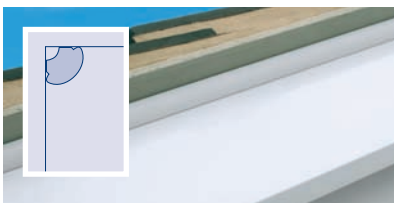
Scotia



Rectangle



Quadrant



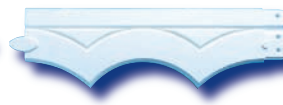
Scotia & 'D' Mould



Roofstyle Components



C446 - Convex



C445 - Concave



C447 - Straight

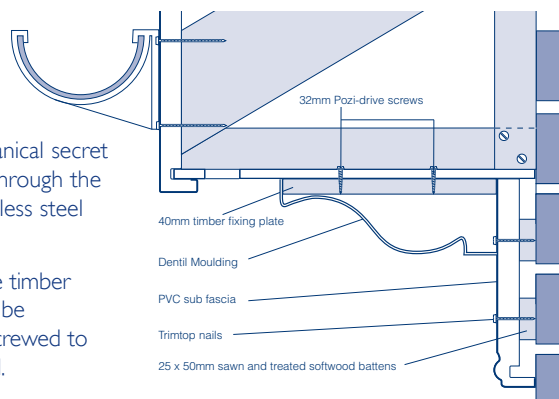
Elements

Dentils

Decorative Dentil mouldings add elegance to the eaves of any property, creating individual architectural detailing. The range includes a choice of 4 sizes, and differing designs.



- A strong mechanical secret fix is achieved through the soffit using stainless steel screws.
- Alternatively the timber fixing plate may be detached and screwed to the soffit or wall.



Gallows

Swish Gallows Brackets are load bearing and capable of offering structural support to door and window canopies. The surface pattern mimics the traditional appearance of timber with a high level of bevelling detail.



Feature Corbel

The Feature Corbel has sharply defined sweeping curves which are most effective when installed below a flat top canopy or used in pairs beneath oriel windows.



Dentils

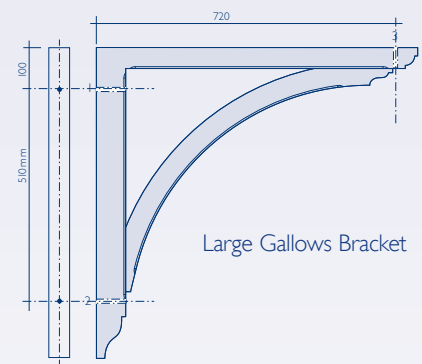
Swish Dentils provide an excellent means of adding both decoration and value to a property.

The range meets the requirements of most new build and refurbishment applications. Each unit is capable of a secret mechanical fix in at least one direction through a built in footplate.

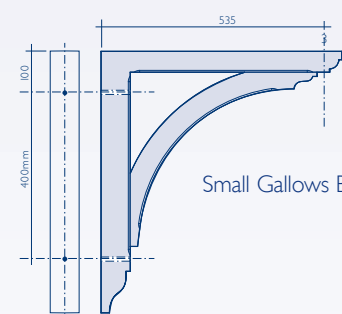
The orientation and spacing are worth careful consideration in order to achieve the best effect. In addition, a continuous sub-fascia of cellular PVC fixed to the wall under the soffit will greatly enhance the effect.

Gallows & Corbel

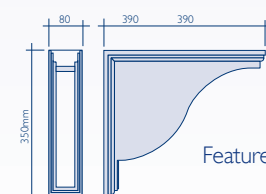
Swish exterior Gallows Brackets and Feature Corbel offer a stylish yet durable detail to feature under canopies, bay and oriel windows.



Large Gallows Bracket



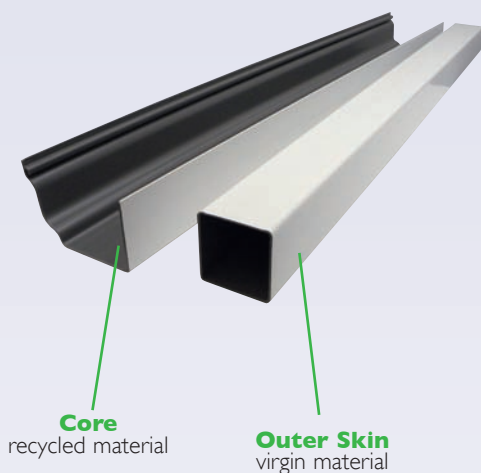
Small Gallows Bracket



Feature Corbel

Gutters and Pipes

Gutters and pipes have a core of recycled material which is grey in colour in order to avoid the unnecessary use of additional colouring agents.



