Skylights & Panel Glazing

Brett Martin Middle East

Brett Martin

DESIGNING FOR DAYLIGHT

SKYLIGHTS & PANEL GLAZING

CONTENTS

Brett Martin

COMMITTED TO MIDDLE EAST SUCCESS

Established in 1958, Brett Martin is a privately owned family business which has become one of Northern Ireland's most successful independent manufacturing companies.

With headquarters located on its founding site in Co. Antrim, the company has grown scale to employ over 1000 people at several locations throughout the UK, Europe and across the world.

The company's product portfolio includes an impressive range of plastic sheets, factory engineered skylight systems, and, plumbing & drainage systems. A commitment to an ongoing programme of investment in the latest manufacturing technology, innovation and product development ensures that Brett Martin solutions remain at the forefront of its chosen markets. Such an excellent reputation has emerged from our success in providing tailored solutions to the world's leading brands.

Brett Martin have been successfully operating in the Middle East for almost a decade and our commitment to this market has been consolidated with the inception of Brett Martin DWC LLC, a centrally located sales office in the UAE to cater for the wider GCC region. Our Middle East team have established key relationships with world renowned partners and suppliers, and are instrumental in delivering state of the art technologies in daylight systems to the construction industry.

Strong partnerships with our clients and customer have helped Brett Martin secure projects for many of the Middle East's leading brands and most prestigious projects across the region.

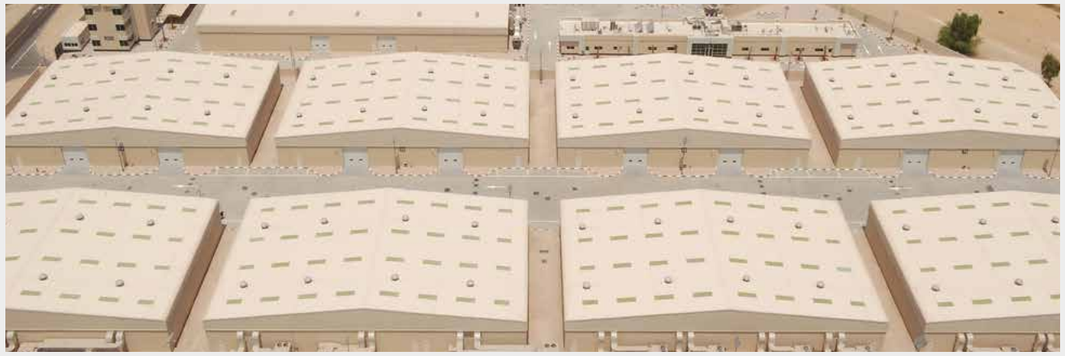
ACCREDITATIONS

All Brett Martin Group manufacturing facilities have achieved ISO 9001: 2008 in recognition of our commitment to quality. Extensive certifications and approvals are held throughout the product ranges including CE marking, BBA certifications and BSI Kitemarks.

From 2007 Brett Martin Daylight Systems has also held the ISO 14001accreditation for Environmental Management.

Brett Martin Daylight System not only are the first skylight manufacture to receive certification from Dubai Central Laboratory (DCL) for its BBA certification, but are also the First international skylight manufacture to hold the Certificate of Compliance to the UAE Fire Life and Safety Code of Practice for its complete Trilite skylight Range.

EnergySaver FAIRs



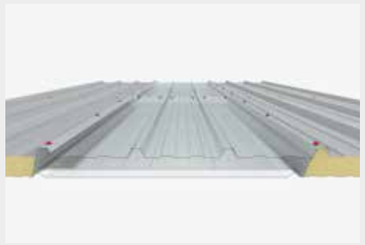
Energysaver composite panel rooflights are the optimum solution for providing natural quality daylight in buildings constructed with composite roofing panels. They are manufactured from Trilite GRP and are available in a range of sheet options which are compatible with all composite panel roofing systems. Energysaver rooflights can also be tailored to meet specification. These innovative, triple skin factory assembled insulating rooflights are easy to handle on site, easy to install and offer the best quality diffused natural daylight, thermal performance and ready-to-fit convenience for wide-span buildings.

Key Features

- **UV Protection:** Outer sheets supplied with Superlife™ enhanced UV surface protection. Optional Diamond protection for protection against weathering, UV degradation and chemical attack
- **Thermal Performance:** Option of U-value range from 1.9W/m²K to as low as 0.9W/m²K
- **Light Transmission:** 65-70% diffused (55-65% on heavier sheet weights)
- **Sizing:** can be tailored to meet specification requirements
- **Durability:** Life span 25 years + (Trilite 30 and above), 30 years+ with Diamond protection
- **Fragility:** Class B non-fragility to ACR[M]001: 2005
- **Fire Grade:** SAB Class 3, SAA Class 1 & SAA Class 0 to BS 476 Part 3, 6 & 7
- **Certification:** BBA approved, DCL certification & UAE Fire Code

Applications

Energysaver improves the internal environment, reducing heat loss and condensation and improving long term performance in a diversity of industrial and commercial buildings and leisure environments such as factories and warehouses, distribution centres, retail outlets and sports halls.

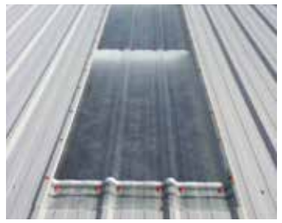


EnergySaver FAIRs

TB219
Product Data Sheet
Trilite 30 Energysaver FAIR

Product Description
Trilite 30 Energysaver FAIRs are Factory Assembled Insulating Rooflights specifically intended for use with composite panel cladding systems and are available to match most systems.

They comprise of a corrugated translucent GRP outer; intermediate layer and flat GRP liner bonded together with Hardpak internal spacers positioned to align with the purlins when they are installed. The outer weighs 3.0 kg/m², and is approximately 1.7mm thick. Typically supplied with an outer fire rating of SAB to BS476 part 3 and liner of Class 1 to BS476 part 7. They have full BBA approval certified under 04/4114.



Durability
Trilite 30 Energysaver FAIRs have a life span in excess of 25 years. They have Superlife™ surface protection and UV stabilised resin system to protect against discolouration (yellowing)[1] and degradation which would otherwise be caused by UV exposure and will prevent significant discolouration for at least 20 years.

Safety Requirements / CDM Regulations
Trilite 30 Energysaver FAIRs achieve Class B non-fragility to ACR[M]001 when fully installed. They meet standard industry guidelines (as defined in NARM Technical Document NTD03):

Rooflight Assembly	Classification [2]	Expected period of non-fragility [3]
Trilite 30 FAIR	Class B	25 Years

PLEASE REFER TO NARM NTD03 FOR FULL DETAILS & CONDITIONS

Trilite 30 Energysaver FAIRs when fully fixed will resist loads typically created by foot-traffic or a falling person without failure, although such impacts may result in damage. Appropriate precautions should be used when installing and accessing these rooflights to ensure they are not subjected to impact or foot traffic. Damaged rooflights, whether from impact, foot traffic or other cause, must be replaced.

Composition & Appearance
Trilite 30 GRP is manufactured from polyester based resins (containing UV inhibitors, fire retardant and process additives) and chopped strand glass fibre reinforcement, with 33% glass content and are classified CE30[4]. Outer sheets also incorporate our Superlife UV protective surface and are classified CE30E[4].

Coloured Sheet
Trilite 30 Energysaver FAIRs are available as translucent coloured sheet for specific applications[5].

[1] performance proven by accelerated weathering test on rooflight outer sheets (typically SAB class 3 grade), showing delta E less than 10 and light transmission reduced by less than 12% after 3000 hours exposure to QUV testing, comprising cycles of 4 hours of UVA340nm at 60°C and 4 hours condensation at 40°C

[2] when installed at purlin centres of 0.6 - 2.0m with a roof system which has been determined (without rooflights) to achieve an equal or better non-fragility classification

Design features
All Energysaver FAIRs include Hardpak fillers at each end and every intermediate purlin position, providing much greater support for fasteners to ensure more reliable installation. Hardpak fillers have a bulk compressive modulus of 8MPa, ensuring an 80mm deep filler will compress by less than 0.2mm when subjected to the weight of a 90kg man (applied evenly).

All Energysaver FAIRs include Underlap Strip as standard, specially profiled to match the underlap corrugation and fitted in a single piece to match the full length of the FAIR, allowing use of standard sidelap fasteners to ensure more reliable installation on site.

All Energysaver FAIRs are supplied in Ecopac packaging, allowing outdoor storage whilst minimizing use of packaging materials reducing waste and enhancing sustainability.

Manufacture
Trilite 30 GRP is manufactured to EN 1013 under ISO 9001 Quality Management System.

Tolerances

Sheet weight:	± 10%
Sheet length:	-0 +20mm (for sheets <2.5m) -0% +0.8% (for sheets >2.5m)
Cover width:	± 0.8%
Squareness:	0.5% of cover width

Installation
Standard installation details can be found in Technical Bulletin 125 or CAD drawing HC222.

Maintenance, Handling & Storage
For full maintenance, handling and site storage details see separate data sheet - COSHH Data Sheet 02.

[3] when all other components have been specified accordingly and it has been demonstrated that the roof system (without rooflights) will retain the same non-fragile classification for the same period

[4] as defined in National Annex to BS EN 1013

[5] please note: some colour pigments can fade over time particularly in translucent sheets, and long term colour stability cannot be guaranteed; please consult BMDS for full details

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ENERGYSAVER FAIRS

EnergySaver FAIRs

TB219
Product Data Sheet
Trilite 30 Energysaver FAIR

Fire Ratings
Building Regulations Approved Document B: Fire Safety, Volume 2 - Buildings other than dwellings (2019 edition, amended May 2020) sets out the fire safety rules for buildings other than dwellings, which can be met by achieving specific European class fire ratings to European standard BS EN 13501 (European class rating), with a transposition option to National Class fire ratings to British standard BS476 (see Approved Document B, Appendix B, paragraph B10).

Section B2 covers internal fire spread and applies to the linings of both roof and wall, Section B4 covers external fire spread and applies to external roof and wall coverings.

Standard Energysaver rooflights are supplied with the following fire ratings:

Sheet	BS476 pt3	BS476 pt7	
Outer Sheet	**SAB**	Class 3	
Liner Panel	SAA	**Class 1**	

(Certificates from independent laboratories are available to confirm these fire ratings)

Optionally, the fire rating of the outer sheet can be enhanced to match the liner (or the fire rating of the liner can be reduced to match the outer), or the fire rating of either or both sheets can be enhanced to achieve Class 0 as defined by BS476 pt6 and the Building Regulations.

For full details see Technical Bulletin 106.

The fire rating of Trilite GRP rooflight sheets is printed on each rooflight; in addition a coloured tracer is incorporated to identify the fire rating:
- SAB Class 3 are identified with a blue tracer
- SAA Class 1 are identified with a red tracer
- SAA Class 0 are identified with a red and yellow tracer

Transmission Values

Rooflight Application	U Value	Tv Visible Light Transmission	G Value Total Solar Transmittance	Shading Coefficient
Energysaver 1.9 (Internal layer - thermal membrane)	1.9 W/m² K	0.60	0.55	0.63
Energysaver 1.3 (Internal layer - Cleartherm)	1.3 W/m² K	0.55	0.51	0.58
Energysaver 1.0 (Internal layer - 2 x Cleartherm)	1.0 W/m² K	0.49	0.45	0.52
Energysaver 0.9 (Internal layer - 2 x Cleartherm + Gap)	0.9 W/m² K	0.49	0.43	0.49

Physical Properties

TENSILE STRENGTH
90 MPa

FLEXURAL STRENGTH
180 MPa

BARCOL HARDNESS
40 - 50

FIXING PULL-OUT LOAD
29mm washer: 1160 N

COEFFICIENT OF LINEAR EXPANSION
22 X 10^{-6}/°C

SERVICE TEMPERATURE
-20°C TO 80°C

FLEXURAL MODULUS
6600 MPa

GLASS CONTENT
33%

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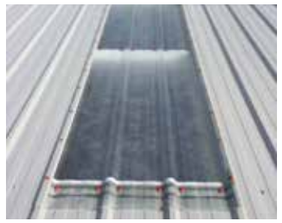
EnergySaver FAIRs

TB220
Product Data Sheet
Trilite 36 Energysaver FAIR

Product Description
Trilite 36 Energysaver FAIRs are Factory Assembled Insulating Rooflights specifically intended for use with composite panel cladding systems and are available to match most systems.

They comprise of a corrugated translucent GRP outer; intermediate layer and flat GRP liner bonded together with Hardpak internal spacers positioned to align with the purlins when they are installed. The outer weighs 3.6 kg/m², and is approximately 2.0mm thick. Typically supplied with an outer fire rating of SAB to BS476 part 3 and liner of Class 1 to BS476 part 7. They have full BBA approval certified under 04/4114.



Durability
Trilite 36 Energysaver FAIRs have a life span in excess of 30 years. They have Superlife™ surface protection and UV stabilised resin system to protect against discolouration (yellowing)[1] and degradation which would otherwise be caused by UV exposure and will prevent significant discolouration for at least 20 years.

Safety Requirements / CDM Regulations
Trilite 36 Energysaver FAIRs achieve Class B non-fragility to ACR[M]001 when fully installed. They exceed standard industry guidelines (as defined in NARM Technical Document NTD03):

Rooflight Assembly	Classification [2]	Expected period of non-fragility [3]
Trilite 36 FAIR	Class B	25 Years

PLEASE REFER TO NARM NTD03 FOR FULL DETAILS & CONDITIONS

Trilite 36 Energysaver FAIRs when fully fixed will resist loads typically created by foot-traffic or a falling person without failure, although such impacts may result in minor damage. Appropriate precautions should be used when installing and accessing these rooflights to ensure they are not subjected to impact or foot traffic. Damaged rooflights, whether from impact, foot traffic or other cause, must be replaced.

Composition & Appearance
Trilite 36 GRP is manufactured from polyester based resins (containing UV inhibitors, fire retardant and process additives) and chopped strand glass fibre reinforcement, with 33% glass content and are classified CE36[4]. Outer sheets also incorporate our Superlife UV protective surface and are classified CE36E[4].

Coloured Sheet
Trilite 36 Energysaver FAIRs are available as translucent coloured sheet for specific applications[5].

[1] performance proven by accelerated weathering test on rooflight outer sheets (typically SAB class 3 grade), showing delta E less than 10 and light transmission reduced by less than 12% after 3000 hours exposure to QUV testing, comprising cycles of 4 hours of UVA340nm at 60°C and 4 hours condensation at 40°C

[2] when installed at purlin centres of 0.6 - 2.0m with a roof system which has been determined (without rooflights) to achieve an equal or better non-fragility classification

Design features
All Energysaver FAIRs include Hardpak fillers at each end and every intermediate purlin position, providing much greater support for fasteners to ensure more reliable installation. Hardpak fillers have a bulk compressive modulus of 8MPa, ensuring an 80mm deep filler will compress by less than 0.2mm when subjected to the weight of a 90kg man (applied evenly).