Accessories

Swish Rainwater System accessories are injection moulded using virgin PVC. Components incorporate a simple clip together system for fitting gutter and pipe profiles. Gutter Clips include pre-installed seals that are lubricated during manufacture to ease the clipping process.



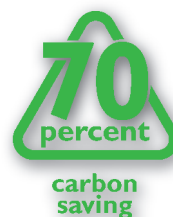
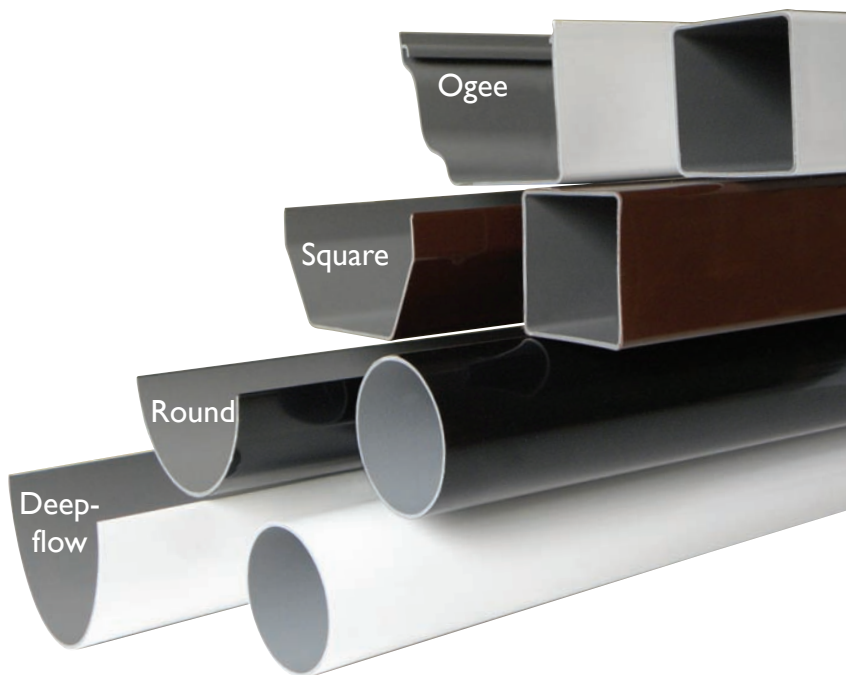
PVC Sustainable R

The System

Swish Rainwater Systems are ideal for those who wish to specify quality products that have a reduced carbon footprint. They are unique in the UK in that they contain a high proportion of post consumer recycled PVC.

Approximately 84% by weight of gutters and pipes is composed of recycled material that is derived from old PVC windows and gutter systems that have been removed from buildings when being refurbished or demolished.

The production of PVC components from recycled material requires a fraction of the energy needed to manufacture virgin PVC and so 70% saving in CO₂ output is made during the production of Swish gutter and pipe profiles when compared to production of 100% virgin material.



Rainwater Systems

Swish Rainwater Systems are designed for application in most domestic and light commercial properties throughout the UK. Information to assist specifiers determine the basic requirements of a gutter system is available in the Swish Rainwater Design and Installation Guide. Swish Technical Services Dept. can provide further information and guidance as required. For further details please contact them on 01827 317238.

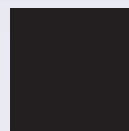


Specification

Performance

Gutter	Flow Rate	Max. area drained
Round	0.9 l/s	43 m ²
Square	1.6 l/s	76 m ²
Ogee	2.2 l/s	105 m ²
Deepflow	1.8 l/s	86 m ²

Colours



Black



Brown



White

Certification

Swish Rainwater Systems are manufactured to the following standards:-

- Kitemark KM508760
- BS EN 607 : 2004 (Eaves Gutters & Fittings)
- BS EN 12200/1 : 2000 (Plastic Piping Systems)
- BS EN 1462 : 2004 (Brackets for Eaves Gutters)
- ISO 9001 Quality Management System



KM 508760

Swish Cladding



Versatile Designs

Cellular PVC cladding can can be fitted in a variety of patterns including horizontal, herring-bone or diagonal. Some profiles can be mounted vertically.

Horizontal

Vertical*

Herring Bone*

* Tee Gee and Open V only

Swish Cladding Sy

White

Cellular PVC cladding can significantly improve the thermal properties of a building and provides an excellent low maintenance alternative to timber. The Swish cladding system offers excellent colourfastness and considerable design choice.



stems

Foiled

Cladding profiles are commonly used on the cheeks and apex of dormer windows, as a long life replacement for softwood claddings and as a ceiling soffit for large open porches. The Foiled range is compatible with many window and conservatory system colours, and features colour matched trims and joints.



Design Criteria

White Cladding

Battens:	Min. 19 x 38mm. Recommended 25 x 38mm (suits return flange on C027 starter trim and C040 universal channel with batten cover).
Airspace:	Minimum 19mm. Recommended 25mm, with ventilation.
Fixing Centres	600mm max. up to 2 storeys 400mm max. from 2 to 5 storeys.

Coloured & Foiled Cladding

Battens:	Min. 50 x 38mm
Airspace:	Min. 50mm to the rear of the installation. Continuity of the ventilation path should be achieved by omitting the starter batten and by venting into the eaves or leaving a 10mm air gap between the cladding and soffit. Angle ventilators C061 or C065 can be installed at the base and top of the installation to prevent insect ingress.
Fixing Centres:	400mm max.

Generally

Fixings:	25mm A4 stainless steel pins (C203) for 19mm battens. 30mm A4 stainless steel pins (C204) for 25mm battens.
Breather membrane:-	Install over timber frame or in exposed locations.
Insulation incorporated:-	Counter batten and include breather membrane. 25mm ventilated airspace must be provided for white, coloured and foiled cladding as above.
Sealing:	Use low modulus silicone (C077).

Guarantees

All Swish White cellular PVC profiles carry a 20 Year Product Guarantee. All foiled and coloured cellular profiles carry a 10 Year Guarantee. For further details please contact Swish Building Products.

For further details contact:

Swish[®]
BUILDING PRODUCTS

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www.swishbp.co.uk**

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REHAU TOTAL70
Total Choice for Every Type of Home

REHAU TOTAL70

All the benefits without compromise

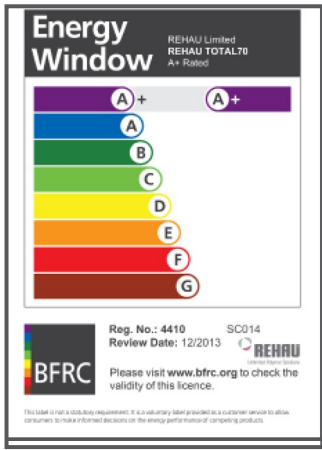
Our 70mm window and door system offers a range of styles crafted using PVCu which guarantee maximum energy efficiency and performance for your investment.

There are two aesthetic options to choose from in our casement window range. REHAU TOTAL70c is our chamfered system, REHAU TOTAL70s our fully sculptured system. The range of styles extends to REHAU TOTAL70r which is a fully reversible window system.

TOTAL
70_c

TOTAL
70_s

TOTAL
70_r



Energy efficiency

For excellent thermal properties and to achieve greater energy savings, REHAU TOTAL70 window systems easily achieves an A+ rating, the highest possible Window Energy Rating (WER) for thermal efficiency. The more efficient your home, the more you save. TOTAL70 windows and doors will comply with and exceed Part L Building Regulations*. For windows this requirement is an overall U-Value of 1.6 W/m²K and for doors 1.8 W/m²K. TOTAL70 can achieve U-Values of 0.8 W/m²K using triple glazed Argon sealed units. This means that the systems are suitable for Passivhaus standard - currently the most energy efficient specification for a building throughout Europe.

Noise reduction

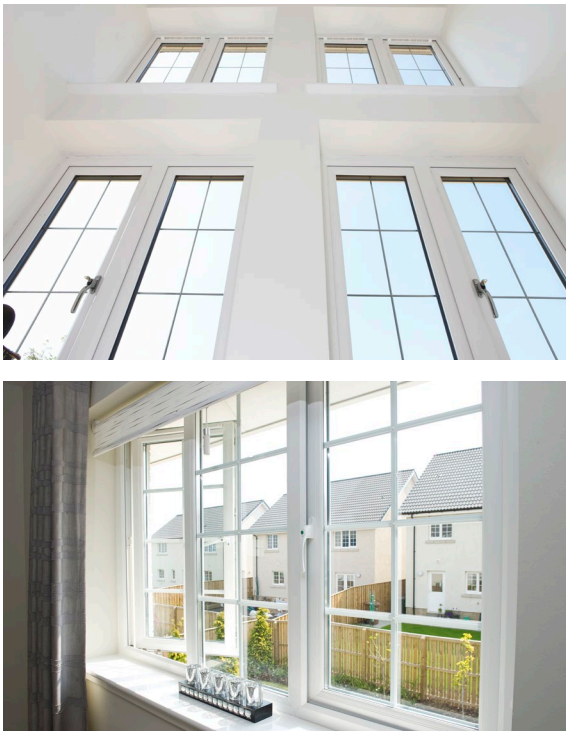
Double & triple glazed sealed units considerably reduce outdoor noise levels, allowing you to relax in the peace and quiet of your home.