All Energysaver FAIRs include Underlap Strip as standard, specially profiled to match the underlap corrugation and fitted in a single piece to match the full length of the FAIR, allowing use of standard sidelap fasteners to ensure more reliable installation on site.

All Energysaver FAIRs are supplied in Ecopac packaging, allowing outdoor storage whilst minimizing use of packaging materials reducing waste and enhancing sustainability.

Manufacture
Trilite 36 GRP is manufactured to EN 1013 under ISO 9001 Quality Management System.

Tolerances

Sheet weight:	± 10%
Sheet length:	-0 +20mm (for sheets <2.5m) -0% +0.8% (for sheets >2.5m)
Cover width:	± 0.8%
Squareness:	0.5% of cover width

Installation
Standard installation details can be found in Technical Bulletin 124 or CAD drawing HC223.

Maintenance, Handling & Storage
For full maintenance, handling and site storage details see separate data sheet - COSHH Data Sheet 02.

[3] when all other components have been specified accordingly and it has been demonstrated that the roof system (without rooflights) will retain the same non-fragile classification for the same period

[4] as defined in National Annex to BS EN 1013

[5] please note: some colour pigments can fade over time particularly in translucent sheets, and long term colour stability cannot be guaranteed; please consult BMDS for full details

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ENERGYSAVER FAIRS

EnergySaver FAIRs

TB220
Product Data Sheet
Trilite 36 Energysaver FAIR

Fire Ratings
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Sheet	BS476 pt3	BS476 pt7	
Outer Sheet	**SAB**	Class 3	
Liner Panel	SAA	**Class 1**	

(Certificates from independent laboratories are available to confirm these fire ratings)

Optionally, the fire rating of the outer sheet can be enhanced to match the liner (or the fire rating of the liner can be reduced to match the outer), or the fire rating of either or both sheets can be enhanced to achieve Class 0 as defined by BS476 pt6 and the Building Regulations.

For full details see Technical Bulletin 106.

The fire rating of Trilite GRP rooflight sheets is printed on each rooflight; in addition a coloured tracer is incorporated to identify the fire rating:
- SAB Class 3 are identified with a blue tracer
- SAA Class 1 are identified with a red tracer
- SAA Class 0 are identified with a red and yellow tracer

Transmission Values

Rooflight Application	U Value	Tv Visible Light Transmission	G Value Total Solar Transmittance	Shading Coefficient
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Energysaver 1.3 (Internal layer - Cleartherm)	1.3 W/m² K	0.55	0.51	0.58
Energysaver 1.0 (Internal layer - 2 x Cleartherm)	1.0 W/m² K	0.49	0.45	0.52
Energysaver 0.9 (Internal layer - 2 x Cleartherm + Gap)	0.9 W/m² K	0.49	0.43	0.49

Physical Properties

TENSILE STRENGTH
90 MPa

FLEXURAL STRENGTH
180 MPa

BARCOL HARDNESS
40 - 50

FIXING PULL-OUT LOAD
29mm washer: 1400 N

COEFFICIENT OF LINEAR EXPANSION
22 X 10^{-6}/°C

SERVICE TEMPERATURE
-20°C TO 80°C

FLEXURAL MODULUS
6600 MPa

GLASS CONTENT
33%

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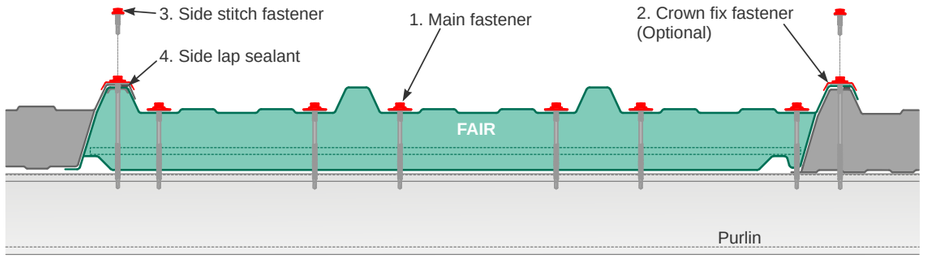
EnergySaver FAIRs

TB125

Installation - Trilite 24 & 30 Energysaver FAIR (150mm Endlap) All U Values

Main Fasteners - End Lap & Intermediate Purlin



1. Main fastener
Stainless steel Ø5.5/6mm with Ø29/32mm sealing washer with soft bonded seal, typically poppy red; min 5 fasteners per purlin, fitted in the trough, max 250mm apart; for profiles >200mm pitch use two fasteners per trough, located either side of the main corrugations. See below for typical fastener references.

2. Crown fix fastener (optional)
Stainless steel Ø5.5/6mm with Ø19mm sealing and saddle washer, typically poppy red; fix at end laps along the end lap fixing line into the purlin, on each side lap of the end lap (2 per end lap). See below for typical fastener references.

3. Side Stitch fastener
Stainless steel side stitch fastener with Ø15/19mm sealing washer, typically poppy red; fix at 300mm to max 400mm centres and evenly spaced about all FAIR end laps - not through the end lap joint. See below for typical fastener references.

4. Side lap sealant
One run of Class A 6x5mm cross linked butyl mastic, pale coloured, positioned on the crown of the side lap corrugation, on the weather side of the side stitch fasteners. Immediately downslope of the end lap, it is necessary to have a double thickness of side lap sealant for a distance of min 50mm on the side where the outer sheet underlaps adjacent sheets. The same applies for the side lap sealant immediately upslope of the end lap on the side where the outer sheet overlaps the adjacent panels, see page 4.

5. End lap sealant
Two beads of Class A 6x5mm cross linked butyl mastic, pale coloured, position max 25mm above and below fixing line. If a third seal at the tail of the end lap is required, gun grade silicone (ISO11600-F-25LM) should be used.

6. FAIR alignment
FAIRs must be seated on the purlin/extension plate by a nominal 40mm (min 30mm) at the up slope lap, this ensures full support for internal reinforcement and is essential for non-fragility.

7. Purlin extension plates
Purlin extension plates are recommended to ensure correct support and alignment at lap positions, where on-site steelwork tolerances cause variations from the nominal position.

8. Hardpak fillers
It is essential to ensure the Hardpak fillers are located directly over the purlin/extension plate at the up slope end and intermediate positions to allow the fixing of main fasteners into the purlin.

Typical fastener references

	SFS	EJOT
Main fasteners	SXC5-S29-5.5 x length	CF29-JT3-D-6H-5.5 x length
Crown fix fasteners	SXC5-S29-5.5 x length + CA-Type-E-RAL 2002	CF29-JT3-D-6H-5.5 x length + Storm Washer
Side-stitch fasteners	SL2-S-S16-6.3x28	CF15-JT3-2H-5.5x30

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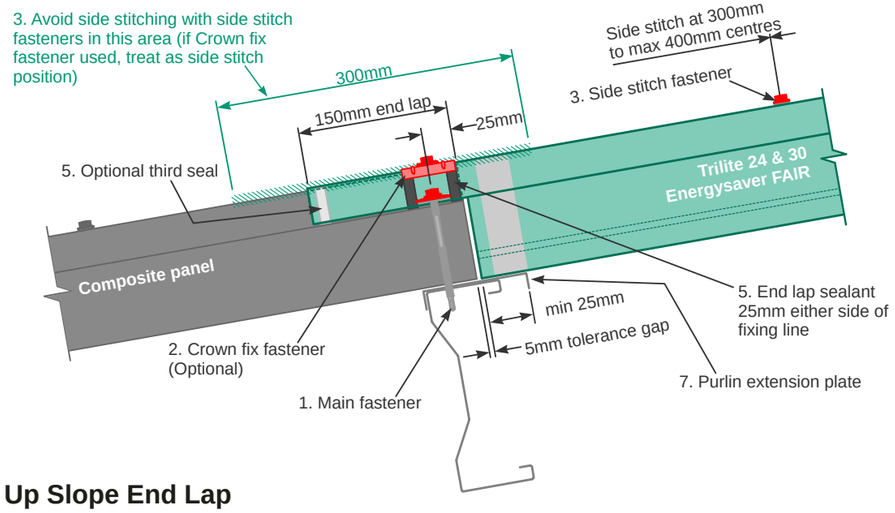
ENERGYSAVER FAIRS

EnergySaver FAIRs

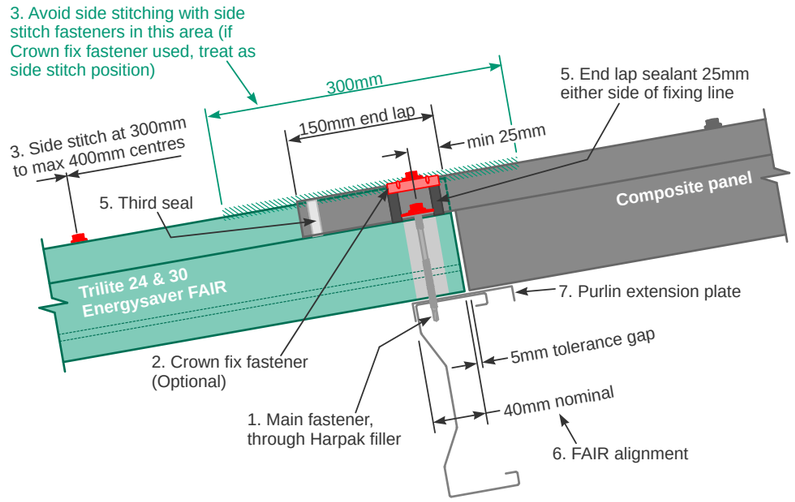
TB125

Installation - Trilite 24 & 30 Energysaver FAIR (150mm Endlap) All U Values

Down Slope End Lap



Up Slope End Lap



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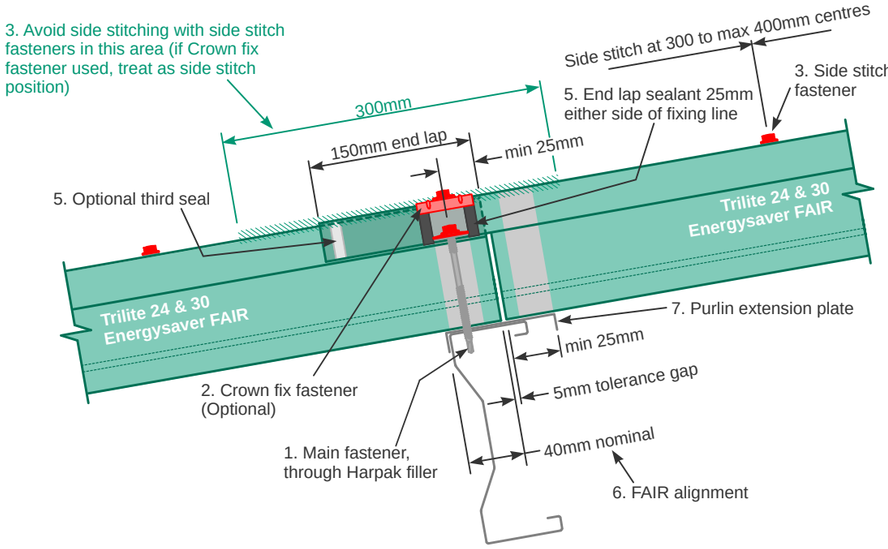
EnergySaver FAIRs

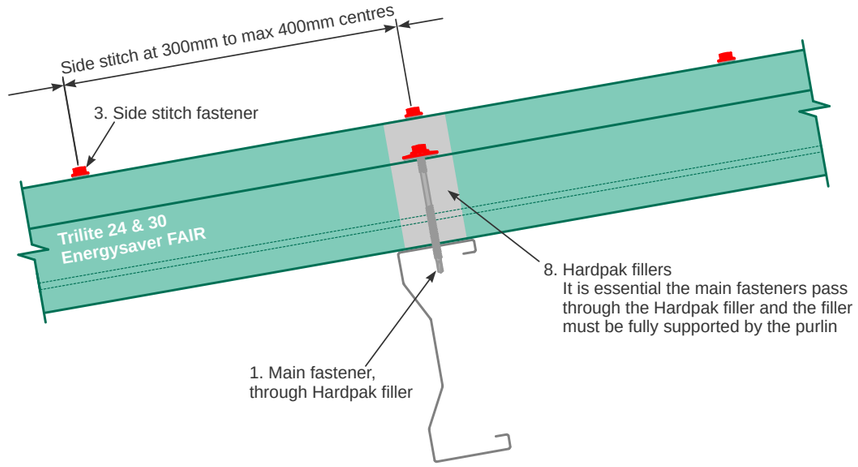
TB125

Installation - Trilite 24 & 30 Energysaver FAIR (150mm Endlap) All U Values

FAIR to FAIR End Lap



Intermediate Purlin Position



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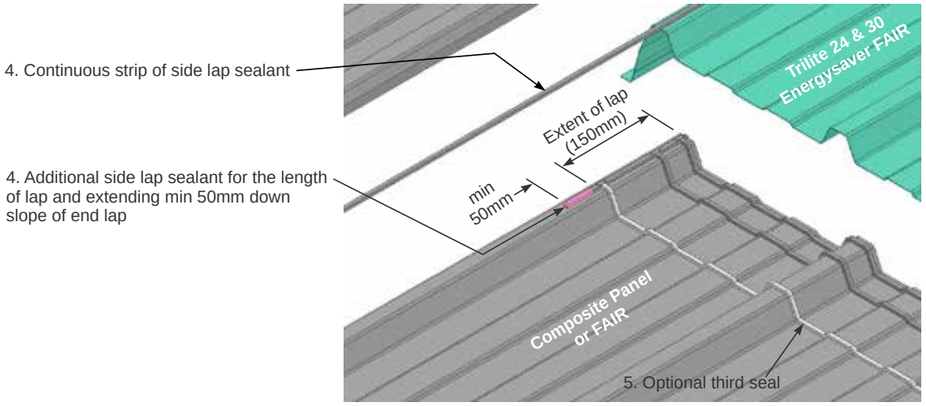
ENERGYSAVER FAIRS

EnergySaver FAIRs

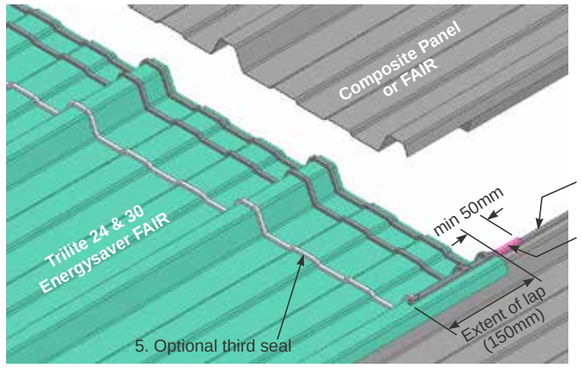
TB125

Installation - Trilite 24 & 30 Energysaver FAIR (150mm Endlap) All U Values

Down Slope End Lap - Additional Sealing Requirements



Up Slope End Lap - Additional Sealing Requirements



4. Continuous strip of side lap sealant

4. Additional sidelap sealant over the Trilite Energysaver FAIR - placed on the length of the end lap and extends a minimum of 50mm up the slope.

MINIMUM ROOF PITCH Minimum design roof pitch 5.5° (finished roof pitch 4°)*

CORRECT HANDLING OF FAIRS IS CRITICAL full guidance given in TB154

DO NOT over drive fasteners

ONLY use good quality assured fasteners

***Minimum Roof Pitch**

Trilite Energysaver FAIRs are recommended for a minimum a minimum design pitch of 5.5 degrees, to ensure a minimum finished roof pitch of 4 degrees after allowing for tolerances and on site variations in accordance with BS5427 "Code of practice for the use of profiled sheet for roof and wall cladding on buildings (see BS5427:2016 section 5.1.3). If these rooflights are fitted at lower than 4° finished roof pitch, there will not be any detrimental effect on the rooflight sheet itself, but the risk increases of leaks at endlaps or fixings occurring due to small variations in installation details (see BS5427, Note 3 to 5.1.3). Heavyweight Trilite rooflights are more rigid, providing more even compression of sealants and less localised deflection around fasteners, thus reducing risk of leaks at endlaps or fixings and should be considered for use on applications near BS5427 minimum pitch recommendations.

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Trilite GRP

Trilite GRP site assembled profiled rooflights offer a wide range of options and choice of product performance and is Europe's largest range of rooflight sheeting. Quick and easy to install into the surrounding corrugated sheeting, all sheets achieve the highest levels of profile accuracy and cover a range of safety levels, U values and fire ratings. Single, double and triple skin rooflights are available for a huge variety of applications. Our entire range of GRP site assembled rooflights have been BBA approved.

Key Features

- **Profiles**: Wide and growing selection of over 1,000 corrugated profiles in 6 weights and 3 fire grades to match corrugated metal cladding
- **UV Protection:** All weather sheets supplied with Superlife™ enhanced UV surface protection. Optional Diamond protection for protection against weathering, UV degradation and chemical attack
- **Thermal Performance:** U-value of 1.9W/m^2K with options as low as 0.9W/m^2K
- **Light Transmission:** Excellent diffused natural light transmission levels
- **Durability:** GRP life expectancy of over 30 years, Polycarbonate high transmission levels for at least 10 years, weatherability for over 15
- **Fragility:** Range of GRP products achieve Class-B or Class-C non-fragility
- **Fire Grade:** SAB Class 3, SAA Class 1 & SAA Class 0 to BS 476 Part 3, 6 & 7
- **Certification:** Entire range of GRP site assembled rooflights BBA approved, DCL certification & UAE Fire Code

Applications

Trilite GRP site assembled rooflights provide high quality natural daylight for metal clad industrial buildings. There are a huge variety of applications from stadia, warehouses and distribution depots to commercial premises and farm buildings.

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Trilite GRP

TB129

Product Data Sheet
Trilite 30 Corrugated GRP (CE30 & CE30E)

Product Description
Trilite 30 rooflights are corrugated translucent GRP sheets; they weigh 3.0 kg/m^2, and are approximately 1.7mm thick. Typically supplied with fire ratings SAB to BS476 part 3 and Class 3 to BS476 part 7, they are also available with fire ratings of SAA, Class 1 or Class 0.

Trilite 30 rooflights are available to match most corrugated profiles for roof or wall, and are typically used in site assembled applications in combination with other grades of Trilite GRP sheet. They have full BBA approval certified under 04/4114.

Durability
Trilite 30 rooflights have a life span in excess of 25 years. They have Superlife™ surface protection and a UV stabilised resin system to protect against discolouration (yellowing)[1] and degradation which would otherwise be caused by UV exposure and will prevent significant discolouration for at least 20 years.

Safety Requirements / Non-Fragility
Trilite 30 rooflights can achieve Class B non-fragility to ACR[M]001 as a single skin rooflight and in combination with other rooflight skins. The strength of the rooflight sheet itself will be retained in the long term; however, non-fragility is a function of a fully installed assembly which can become fragile even if there has been no deterioration of the rooflight sheet itself.

Rooflight Assembly	Classification [2]	Expected period of non-fragility [3]
As single skin or liner only [4]	Class B	When new [5]
In combination with Trilite 18 [6] (or higher)	Class B	25 Years

PLEASE REFER TO NARM NTD03 FOR FULL DETAILS & CONDITIONS

Non-fragile rooflight assemblies which include Trilite 30 rooflights (as detailed above) will resist loads typically created by foot-traffic or a falling person without failure, although such impacts may result in damage. Appropriate precautions should be used when installing and accessing these rooflights to ensure they are not subjected to impact or foot traffic. Damaged rooflights, whether from impact, foot traffic or other cause, must be replaced.

Composition & Appearance
Trilite 30 GRP is manufactured from polyester based resins (containing UV inhibitors, fire retardant and process additives) and chopped strand glass fibre reinforcement, with 33% glass content and are classified CE30[7]. Outer sheets also incorporate our Superlife UV protective surface and are classified CE30E[7].

Coloured Sheet
Trilite 30 GRP is available as translucent coloured sheet or opaque for specific applications[8].

Manufacture
Trilite 30 GRP is manufactured to EN 1013 under ISO 9001 Quality Management System.

Tolerances

Sheet weight:	± 10%
Sheet length:	-0 +20mm (for sheets <2.5m)
	-0% +0.8% (for sheets >2.5m)
Cover width:	± 0.8%
Squareness:	0.5% of cover width

Installation
Full installation details can be found in Technical Bulletin 156 or CAD drawing HC225.

Maintenance, Handling & Storage
For full maintenance, handling and site storage details see separate data sheet - COSHH Data Sheet 01.

[1] performance proven by accelerated weathering test on rooflight outer sheets (typically SAB class 3 grade), showing delta E less than 10 and light transmission reduced by less than 12% after 3000 hours exposure to QUV testing, comprising cycles of 4 hours of UVA340nm at 60°C and 4 hours condensation at 40°C

[2] when installed at purlin centres of 0.6 - 2.0m with a roof system which has been determined (without rooflights) to achieve an equal or better non-fragility classification

[3] when all other components have been specified accordingly and it has been demonstrated that the roof system (without rooflights) will retain the same non-fragile classification for the same period

[4] if sinusoidal profile to suit Fibre Cement sheet, the expected period of non-fragility will be 25 years.

[5] the installed assembly may remain non-fragile in the long term but a range of external factors can affect non-fragility, and deterioration of any aspect of the installation may render the installed assembly fragile at any point, typically after 5-20 years, even if there has been no deterioration of the rooflight sheets themselves

[6] Trilite 18 liner (fragile) with Trilite 30 outer, or Trilite 18 outer over Trilite 30 liner (where the liner will be Class B non-fragile)

[7] as defined in National Annex to BS EN 1013

[8] please note: some colour pigments can fade over time particularly in translucent sheets, and long term colour stability cannot be guaranteed; please consult BMDS for full details

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Trilite GRP

TB129

Product Data Sheet
Trilite 30 Corrugated GRP (CE30 & CE30E)

Fire Ratings
Building Regulations Approved Document B: Fire Safety, Volume 2 - Buildings other than dwellings (2019 edition, amended May 2020) sets out the fire safety rules for buildings other than dwellings, which can be met by achieving specific European class fire ratings to European standard BS EN 13501 (European class rating), with a transposition option to National Class fire ratings to British standard BS476 (see Approved Document B, Appendix B, paragraph B10).

Section B2 covers internal fire spread and applies to the linings of both roof and wall, Section B4 covers external fire spread and applies to external roof and wall coverings.

We are able to supply 3 grades of fire rated Trilite GRP sheets each of which are rated to both BS476 parts 3 & 7, as follows:

Sheet rating	BS476 pt3	BS476 pt7	Building Regs	Typical application
SAB Class 3	**SAB**	Class 3	-	Outer sheet for roof and walls
SAA Class 1	SAA	**Class 1**	-	Liner sheet for roof and walls
SAA Class 0	SAA	Class 1	**Class 0**	Circulation spaces, external walls (<1m from boundary or >18m high)

(Certificates from independent laboratories are available to confirm these fire ratings)

For full details see Technical Bulletin 106.

The fire rating of Trilite GRP rooflight sheets is printed on each rooflight; in addition a coloured tracer is incorporated to identify the fire rating:
- SAB Class 3 are identified with a blue tracer
- SAA Class 1 are identified with a red tracer
- SAA Class 0 are identified with a red and yellow tracer

Transmission Values

Rooflight Application	U Value	Tv Visible Light Transmission	G Value Total Solar Transmittance	Shading Coefficient
Single Skin	5.7 W/m² K	0.78	0.76	0.87
Triple Skin - Site Assembled (Trilite 30 / Cleartherm / Trilite 18)	1.3 W/m² K	0.55	0.51	0.58

Physical Properties
TENSILE STRENGTH
90 MPa

FLEXURAL STRENGTH
180 MPa

BARCOL HARDNESS
40 - 50

FIXING PULL-OUT LOAD
29mm washer: 1160 N

COEFFICIENT OF LINEAR EXPANSION
22 X 10^{-6}/°C

SERVICE TEMPERATURE
-20°C TO 80°C

FLEXURAL MODULUS
6600 MPa

GLASS CONTENT
33%

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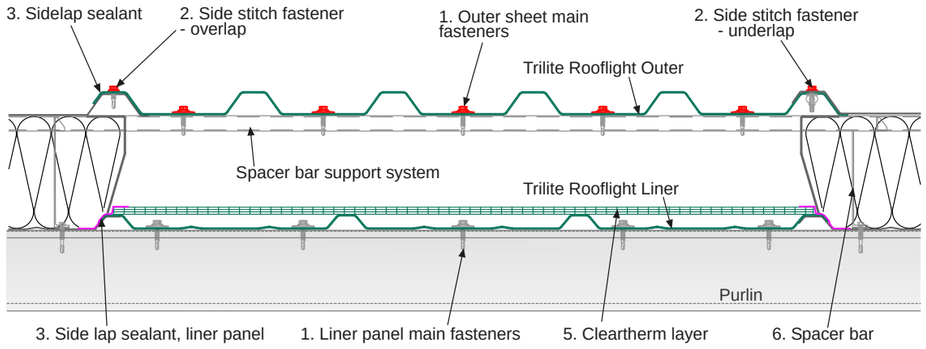
Trilite GRP

TB156

Installation - In-Plane Site Assembled GRP Rooflights
Triple Skin with Cleartherm - Trilite 18, 24 & 30

Main Fasteners - End Lap & Intermediate Purlin



General Arrangement
Generally, spacer brackets are positioned outside of the area of rooflight, necessitating the use of 3m spacer bars. Cleartherm sheets are normally fitted in standard 6m sheet lengths butted up to one another for lowest cost. (Butt joints between sheets do not need to be aligned with purlins or laps in the liner or outer sheet). Alternatively, spacer bar brackets can be positioned as normal within the rooflight area (avoiding the need for longer spacer bars). In this case Cleartherm sheets should be fitted in single span lengths, butted together along the line of the spacer bar with the end of the sheet notched to clear the spacer bar bracket.

Fixing Sequence
Cleartherm is laid and secured over the liner panel (after the liner has been fitted as normal): the spacer bar system, fillers and/or flashings to stop insulation migration are then fitted as normal. Note: Cleartherm sheets should not be exposed to weather before the outer sheet is fitted. The Cleartherm sheet can also be installed at the same time as the outer sheet, simply sliding into position under the spacer bars: limiting sheet lengths to double spans may assist with this.

1. Main Fasteners
Stainless steel Ø5.5/6mm with min Ø29mm sealing washer with soft bonded seal, typically poppy red. Min 5 fasteners per purlin, fitted in the trough, max 200mm apart. For profiles >200mm pitch use two fasteners per trough, located either side of the main corrugations.
Outer Sheet - fasteners located in the centre of the top flange of the spacer bar.
Liner Panel - The panel should extend a min of 50mm beyond the fixing line at each end after allowing for on site tolerances. Fixed spacer bar brackets can be regarded as a single fastener.
See over for typical fastener references.

2. Side Stitch Fasteners
Brett Martin Daylight Systems recommend GRP overlaps the metal on both sides if possible to reduce the cost and number of fastener types on site, and improve ease of installation.
Stainless steel side stitch fastener with Ø15/19mm sealing washer, typically poppy red; fix at 300mm to max 400mm centres and evenly spaced about all end laps - not through the end lap joint. If it is necessary for the GRP to underlap the metal on one side, use expanding rubber bolts. See over for typical fastener references.

3. Side Lap Sealant
Outer Sheet - One run of Class A 6x5mm cross linked butyl mastic, pale coloured, positioned on the crown of the sidelap corrugation, on the weather side of the side stitch fasteners.
Liner Panel - Both sides should lap over the adjacent metal sheet. Apply 50mm wide film backed butyl tape over laps to prevent opening, improve resistance to impact, airtightness and vapour control.

4. End Lap Sealant
Outer Sheet - Two beads of Class A 6x5mm cross linked butyl mastic, pale coloured, positioned max 25mm above and below fixing line. If a third seal at the tail of the end lap is required, gun grade silicon (ISO11600-F-25LM) should be used.

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Trilite GRP

TB156

Installation - In-Plane Site Assembled GRP Rooflights
Triple Skin with Cleartherm - Trilite 18, 24 & 30

4. End Lap Sealant (Cont.)
Liner Panel - One bead of Class A 6x5mm cross linked butyl mastic, pale coloured, position inside the lap, along the line of the fasteners or alternatively with 50mm wide film backed butyl tape over the lap.

5. Cleartherm layer
Simply secured with 50mm film backed butyl tape along each side lap. Alternatively, 9x3mm sealant can be applied to the crown of each side corrugation of the liner panel and the Cleartherm layer placed on top.

6. Spacer bar bracket positioning
Generally, spacer brackets are positioned outside of the area of rooflight, necessitating the use of 3m spacer bars. Alternatively, spacer bar brackets can be positioned as normal within the rooflight area (avoiding the need for longer spacer bars), but this will require Cleartherm sheets to be fitted in single span lengths, butted together along the line of the spacer bar with the end of the sheet notched to clear the spacer bar bracket.

Correct installation of rooflights is important to ensure they achieve the correct level of safety performance and give long term weather tightness.