Safety and security

REHAU TOTAL70 window and door systems can achieve the British Standard BS7950 and PAS24 security standards.

Low maintenance

Our systems contain a unique compound with a smooth gloss finish – guaranteeing they retain their pristine appearance. It also means they will never warp, rot or need painting.



REHAU TOTAL70

Colour and choice for your home

PVCu windows and doors don't have to be white - choosing REHAU for your home opens up a world of colour and choice which will complement your style of property perfectly



If you like the look of traditional painted windows but want the benefits of PVCu and double or triple glazing then you'll love REHAU's fantastic range of foil laminate range.

With our laminate PVCu the colour and finish options are vast complementing both the exterior and interior of your home - you can choose one colour and finish for the outside and a totally different one for the inside. Over 20* laminate options include an attractive range of woodgrain effect finishes all contained in our easy to use swatch and split in to four simple collections to help you choose the look which matches your home.

All laminate finishes carry extensive guarantees and are well proven for high performance and longevity in all types of weather conditions and all areas, without colour deterioration or fade.

Whatever you choose you can be assured that your windows, doors or conservatory will beautifully enhance your home for years to come.



The Collections



Contemporary Collection

Building on the growing popularity PVCu Windows, which mimic the minimalist look of aluminium windows, The Contemporary Collection includes a selection of blacks and greys



Timeless Collection

A great choice for period properties, The Timeless Collection includes Clotted Cream, Chartwell Green and Windsor.



Traditional Collection

Offering options for those looking a more traditional timber finish including Golden Oak, Mahogany and Rosewood.



Statement Collection

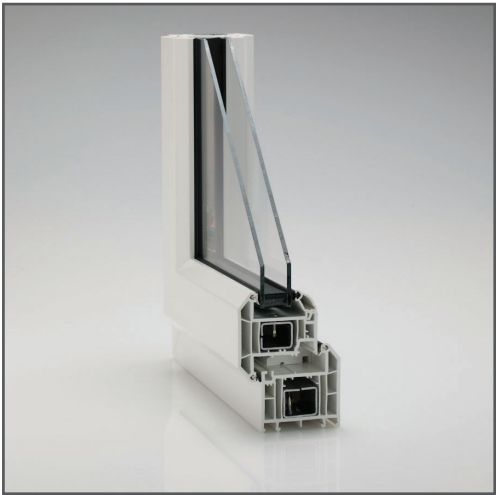
Some of the bolder colours within the REHAU range, colours include reds, blues and greens for a more daring look.

**Some colour options may have extended lead times - please check with your supplier*



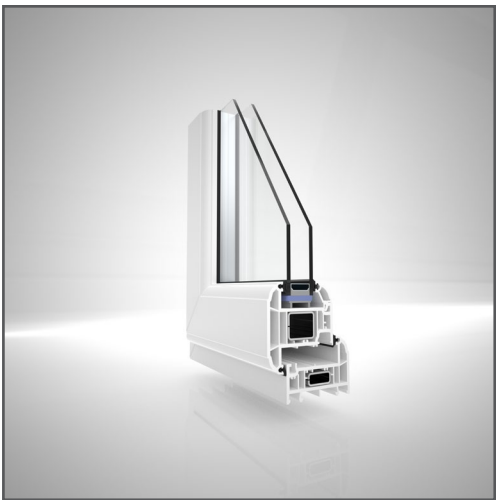
REHAU TOTAL70

Versatility and style



TOTAL 70_c TOTAL70c is our original and most popular 70mm Chamfered window and door system.

This enables maximum thermal efficiency for windows without the need for more expensive glass, making them more cost effective and giving you even more savings on your energy bills. This system is available in French and casement windows, tilt & turn windows, horizontal pivot windows and bay and bow windows. Also, a choice of door styles such as residential, tilt/turn patio doors and French doors. Our chamfered system is simple yet elegant, helping to create beautiful contemporary frames for your home.