Typical fastener references

Main Fasteners - Outer Sheet		Side Stitch Fasteners - Overlapping	
SFS	**EJOT**	**SFS**	**EJOT**
SX3/15-S29-6 x 40	CF29-JT3-3-5.5 x 32	SXP3/12-A16-6 x 35	CF15-JT3-2H-5.5 x 30

Main Fasteners - Liner Panel		Side Stitch Fasteners - Underlapping	
SFS	**EJOT**	**SFS**	**EJOT**
SX3/9-S29-6 x 29	CF29-JT3-3-5.5 x 32	LL-S-S16-9.5 x 25 + cap	-

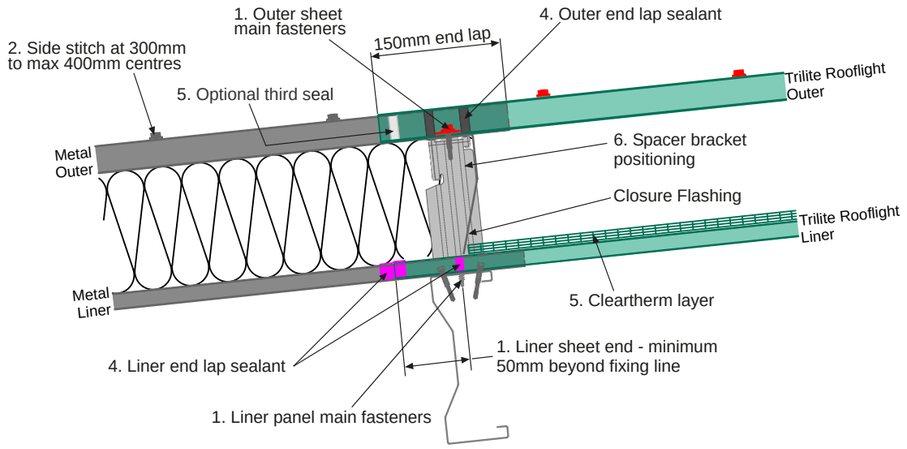
⚠ **MINIMUM ROOF PITCH** Minimum design roof pitch 5.5° (finished roof pitch 4°) *See page 3

⚠ **CORRECT HANDLING OF GRP IS CRITICAL** - full guidance given in TB154

⚠ **DO NOT** over drive fasteners

⚠ **ONLY** use good quality assured fasteners

Down Slope End Lap - Rooflight Over Cladding



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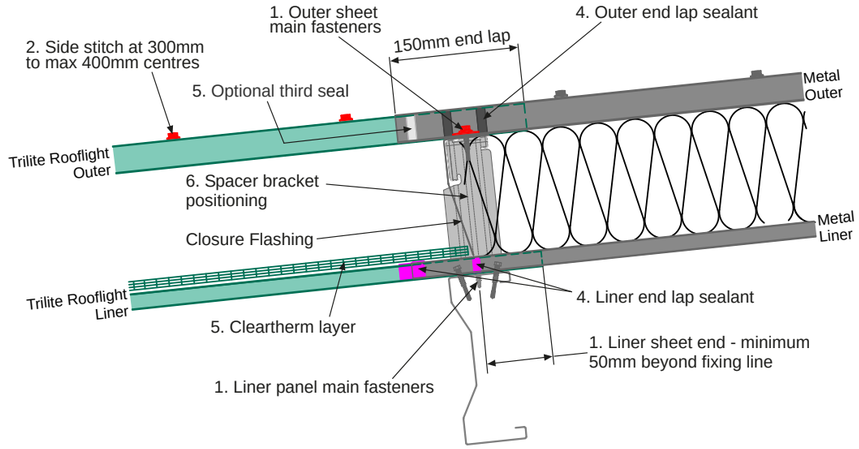
Trilite GRP

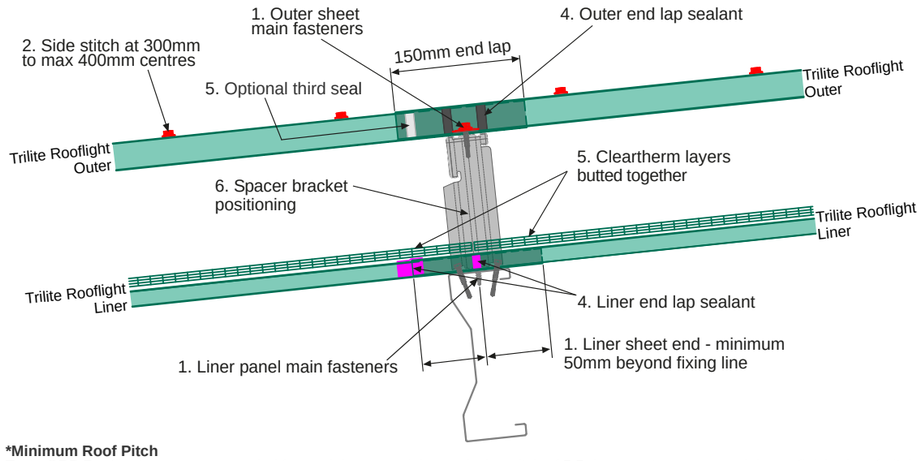
TB156

Installation - In-Plane Site Assembled GRP Rooflights
Triple Skin with Cleartherm - Trilite 18, 24 & 30

Up Slope End Lap - Cladding Over Rooflight



End Lap - Rooflight To Rooflight



***Minimum Roof Pitch**
Trilite GRP Rooflights are recommended for a minimum a minimum design pitch of 5.5 degrees, to ensure a minimum finished roof pitch of 4 degrees after allowing for tolerances and on site variations in accordance with BS5427 "Code of practice for the use of profiled sheet for roof and wall cladding on buildings (see BS5427:2016 section 5.1.3). If these rooflights are fitted at lower than 4° finished roof pitch, there will not be any detrimental effect on the rooflight sheet itself, but the risk increases of leaks at end laps or fixings occurring due to small variations in installation details (see BS5427, Note 3 to 5.1.3). Heavyweight Trilite rooflights are more rigid, providing more even compression of sealants and less localised deflection around fasteners, thus reducing risk of leaks at end laps or fixings.

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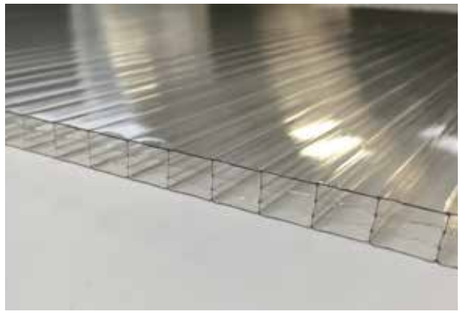
Cleartherm

TB292

Product Data Sheet
Cleartherm Intermediate Rooflight Layer
(Middle East Application)

Product Description



Cleartherm is a light weight 10mm thick 4 wall structured polycarbonate sheet used as an intermediate rooflight layer to create a thermally efficient triple skin skylight.

It has been are specifically designed to improved thermal efficiency whilst maintaining high light transmission and with minimal cost.

Cleartherm is typically used between a profiled in-plane GRP/FRP skylight liner sheet and a separate rooflight outer (either a profiled in-plane outer sheet, or a barrel vault outer sheet). Cleartherm is easily installed by laying directly onto the GRP/FRP liner, secured with film backed butyl tape (or onto butyl strip sealant within the joint). Cleartherm can also be used as the intermediate layer within our Trilite Energysaver FAIRs.

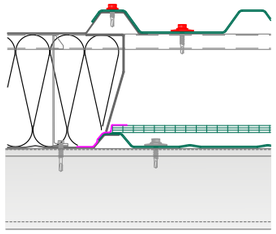
Cleartherm has full BBA (British Board of Agrément) approval when used in conjunction with Trilite GRP skylights and is certified under 04/4114.

Cleartherm also holds Attestation of Conformity from the Dubai Central Laboratory Department when used in conjunction with Trilite GRP skylights and is certified under attestation number VA17060001.

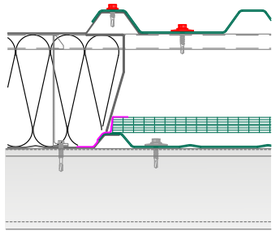
Cleartherm has a life expectancy in excess of 10 years, and when installed in conjunction with Trilite profiled GRP sheets is included within the scope of the Trilite 10 year warranty.

Product Options

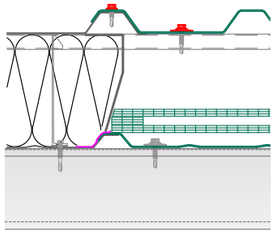
Single layer - 1.3 W/m² K



Double layer - 1.0 W/m² K



Cassette - 0.9 W/m² K



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Cleartherm

TB292

Product Data Sheet
Cleartherm Intermediate Rooflight Layer
(Middle East Application)

Performance Characteristics

Outer Sheet Weight	Cleartherm Type	U Value	Light Transmission	G Value	Shading Coefficient
Trilite 2.4	Single	1.3	0.58	0.52	0.60
	Double	1.0	0.53	0.44	0.51
	Cassette	0.9	0.53	0.44	0.51
Trilite 3.0	Single	1.3	0.55	0.51	0.58
	Double	1.0	0.50	0.43	0.49
	Cassette	0.9	0.50	0.43	0.49
Trilite Ultra 36	Single	1.3	0.53	0.50	0.57
	Double	1.0	0.47	0.41	0.47
	Cassette	0.9	0.47	0.41	0.47

Overall performance data for triple skin skylight comprising Trilite outer sheet, Cleartherm intermediate and Trilite 1.8 liner

Capital Sheet	Manufacture	Service Temperature	Maintenance, Handling & Storage
Trilite 2.4	Cleartherm is manufactured to EN 16153:2008 with a Quality Management System independently accredited to ISO9001:2015.	-10°C to 80°C	For full maintenance, handling and site storage details see separate data sheet - COSHH Data Sheet 07.
Trilite 3.0			
Trilite Ultra 36			

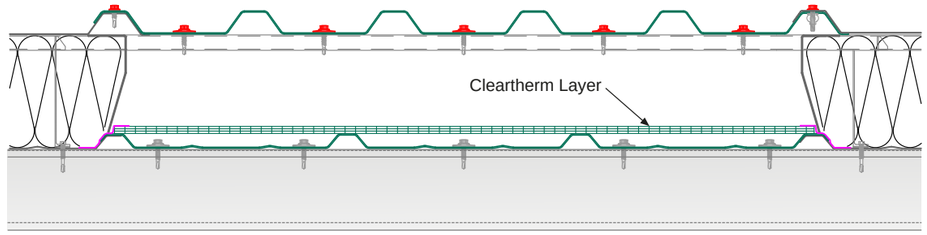
Product Dimensions:

	Weight	Thickness	Width	Max Length
Single	1.00kg/m²	10mm$_{+-0.5mm}$	1.0m$_{-6mm+2mm}$	6.0m$_{+-5mm}$
Double	2.00kg/m²	20mm$_{+-0.5mm}$	1.0m$_{-6mm+2mm}$	6.0m$_{+-5mm}$
Cassette	2.05kg/m²	32mm$_{(Overall)}$	1.0m$_{-6mm+2mm}$	3.5m$_{+-5mm}$

Typical Installation Details

Installation
Full details of installation between profiled in-plane Trilite GRP sheets can be found in Technical Bulletin 156 or CAD drawing HC225.

Cross Section



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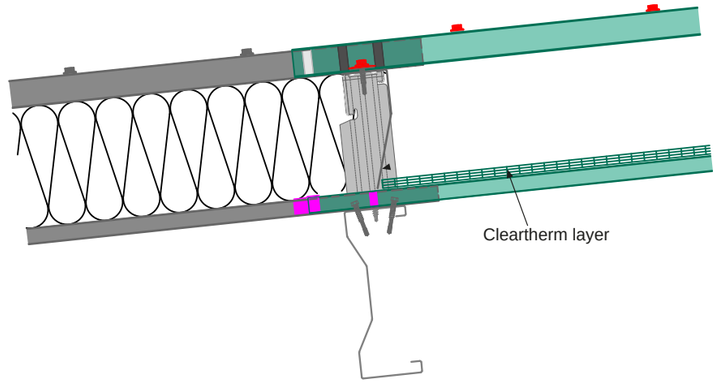
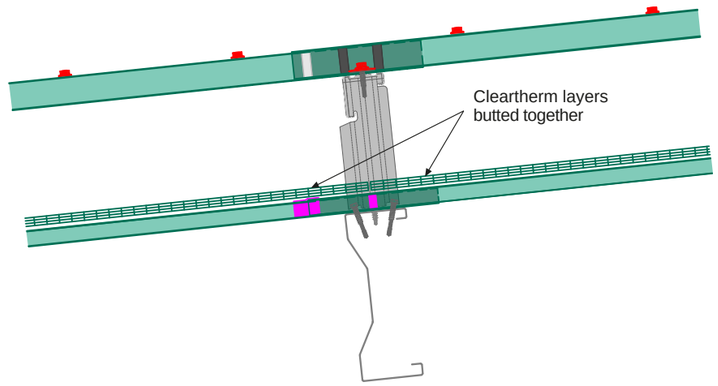
Cleartherm

TB292
Product Data Sheet
Cleartherm Intermediate Rooflight Layer
(Middle East Application)

Down Slope Lap



Rooflight to Rooflight Lap



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Multivault SSR

Multivault SSR is a high quality, site assembled profiled polycarbonate vault rooflight designed for use with standing seam roofs. Multivault SSR utilises standard standing seam verge components to act as the kerb in installation and where a secret fix style system is required.

The Multivault SSR system consists of a GRP liner, Cleartherm layer and Multivault SSR polycarbonate barrel vault outer and forms a completely watertight roof covering. The design is approved by leading standing seam manufacturers.

Key Features

- **UV Protection:** manufactured with a co-extruded UV protective surface to resist discolouration and degradation
- **Glazing:** available in clear
- **Thermal Performance:** Triple skin U-value 1.3W/m²K (double skin 2.2)
- **Light Transmission:** Determined by chosen tint (e.g. double skin clear provides 80% direct light)
- **Width:** 1200mm nominal width (to fit opening left by 3 x 400mm wide standing seam cladding sheets).
- **Run length:** Modular units for unlimited run lengths
- **Durability:** Life span of 15 - 20 years
- **Fragility:** Class B non-fragility to ACR[M]001
- **Fire Rating:** SSR outer Class 1 to BS476 part 7 (and deemed SAA by Building Regulations)
- **Certification:** BBA approved, DCL certification & UAE Fire Code

Applications

Multivault SSR can be incorporated into new or refurbished roofs in a wide range of building types including distribution warehouses, factories, aircraft hangars and colleges.

Multivault SSR

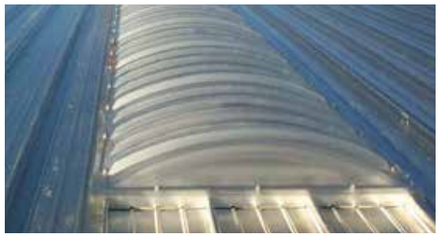
TB233
Product Data Sheet
Multivault SSR

Product Description
Multivault SSR is a site assembled barrel vaulted rooflight specifically for low pitch standing seam roof applications and are nominally 1200mm wide - to fit the opening left by 3 x 400mm wide standing seam cladding sheets.
The SSR outer is thermo-formed from 2mm thick polycarbonate.

The rooflight assembly consists of a GRP liner; Cleartherm layer and Multivault SSR polycarbonate barrel vault outer, the GRP liner and Cleartherm layer are available in variable lengths to suit the application,the barrel vault outer units available are:

- 250mm Downslope End Unit
- 1000mm Continuation Units (also available as: 750mm; 500mm & 250mm run lengths)
- 250mm Upslope End Unit
- 250mm Upslope Ridge End Unit (for terminating the run at the ridge flashing)
- 500mm Crown Units (for curved roof applications, fitted with 250mm Downslope End Units at both ends)

For full installation and layout details see Technical Bulletin 173.



Durability
Multivault SSR are manufactured with a UV protective co-extruded outer layer containing high levels of UV absorber on the top surface to protect against discolouration (yellowing)[1] and ensuring durability for a 20 year life span.

Safety Requirements / Non Fragility
Multivault SSR barrel vault rooflights achieve Class B non-fragility to ACR[M]001 when fully installed (in accordance with the principles of NARM Technical Document NTD03):

Rooflight Assembly	Classification [2]	Expected period of non-fragility [3]
Multivault SSR (over Trilite 3.0 GRP liner)	Class B	25 Years [4]

PLEASE REFER TO NARM NTD03 FOR FULL DETAILS & CONDITIONS

Multivault SSR rooflight assembly when fully fixed will resist loads typically created by foot-traffic or a falling person without failure, although such impacts may result in damage. Rooflights should not be subjected to impact or foot traffic. Damaged rooflights, whether from impact, foot traffic or other cause, must be replaced.

Composition & Appearance
The Multivault SSR barrel vault rooflight is manufactured from polycarbonate with a co-extruded UV protective surface to resist discolouration and degradation caused by UV exposure.

Design Features
The Multivault SSR rooflight is designed for simple installation in conjunction with typical standing seam cladding systems. They include an angled side detail to ensure the main fasteners have sufficient water run off and rigid corrugations over the arc of the rooflight adding rigidity and lapping detail. They are suitable for runs of unlimited length.

Manufacture
Multivault SSR is manufactured to EN 14963 under ISO 9001 Quality Management System.

Tolerances (where applicable)
Cover width: ± 0.8%
Squareness: 0.5% of cover width

Installation
Full installation details can be found in Technical Bulletin 173 or CAD drawing HC220.

Maintenance, Handling & Storage
For full maintenance, handling and site storage details see separate data sheet:
- COSHH Data Sheet 04 - Multivault SSR
- COSHH Data Sheet 07 - Cleartherm layer
- COSHH Data Sheet 01 - GRP liner

[1] performance proven by accelerated weathering test, showing light transmission reduced by less than 1.5% after 32000 hours exposure to QUV testing.

[2] when installed with a roof system which has been determined (without rooflights) to achieve an equal or better non-fragility classification.

[3] when all other components have been specified accordingly and it has been demonstrated that the roof system (without rooflights) will retain the same non-fragile classification for the same period.

[4] May require replacement SSR outer during the 25 year period.

Brett Martin

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MULTIVAULT SSR

Multivault SSR

TB233
Product Data Sheet
Multivault SSR

Fire Ratings
Building Regulations Approved Document B: Fire Safety, Volume 2 - Buildings other than dwellings (2019 edition, amended May 2020) sets out the fire safety rules for buildings other than dwellings, which can be met by achieving specific European class fire ratings to European standard BS EN 13501 (European class rating), with a transposition option to National Class fire ratings to British standard BS476 (see Approved Document B, Appendix B, paragraph B10).

Section B2 covers internal fire spread and applies to the linings of both roof and wall, Section B4 covers external fire spread and applies to external roof and wall coverings.

Standard Multivault SSR rooflights are supplied with the following fire ratings:

Sheet	EN13501 pt1	EN13501 pt5	
Polycarbonate Outer Sheet	B-s1,d0	B_{ROOF}(t4)*	

*Can be regarded as being B_{ROOF}(t4) if a minimum rating of C-s3,d2 to EN13501 pt1 is achieved (Approved Document B paragraph 14.7) (Certificates from independent laboratories are available to confirm these fire ratings)

See seperate data sheet for GRP liner fire ratings.
For full details regarding Polycarbonate fire ratings see Technical Bulletin 413.

Transmission Values

Rooflight Application	U Value	Tv Visible Light Transmission	G Value Total Solar Transmittance	Shading Coefficient
Multivault SSR Triple Skin (Over Trilite 30 liner & Cleartherm layer)	1.3 W/m² K	0.62	0.58	0.67

Physical Properties (Multivault SSR outer)

TENSILE STRENGTH
60 MPa

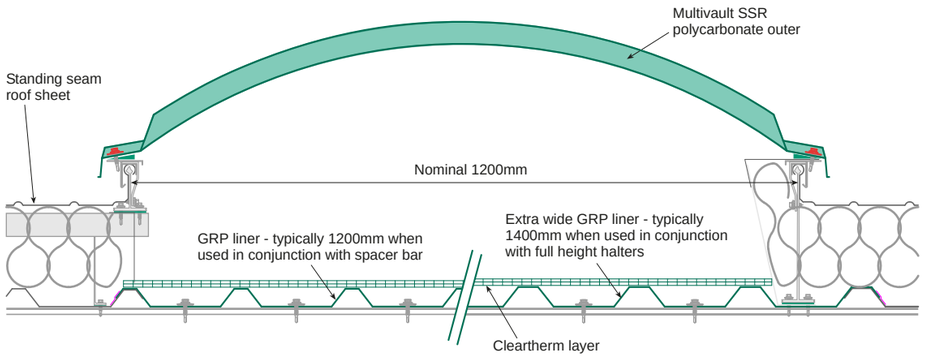
FIXING PULL-OUT LOAD
29mm washer: 930 N

SERVICE TEMPERATURE
-20°C TO 100°C

SPECIFIC GRAVITY
1.20

COEFFICIENT OF LINEAR EXPANSION
68 X 10^{-6}/°C

Typical Cross Section



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Multivault SSR

TB173
Installation Instructions
Multivault SSR Triple Skin

Introduction

This Multivault SSR rooflight is specifically design to fit with standing seam cladding systems and are nominally 1200mm wide - to fit the opening left by 3 x 400mm wide standing seam cladding sheets. The rooflight assembly consists of a GRP liner; Cleartherm layer and Multivault SSR polycarbonate barrel vault outer, the GRP liner and Cleartherm layer are available in variable lengths to suit the application - the barrel vault outer units available are:

250mm Downslope End Unit
1000mm Continuation Units (also available as: 750mm; 500mm & 250mm for specific run lengths)
250mm Upslope End Unit or
250mm Upslope Ridge End Unit (for terminating the run at the ridge flashing & shown in this bulletin)

Also available are **500mm Crown Units** for curved roof applications, this unit changes the direction of lap and should be used at the apex of the roof, runs incorporating this unit should be fitted with **250mm Downslope End Units** at both ends.

Kerb Requirements for Barrel Vault Openers

The SSR barrel vault outers require side kerbs and end kerbs to be installed on, these are usually components of the standing seam cladding system and not supplied by BMDS.

Installation Instructions

Multivault SSR rooflights should be installed to the following instructions. The details below are to be read in conjunction with the following installation drawings in this Technical Bulletin.

1 Multivault SSR Outer fasteners
Main fasteners: stainless steel fitted with large diameter washer & bonded seal (eg. SX3/15-A32-6.0x40) fitted every 250mm by corrugation.
Lap joint fasteners: stainless steel fitted with standard diameter washer & bonded seal (e.g. SX5/38-S16-5.5x63) fitted at lap joints only.

2 Self Adhesive Kerb Filler
Fitted continuously along the kerbs, note: also required on the end kerbs.

3 Kerb Sealant
Two strips of 9x3mm section UV stable pale coloured, cross linked mastic (BMDS: Class A) positioned approx 50mm apart along the full length of all kerbs.

4 Multivault SSR Outer End Lap Sealant
Single strip of 8mm dia bead UV stable pale coloured, cross linked mastic (BMDS: Class A) positioned centrally in the joint and along the edge at the unit at the sides as shown.

5 Cleartherm Side Lap Sealant
One strip of 9x3mm section UV stable pale coloured butyl mastic (BMDS: Class A) positioned along both side laps of the liner.

6 GRP Liner Fasteners
Stainless steel 5.5mm diameter fitted with large diameter washer & bonded seal (eg. SX3/9-A32-6.0x29), or passing through bracket. Five required at every purlin position, please note: the fasteners must be at least 50mm from the end of the sheet. Spacer bar bracket or halter can be regarding as one fastener.

7 GRP Liner End Lap Vapour Check Sealant
End laps to be sealed with a single strip of 6x5mm pale coloured butyl mastic (BMDS: Class A) inside the lap joint along the fixing line (or alternatively with 50mm wide film backed butyl tape over the lap).

8 GRP Liner Side Lap Vapour Check Sealant
Both sides of the liner should overlap the adjacent metal sheets. Apply 50mm wide film backed butyl tape over side laps to: prevent opening; improve resistance to impact; achieve good air tightness and vapour check.

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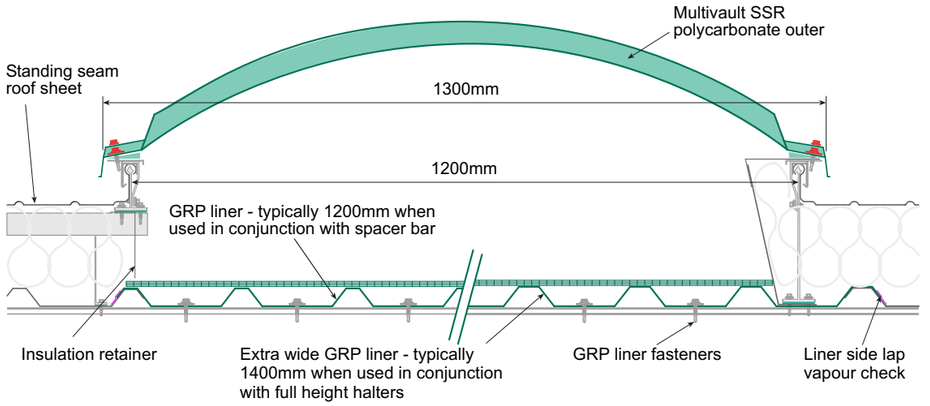
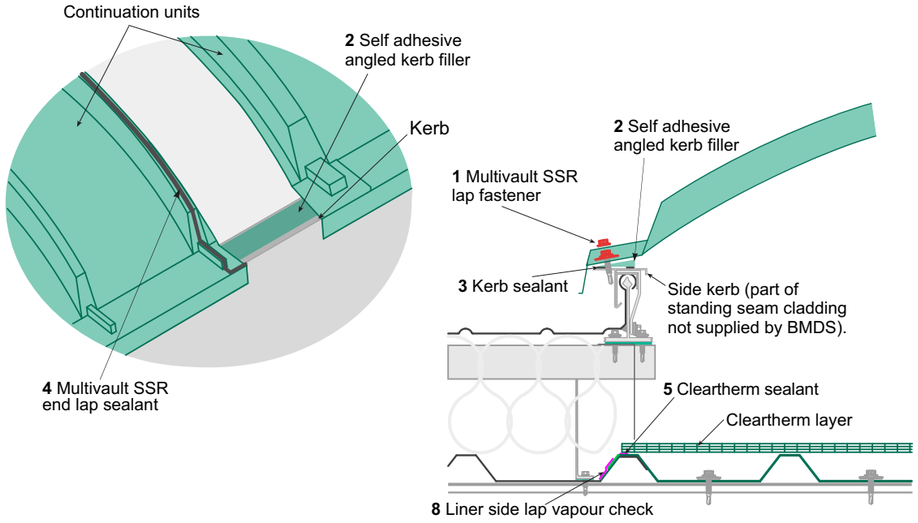
Multivault SSR Cross Section & Kerb Detail





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Multivault SSR

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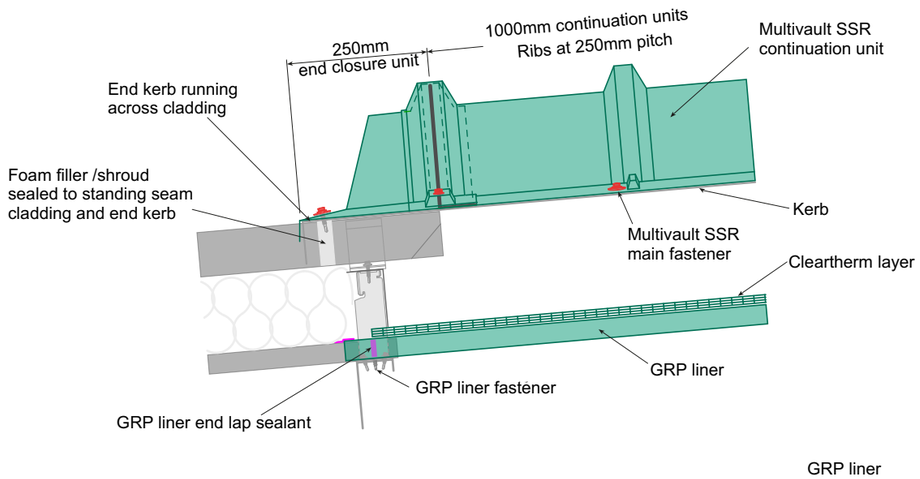
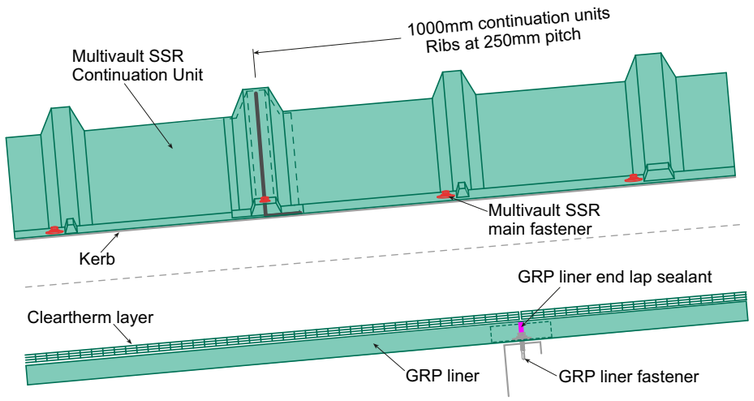
Installation Instructions
Multivault SSR Triple Skin