TOTAL 70_s TOTAL70s has been created with fully Sculptured profiles, offering heightened style to both modern and traditional properties.

This system will appeal to anyone wanting a sympathetic replacement for timber windows with its decorative sculptured edge providing attractive, ornate detail, restoring character to older properties and introducing sought-after features to newer ones. The system is available in a range of window styles including French and casement windows, tilt & turn windows and bay and bow windows. Also, a choice of door styles from residential to tilt/slide patio doors and French doors.



TOTAL 70_r REHAU's TOTAL70r Reversible window system has been designed to ensure a high specification in both quality and performance.

Our new multi-chamber profiles ensure improved thermal performance, with an 'A' window energy rating being easily achievable. Traditionally the reversible window system was developed to allow for easy cleaning especially for windows that were hard to reach on the outside and originally the window was more common in high rise buildings. However, the REHAU TOTAL70r Reversible window is designed with a flush fitting sash and frame for a very contemporary look in any home.



REHAU TOTAL70

System technology

All products accommodate glazing from 4mm to 44mm in either double or triple glazing and offer an enhanced appearance as well as superior fabrication and performance.

Easy glazing

REHAU's single-leg glazing beads and retention detail guarantees on-site glazing is easy and secure when fitted

Integral gaskets

REHAU TOTAL70C & REHAU TOTAL70S profiles are supplied with gaskets already integrated into the profile.

Improved drainage path

Our improved drainage path allows water to drain more efficiently.

Ancillary profiles

A large range of ancillary profiles including sills, angled head drips, square bay poles, couplers and frame extensions, are compatible across the entire REHAU TOTAL70 range.

Surface finish

REHAU is renowned for its quality, demonstrated with the gloss surface finish, that provides a long-lasting appearance with little or no maintenance.

Multi-chamber profiles

The REHAU TOTAL70 range includes profiles with 3, 5 and 6 chambers for improved thermal efficiency without compromising on structural capability

Hardware fixed into steel

If required, the hardware used on REHAU TOTAL70 profiles can be fixed into the steel reinforcement on both sash and frame. This allows for improved technical performance and superior security levels.

Positive friction-stay location

To reduce the strain on screws and hinges, positive friction-stay location is added for improved performance.

Larger reinforcement chamber

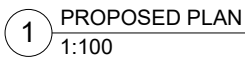
To allow additional strength/rigidity when necessary, a larger reinforcement chamber enables a range of galvanised steels to be inserted for optimum performance

Low threshold

REHAU TOTAL70 doors also offer low thresholds specifically for wheelchair access, complying with Building Regulations.

More information for fabricators and installers can be found in the [REHAU TOTAL70 System Description \(706.600EN/625\)](#).

APPENDIX B – MODULAR SECURITY BUILDING

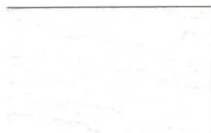


Howdens Greenwich
bull-nosed worktops

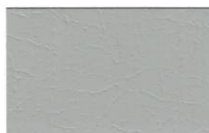
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19.11.21 | DRAWN:
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| PROJECT NO: | DRAWING NO:
3129 | |

Colorcoat® LG

Pre-finished steel for roof and wall cladding



White **col** 00E55



Goosewing Grey **col** 10A05



Meadowland **col** 12B17



Hamlet **col** RAL 9002



Albatross **col** 18B17



Merlin Grey **col** 18B25



Moorland Green **col** 12B21



Honesty **col** 10C31



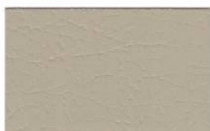
Wedgewood Blue **col** 18C37



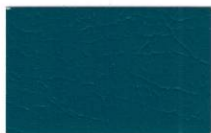
Raven **col** 18B29



Heritage Green **col** RAL 6002



Mushroom **col** 10B19



Ocean Blue **col** 12C39



Anthracite **col** RAL7016



Olive Green **col** 12B27



Terracotta **col** 04C39



Sargasso **col** RAL 5003



Black **col** 00E53



Juniper Green **col** 12B29



Vandyke Brown **col** 08B29

Notes

1. The standard colour references shown above are the nearest equivalents.
2. The printed colours shown for Colorcoat® LG are for guidance only. For a true representation of colour and effect, please obtain product samples from the Colorcoat Connection® helpline.
3. If an exact match between components and Colorcoat® LG is essential, this is best achieved by matching to the actual cladding delivered to site.