Down Slope End Unit Fixing Detail



GRP liner

Mid Span Continuation Unit Fixing Detail



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Multivault SSR

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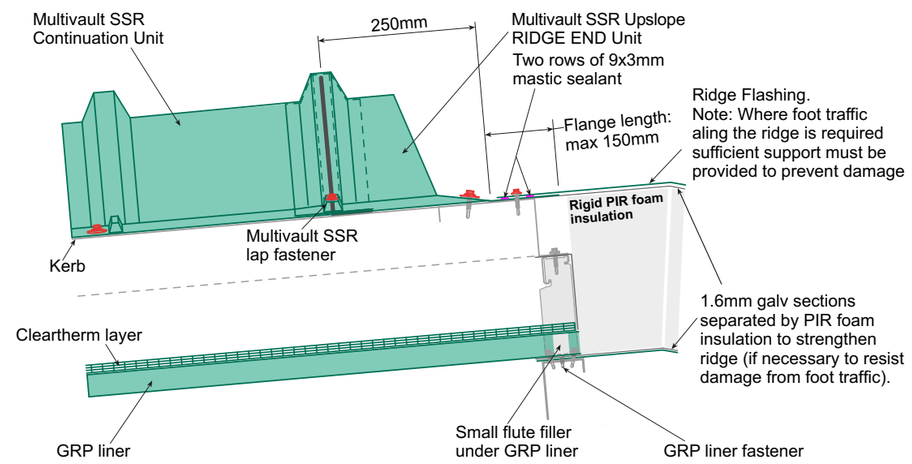
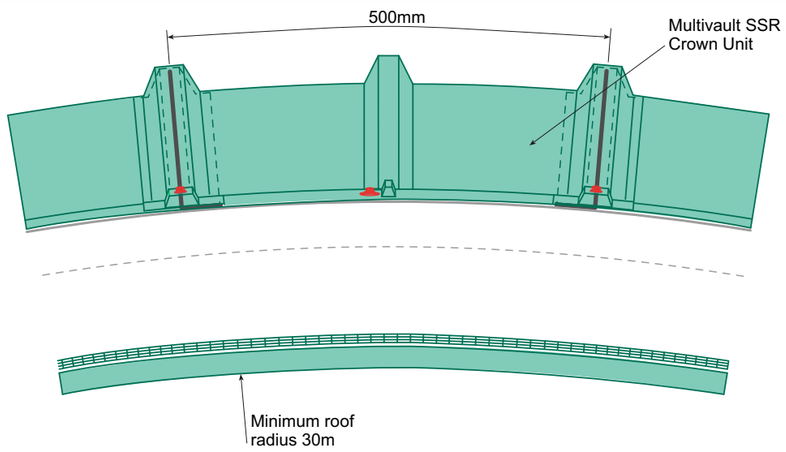
Installation Instructions
Multivault SSR Triple Skin

Upslope Ridge End Unit Fixing Detail



Crown unit fixing detail (curved roof applications only)



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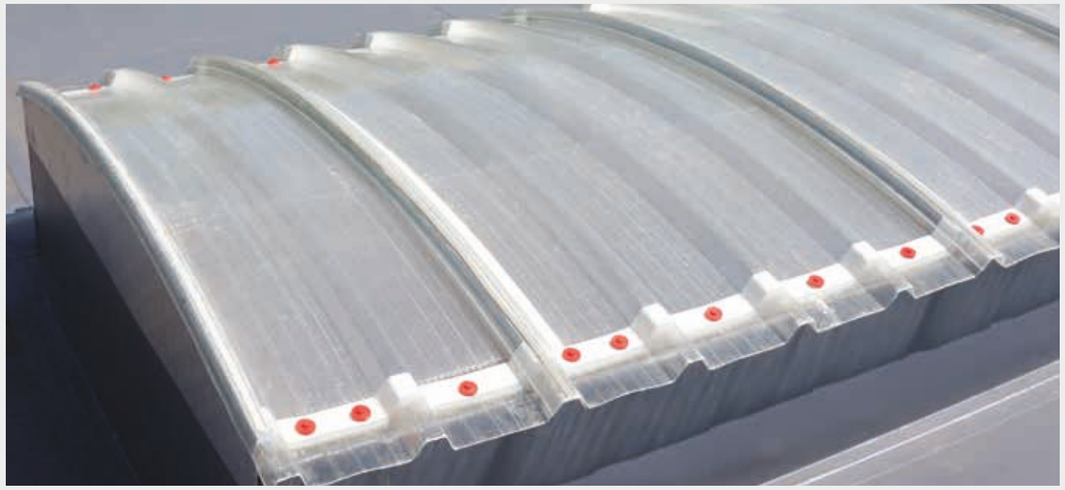
Multivault GRP



Multivault GRP is a vaulted rooflight which laps together to form unlimited length with spanning capabilities up to 4 metres.

Multivault GRP is delivered to site in a factory asembled form, ready to install. Multivault GRP is ideal for all roof types and are fitted onto separate kerbs, without any fixings penetrating the roof covering to preserve the principle of secret fix. The integrated aluminium bar and the well fitting insulated aluminium end closures makes Multivault GRP a robust rooflight option.

Key Features

- **UV Protection:** manufactured with a co-extruded UV protective surface to resist discolouration and degradation
- **Thermal Performance:** Triple Skin U-value 1.3W/m^{2}K
- **Light Transmission:** Triple Skin 58%
- **Span Width:** available in 1000mm to 4000mm widths
- **Run length:** modular units for unlimited run lengths
- **Durability:** Life expectancy of 25 years with minimal maintenance required
- **Fragility:** Class B non-fragility to ACR[M]001
- **Fire Grade:** SAB Class 3, SAA Class 1 to BS 476 Part 3 & 7
- **Certification:** DCL certifcation & UAE Fire Code

Applications

Multivault GRP is particularly suited to daylighting flat or very low pitch roofs in a variety of building types such as; factories, airport infrastructure and other industrial buildings.

Multivault GRP

TB170
Installation
Multivault GRP

GRP Multivault Widths
The size of a Multivault GRP unit is defined by the **Fixing Centre Width**, this is the only dimension required to specify width of the units required. They can be made to any **Fixing Centre Width** between 1m and 4m.

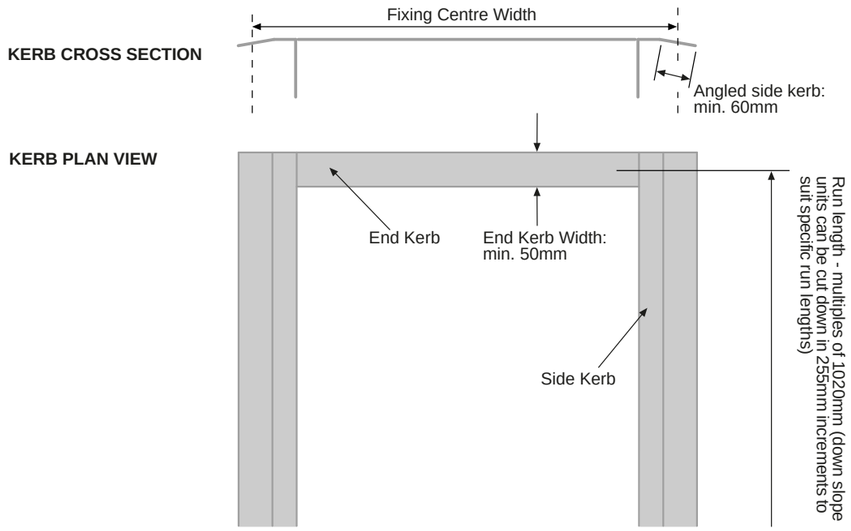
Typical sizes: if planning to fit Multivault GRP with standard 1m wide cladding the **Fixing Centre Width** will need to be typically 1100mm to ensure the fasteners are clear of the rooflight opening and penetrate only the kerb and not through the roof.

Multivault GRP Run Lengths
Multivault GRP are manufactured in modular lengths of 1020mm long (±4mm), so overall run lengths should to be designed as multiples of 1020mm where possible (with provision to incorporate overall length tolerance). Modified downslope end units which are multiples of 255mm can be provided where necessary. They are suitable for both straight roof and curved roof applications (to a minimum radius of 50m). Continuous runs are built up using:
- 1020mm Downslope End Unit (with integral end closure)
- 1020mm Continuation Units
- 1020mm Upslope End Unit (with integral end closure)

Also available are 1020mm Crown Units for curved roof applications, this unit changes the direction of lap, runs incorporating this unit should be fitted with Downslope End Units at both ends.

Kerb Requirements
Multivault GRP require kerbs all round to ensure a safe and weather tight fix, these kerbs are not designed or supplied by BMDS.
- SIDE KERBS, these should be substantial enough to withstand all loadings expected. The kerb should incorporate an angled 60mm flange (shown below); the distance between the centres of the angled flanges should be the **Fixing Centre Width** of the rooflight.
- END KERBS - horizontal kerbs are required at each end of the rooflight run to allow a full air tight seal to be achieved. It also gives the designer an opportunity to create a water tight dam against the cladding if desired.

Kerb Layout for Multivault GRP



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Multivault GRP

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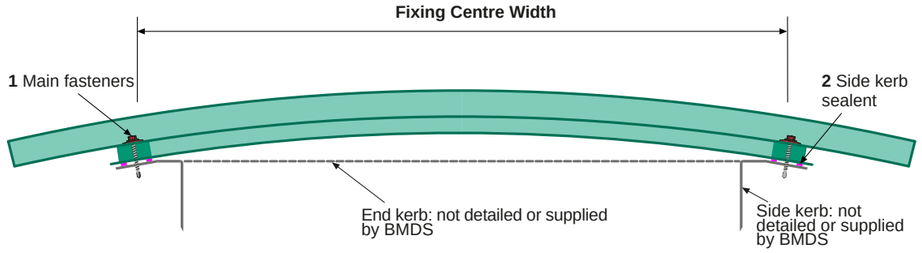
Installation
Multivault GRP

Installation



1. Main Fastener
Stainless steel 6mm diameter fitted with large diameter washer with soft (40 shore hardness) bonded seal eg. SFS SX5/38-S29-5.5x61. To be fixed in every trough through the integral Hardpak filler and into kerb, two fasteners in outer troughs and one in centre troughs.

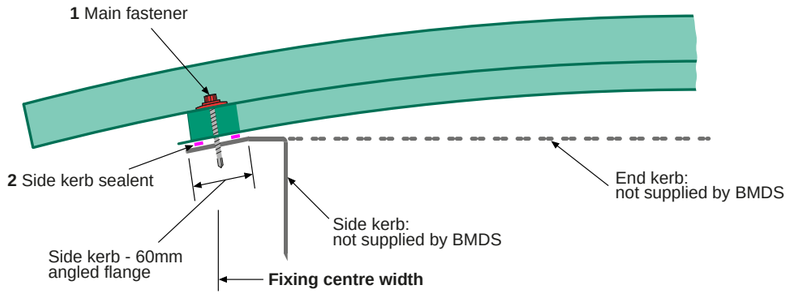
2. Side Kerb Sealant
Two strips of 9x3mm section UV stable pale coloured, cross linked butyl mastic (BMDS:GCA) positioned approx. 50mm apart along the full length of each angled kerb.

3. Additional Kerb & End Lap Sealant
Silicone bead run on the inner lap and at each end of the laps to ensure full seal, using clear silicone.

4. End Kerb Sealant
A single strip of 9x3mm section UV stable pale coloured, cross linked butyl mastic (BMDS:GCA) is required applied along the end kerb, lining up with the end of the unit.

5. End Laps
To seal the end laps a single strip of 9x3mm section UV stable pale coloured cross linked butyl mastic (BMDS:GCA) is required centrally in the lap joint. Units that are larger than 1500mm Fixing Centre Width require stainless steel stitching screws, eg: SFS SX3/9-S16-6.0x29 over the lap at 500mm centres; these fasten into the integral aluminium frame of the unit.

Side Kerb Fixing Detail



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Multivault GRP

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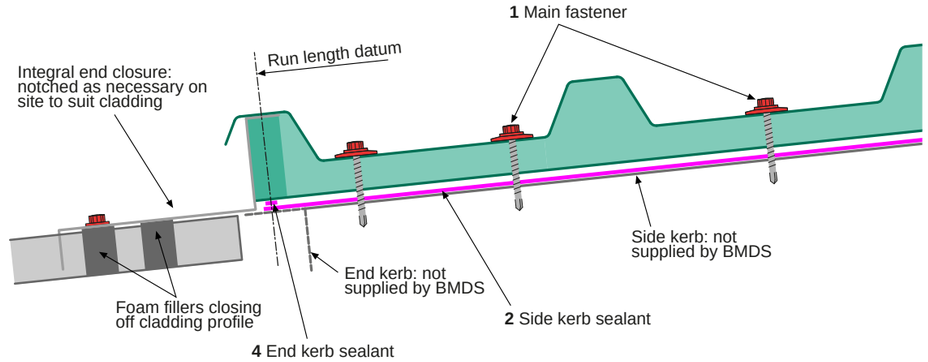
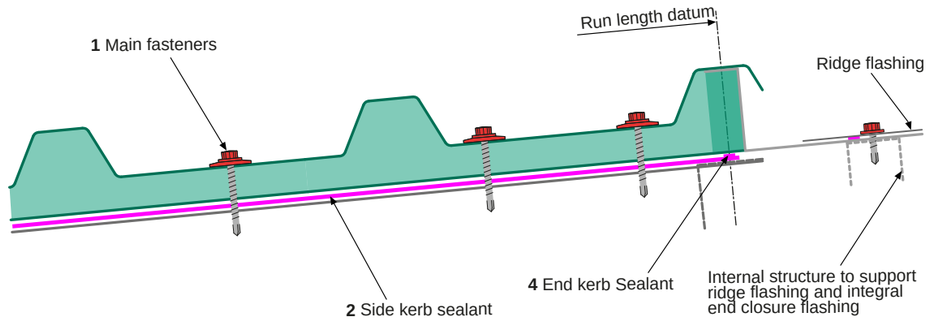
Installation
Multivault GRP

Down Slope End Unit Fixing Detail



Up Slope End Unit Fixing Detail



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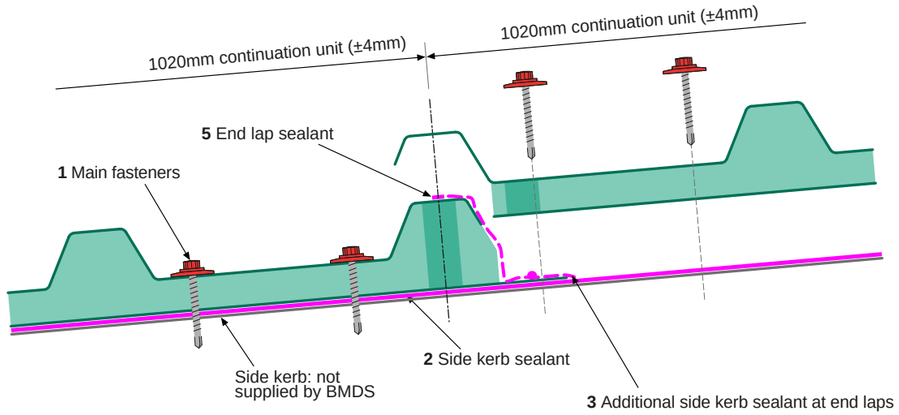
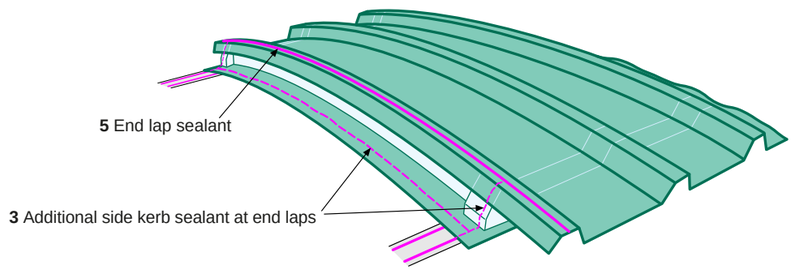
Multivault GRP

TB170
Installation
Multivault GRP

Continuation Unit Fixing Detail



Continuation Unit Fixing Detail



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Multivault GRP

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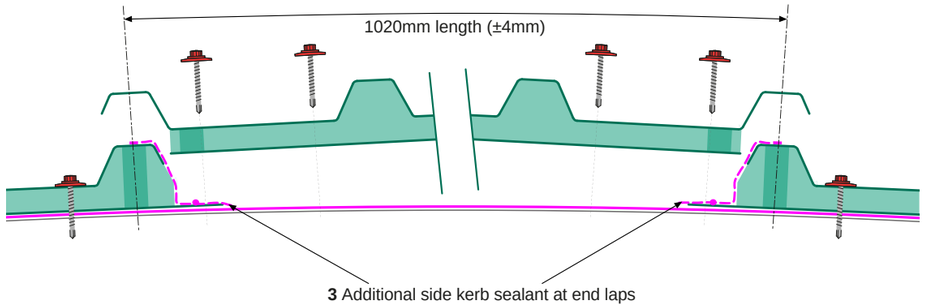
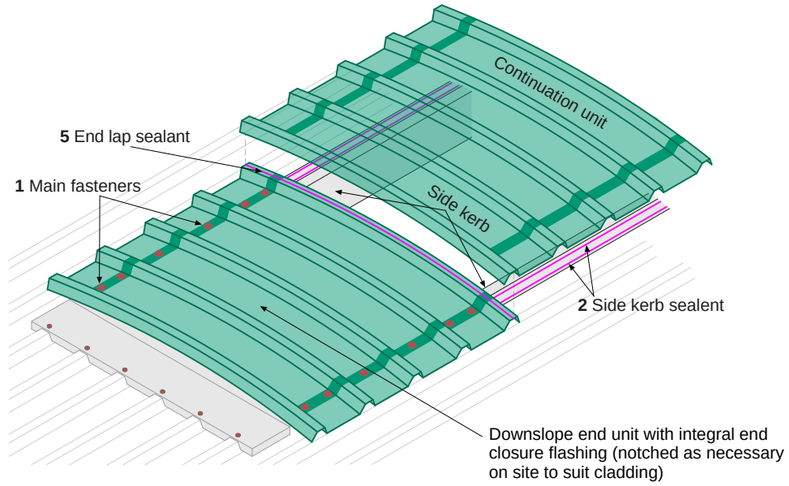
Installation
Multivault GRP

Crown Unit Fixing Detail (Curved Roof Applications Only



On curved roof applications where the rooflights run over the apex of the roof, a **Crown Unit** is required. It should be located at the apex point of the roof. This unit changes the lap direction to always ensure the up slope unit laps over the unit below.
Alignment of this is critical. To ensure a correct fit it is recommended the first slope is installed up to the **Crown Unit** and the following slope is 'backed lapped' from this position.
Minimum roof radius: 50m (subject to width restrictions - contact BMDS Technical Dept)

Overview



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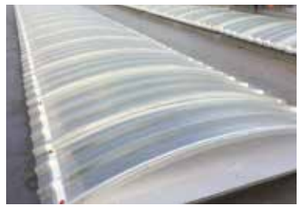
Multivault GRP

TB232
Product Data Sheet
Multivault GRP

Product Description
Multivault GRP is a factory assembled insulating barrel vaulted rooflight specifically for low pitch roof applications and are available in widths from 1000mm to 4000mm.
They comprise of a corrugated curved translucent GRP outer; optional intermediate Cleartherm layer and GRP liner bonded together with Hardpak internal spacers, typically supplied as triple skin (with Cleartherm mid layer) or double skin over separate GRP liner. The outer weighs 2.2 kg/m², and is approximately 1.3mm thick.

Multivault GRP are manufactured in modular lengths of 1020mm long (±4mm), overall run lengths should to be designed as multiples of 1020mm where possible. Modified downslope end units which are multiples of 255mm can be provided where necessary. They are suitable for both straight roof and curved roof applications (to a minimum radius of 50m). Continuous runs are built up using:
- 1020mm Downslope End Unit (with integral end closure)
- 1020mm Continuation Units
- 1020mm Upslope End Unit (with integral end closure)
Also available are 1020mm Crown Units for curved roof applications.



Durability
Multivault GRP have a life span in excess of 25 years. They have Superlife™ surface protection and UV stabilised resin system to protect against discolouration (yellowing)[1] and degradation which would be caused by UV exposure and will prevent significant discolouration for at least 20 years.

Safety Requirements / Non Fragility
Multivault GRP barrel vault rooflights achieve Class B non-fragility to ACR[M]001 when fully installed (in accordance with the principles of NARM Technical Document NTD03):

Rooflight Assembly	Classification [2]	Expected period of non-fragility [3]
Multivault GRP	Class B	25 Years

PLEASE REFER TO NARM NTD03 FOR FULL DETAILS & CONDITIONS

Multivault GRP when fully fixed will resist loads typically created by foot-traffic or a falling person without failure, although such impacts may result in damage. Rooflights should not be subjected to impact or foot traffic. Damaged rooflights, whether from impact, foot traffic or other cause, must be replaced.

Composition & Appearance
Multivault GRP is manufactured from polyester based resins (containing UV inhibitors, fire retardant and process additives) and chopped & continuous strand glass fibre reinforcement, with 33% glass content. The outer sheets also incorporate our Superlife UV protective surface.

Design Features
All Multivault GRP rooflight include Hardpak side fillers providing greater support for fasteners ensuring a more reliable installation. They also include a water managed aluminium section as standard in all under lap corrugations for added rigidity and to allow standard stitch fasteners at each joint when required. Downslope and Upslope end units include an integral end closure flashing made from stucco aluminium. (Notched on site as necessary to suit cladding).

Manufacture
Multivault GRP is manufactured to EN 14963 under ISO 9001 Quality Management System.

Tolerances (where applicable)
Sheet weight: ± 10%
Cover width: ± 0.8%
Squareness: 0.5% of cover width

Installation
Full installation details can be found in Technical Bulletin 170 or CAD drawing HC217 / HC218.

Maintenance, Handling & Storage
For full maintenance, handling and site storage details see separate data sheet - COSHH Data Sheet 08.

[1] performance proven by accelerated weathering test, showing delta E less than 10 and light transmission reduced by less than 12% after 3000 hours exposure to QUV testing, comprising cycles of 4 hours of UVA340nm at 60°C and 4 hours condensation at 40°C.

[2] when installed with a roof system which has been determined (without rooflights) to achieve an equal or better non-fragility classification.

[3] when all other components have been specified accordingly and it has been demonstrated that the roof system (without rooflights) will retain the same non-fragile classification for the same period

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Multivault GRP

TB232
Product Data Sheet
Multivault GRP

Transmission Values

Rooflight Application	U Value	Tv Visible Light Transmission	G Value Total Solar Transmittance	Shading Coefficient
Multivault GRP Triple Skin (with internal Cleartherm layer)	1.3 W/m² K	0.58	0.55	0.63
Multivault GRP Double Skin over GRP liner	2.2 W/m² K	0.55	0.57	0.66

Physical Properties

TENSILE STRENGTH
90 MPa

FIXING PULL-OUT LOAD
29mm washer: 930 N

FLEXURAL MODULUS
6600 MPa

FLEXURAL STRENGTH
180 MPa

COEFFICIENT OF LINEAR EXPANSION
22 X 10^{-6}/°C

GLASS CONTENT
33%

BARCOL HARDNESS
40 - 50

SERVICE TEMPERATURE
-20°C TO 80°C

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Marvault

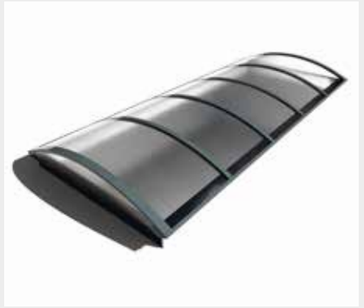
Marvault is a versatile barrel vault rooflight system, glazed in solid or multiwall polycarbonate, with a variety of size, shape, thermal performance, solar control and ventilation options to suit a multitude of requirements. The attention to detail is evident in the clean lines and minimalist styling of the Marvault framework. Daylight area is maximised through wide bay centres. Available in mill finish aluminium, or powder coated to any RAL colour, the system is suitable for use in a variety of low pitch roof applications. Marvault has hidden fixings, giving a clean appearance, and has a variety of height options to suit different glazing specifications and architectural requirements.

Key Features

- **Aluminium Frame:** Elegantly designed, precision engineered
- **Glazing:** polycarbonate options for every application
- **Thermal Performance:** options available for U values down to 1.05W/m²K
- **Opening Ventilation:** electrically operated discreet actuators
- **Length:** rooflights of unrestricted length can be created
- **Span:** 0.8-7m as standard depending on glazing type
- **Durability:** Service Life of 15 - 20 years, guaranteed fit for purpose for at least 10 years
- **Fragility:** Class B non-fragility to ACR[M]001
- **Fire Rating:** EN 13501-1 B, s1-d0

Applications

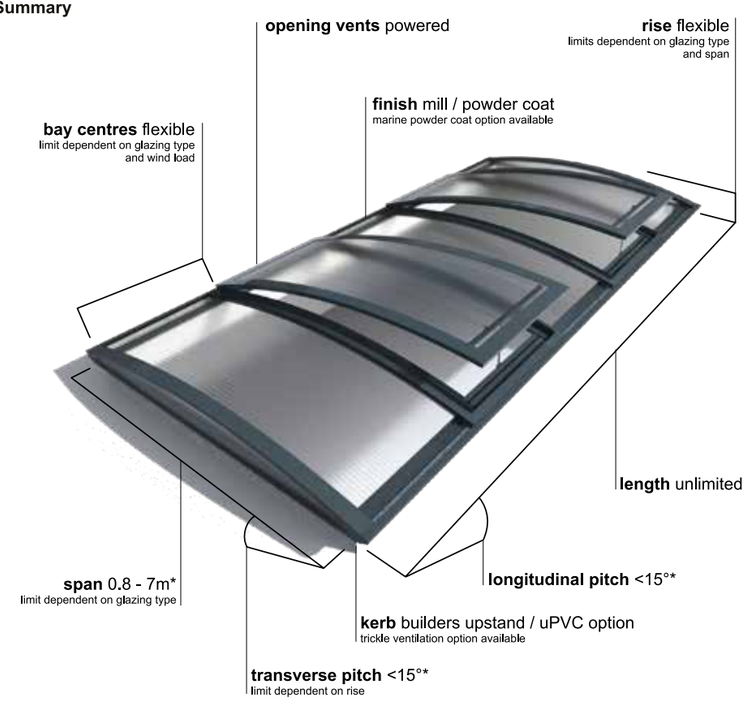
Marvault is considered to be the next generation in continuous vault rooflight systems, It's flexibility in shape provides architects and designers with greater freedom to specify products that harmonise with their surroundings. This together with its other design features make Marvault ideal for maximising daylight in buildings from office environments and shopping centres to schools and large scale leisure facilities.



Marvault

TB247
Marvault Datasheet

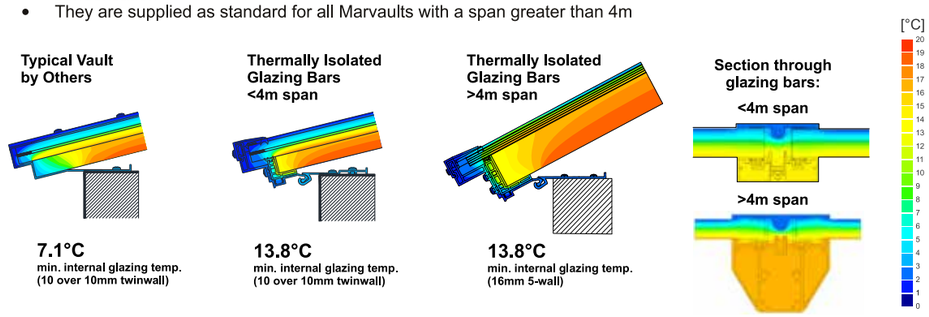
Product Summary



*Refer to Brett Martin Daylight Systems Ltd Technical Dept. for applications outside of the stated limits

Thermally Isolated Glazing Bars Option

- Thermally isolated glazing bars are available on all Part L compliant glazing options to reduce risk of condensation
- They are supplied as standard for all Marvaults with a span greater than 4m



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Marvault

TB247
Marvault Datasheet

Rise
- Articulated kerb allows for variable rise of up to 1/4 of span
- Standard range: 1/4, 1/5, 1/8, 1/12, and lower for narrow 16mm 5-wall

Glazing Type	Span				
	1m	2m	3m	4m	4m-7m
10mm twinwall	1/12	1/12 - 1/6	1/12 - 1/4	1/12 - 1/4	-
16mm 5-wall	1/24	1/12	1/12 - 1/8	1/12 - 1/6	1/8
Solid	1/8	1/8 - 1/4	Special	Special	-

Vertical gable-end bars required depending on rise/span combination.

Bay Centres

Glazing Type	Max Sheet Width	Max Bay Centres
Multiwall	1050mm	1073mm
3mm single skin solid	1025mm	1048mm
Triple skin solid	683mm	705mm

Note that wind loads may restrict bay centre and rise options, and/or necessitate longitudinal tie-bars/cables

Glazing

Glazing Spec	U-value W/m²K	Note
Standard Part L Compliant		
16mm 5-wall	1.9	*Very low rise at narrow spans*
Triple skin solid	1.88 1.83	*With thermally isolated glazing bars*
Enhanced Thermal Performance		
16 over 16 5-wall	1.05	*Very low rise at narrow spans*
Canopies		
3mm solid	5.4	
10mm twinwall	3.2	
Alternative Part L Compliant Options		
10 over 10 twinwall	1.91	*Allows higher rise at narrow spans*

- *Gable end glazing is 25mm 7-wall as standard on all variants*
- *U-values are vertical*
- *Standard glazing is available in clear and opal finishes. For bronze and patterned glazing options please contact technical*
- *Spans over 4m are only available in 16mm 5-wall*

Span

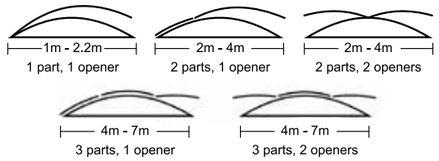
Glazing Type	Min. (mm)	Max. (mm)
16mm 5-wall	1000	7000
16 over 16mm 5-wall	1000	4000
10mm twinwall variants	800	4000
Solid variants	1000	2700 @ 1/8 rise 2500 @ 1/5 rise 2300 @ 1/4 rise

Solid variants limited by material availability. Refer to BMDS Technical Department for wider spans.

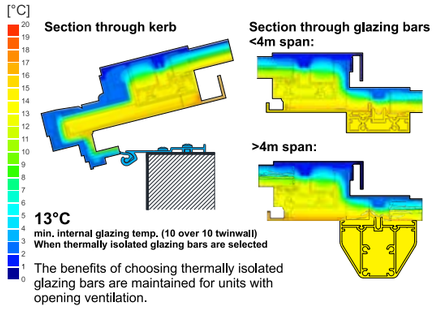
Kerb Options
1. Upstand by others
2. PVC direct fix kerb with trickle ventilation for fitting to upstand by others
3. PVC 150mm or 300mm high kerb
4. PVC 150mm or 300mm high kerb with trickle ventilation

Span limit is 2.4m for all PVC kerb options
Length limit is 3m for 300mm PVC kerb option

Opening Ventilation
- Available on all Part L compliant and enhanced thermal performance glazing options
- 24V or 230V slim chain actuator with max. 350mm stroke as standard
- Available Configurations:



- Refer to Brett Martin Daylight Systems Technical Department for advice on the most efficient ventilation configuration for your needs.
- Opening ventilation is not suitable for 1/4 rise option or curved roof installations
- Opening vents must not be opened or left open in wet or windy conditions. Brett Martin recommend the use of rain and wind sensors with opening vents
- Opening ventilation is available fully thermally broken and airtight



The benefits of choosing thermally isolated glazing bars are maintained for units with opening ventilation.

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Marvault

TB247
Marvault Datasheet

Frame Finish
- Mill finish aluminium frame as standard
- Powder coated option available (standard or marine finish)

Non-Fragility
Marvault rooflights achieve Class B non-fragility to ACR[M]001 when new and fully installed in accordance with Brett Martin Daylight Systems' installation guides.

- 16mm 5 wall variants are class B non-fragile without internal tie-bars
- 10mm twin wall and solid variants are class B non-fragile with internal tie-bars fitted

Airtightness (at 50Pa)
Tested to BS EN 1026
- Standard option: typically 5 - 25 m³/h.m² of envelope area, depending on geometry
- Fully gasketed option: typically 1 - 5 m³/h.m² of envelope area, depending on geometry

Weathertightness
Tested to BS EN 14963

Roof Pitch
- Longitudinal: <15° - refer to Technical for higher pitch applications
- Transverse: 0° - 15° dependent on rise - refer to Technical for specific guidance

CE Marking
Marvault is CE marked to BS EN 14963 and a declaration of performance is available.

Curved Roofs
Often suitable for installation on curved roofs (except with opening vents), but always refer to Technical. Minimum radius will depend heavily on specification.

In general, narrower widths and lower rise will be suitable for use on tighter radius roofs than wider or higher rise variants. Very low rise (16mm 5wall) narrow (1 metre) units may be curved to 20 metre radius or tighter, whilst wider higher rise units may only be suitable at very large radii (e.g. 200m).

In some cases, options such as narrower bay centres and shaped glazing panels, can be used to accommodate smaller roof radii at additional cost where standard products would not be suitable

Installation
- Crash-decks not typically necessary – depends on span and configuration
- Multi-skin cassette glazing for fewer components
- Cassettes pre-assembled for quick and clean install
- Full installation instructions available

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Marlon Clickfix

Brett Martin also offer a range of modular panel glazing systems, known for versatility and ease of installation with options for a wide range of commercial and industrial applications.

The range includes **Marlon Clickfix**, a complete architectural glazing system providing natural quality light, superior thermal insulation and UV protection in addition to the impact resistance, resilience and structural strength inherent in polycarbonate.

The modular design consists of interlocking polycarbonate panels which simply click and fix into place for a completely seamless façade. **Marlon Clickfix** combines with the **Marlon Clickfix VF** glazing bar system for creating seamlessly glazed facades and cladding.

Key Features

- Seamless glazing aesthetic
- Fully thermally broken system
- Integrates with Marlon Clickfix insulating polycarbonate panels
- Quick and easy to install
- Suitable for vertical glazing
- Class B Non Fragile to ACR{M]001
- Maximum airtightness
- Good acoustic performance
- 10 year performance warranty
- Certified to ASTM E283-04, E331-00 and E330 –E330m-14

Applications

Suitable for both internal and external applications including:

- Vertical facades
- Cladding
- Partitioning
- Rain screens

Key Benefits

- 40mm 10wall modular polycarbonate glazing system
- Create dramatic seamless façades and continuous corners
- Thermally insulating, U value 0.99 W/m^{2}K
- Superb spanning capabilities
- Suitable for vertical façades and partitions

Light Transmission

Colour	Light	Solar
Clear (g)	52%	48%
Pearlescent (PW)	44%	32%

Special colours and colour matching available on request. Minimum order quantities apply.

Panel Details & Properties

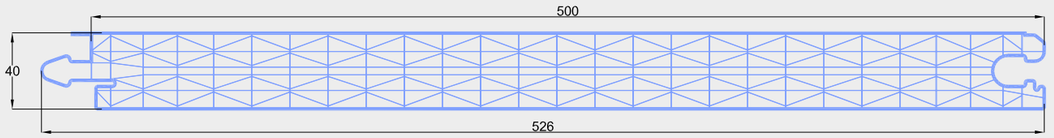
Panel Thickness	40mm
Panel Structure	10wall
Modular Width	500mm (nominal)
Overall Width	526mm (nominal)
Maximum sheet length	12m
Thermal Insulation	0.99W/m^{2}K
Weight	4.3kg/m2
Fire Performance	B-s1,d0 to EN13501-1
Minimum Cold Curving Radius	Contact Technical Department
UV Protection	Single or double sided
Warranty	Limited warranty

Spanning Detail

Load (kN/m^2)	Span (m)
0.5	2.37
1.0	1.99
1.5	1.74
2.0	1.39

All figures relate to double spanning, for additional information please contact the technical department.

Panel Structure & Dimensions



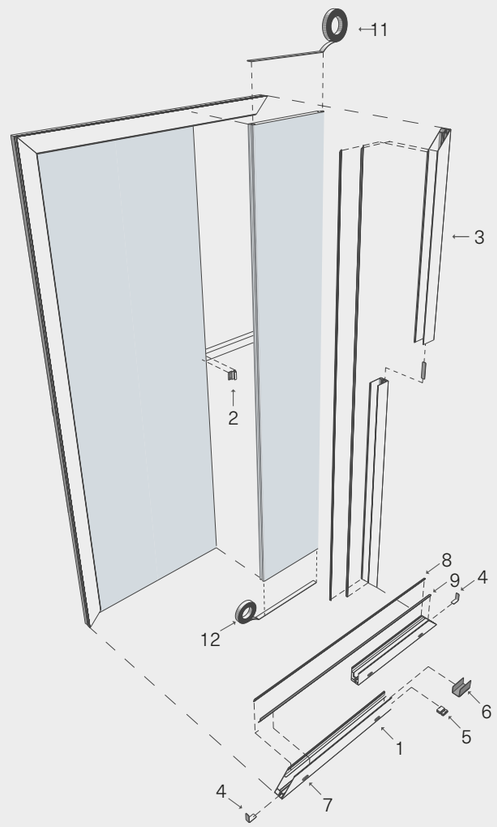
Marlon Clickfix VF90

Installation Façades up to 12m (VF90 Glazing System)

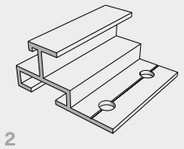
Key Features

- VF90mm profile for façades from 6m to 12m
- Fully thermally broken
- Temperature stable TPE gaskets
- Fully water managed

System Components

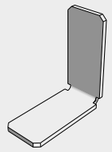


1
AC 403 BMD
Thermally broken Base Profile Slotted

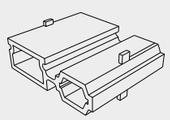


2
AC 401 E50
Purlin Clip

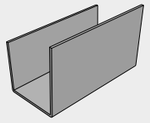
3
AC 402 BMD Thermally broken, Top & Side Profile



4
AC 402 CCB Corner Connector

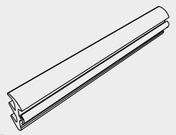


5
AC 402 MCB Straight Profile Connector

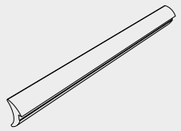


6
AC403 BBS
Butt Strap Connector

7
AC 403 BVCG Drainage Slot Vent Covers



8
AC 404 B
Interior “E” Gasket



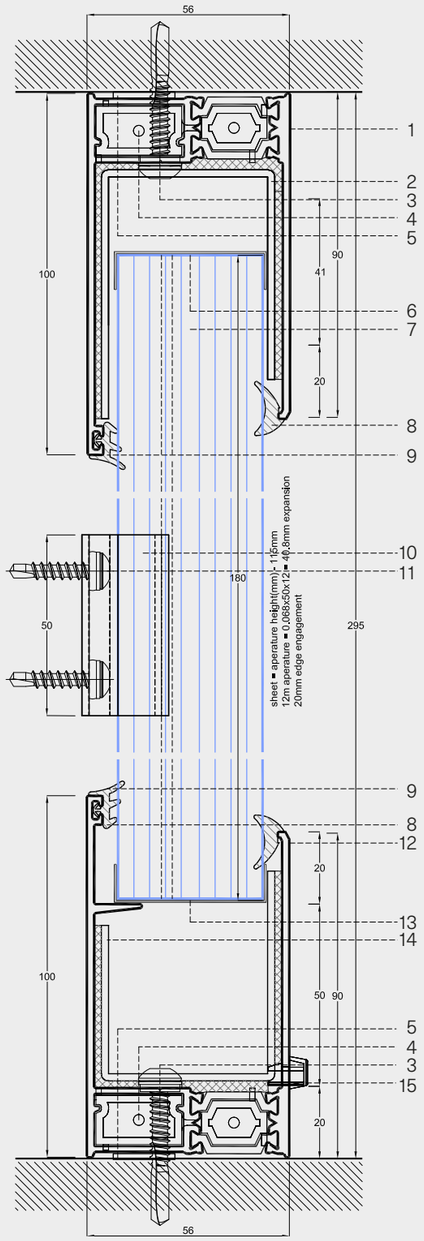
9
AC 405 B
Exterior Wedge Gasket

10
305 839
Click Seal Butyl Mastic

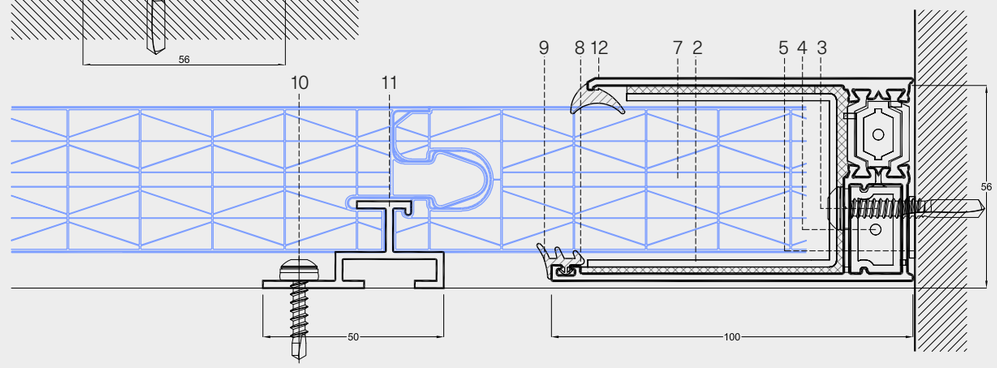
11
AC 406 E
Sealing Tape

12
AC 407 E
Ventilating Tape

INSTALLATION DETAILS

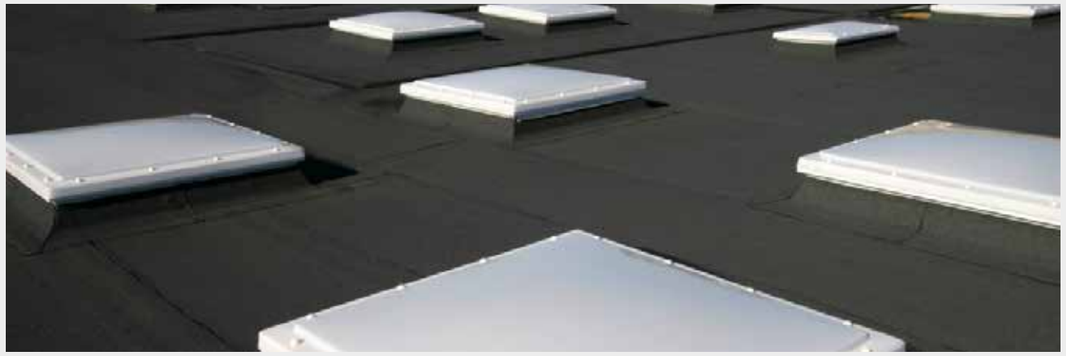


1. Thermally broken top and side profile - AC402BMD
2. Top and side profile sealing bracket - AC402TSBS
3. A4 stainless steel profile fastener - by others
4. Top and side junction bracket - AC402MCB
5. Click seal butyl tape - 305839
6. Die cut sealing tape
7. 40mm 10wall Marlon Clickfix interlocking panel
8. Exterior wedge gasket - AC405B
9. Internal E gasket - AC404B
10. 50mm Aluminium purlin clip - AC401E50
11. A4 stainless steel purlin fastener - by others
12. Thermally broken base profile - AC403BMD
13. Die cut ventilating tape
14. Base profile sealing bracket - AC403BBS
15. Drainage slot cover cap - AC403BVC



Sheet = aperture height (mm) - 115mm
12mm aperture = 0.068 x 50 x 12 = 40.8 mm expansion
20mm edge engagement

Mardome Trade



Mardome Trade has been designed for optimal use of natural light and provides stylish, contemporary looks as standard. Designed with features to ensure quick and easy installation, Mardome Trade is the ideal choice for flat roofs with options to satisfy every specification and budget. There are also a range of added extras to choose from to suit every new build or refurbishment project. Mardome Trade is available in standard sizes from 450x450mm up to 2400x1800mm with a choice of low rise dome or optional low rise pyramid shaped glazing units.

Key Features

- **UV Protection:** co-extruded with a UV protective coating to both sides
- **Glazing:** Glazed with Marlon FSX polycarbonate and available in double, triple or quad skin units depending on the level of thermal insulation required
- **Thermal Performance:** Multiple glazing U-value options for efficient thermal performance, Ud-value as low as 1.03W/m^2K
- **Light Transmission:** Available in clear, patterned, bronze or opal glazing depending on light transmission and lighting effect requirements
- **Size Range:** Huge range of sizes and options
- **Durability:** Period of 20 years, (with a warranty available providing a guarantee of 10 years)
- **Fragility:** Class B non-fragile to ACR[M]001 when new and fully fixed
- **Fire Rating:** Class Bs1, d0 to BS EN 13501: Part 1
- **Certificate:** BBA Approved

Applications

Mardome Trade are individual polycarbonate dome rooflights with a PVC-U multi-walled kerb intended for installation on flat roofs of all modern building types to provide natural light.

JULY 2021

Mardome Trade

TB200
Mardome Trade
Datasheet

Product Description
Brett Martin Daylight Systems Mardome Trade Rooflights are individual polycarbonate dome rooflights with a PVC-U multi-walled kerb intended for installation on flat roofs of all modern building types to provide natural light (and ventilation where specified).

Mardome Rooflights are designed and manufactured under an ISO9001 approved quality system. Product options which will help to satisfy differing requirements for light transmission, thermal performance, ventilation and acoustics are available.

Brett Martin Daylight Systems Mardome Trade Rooflight Domes have full BBA approval and are certified under 06/4385, and are also available with optional Secured by Design accreditation.

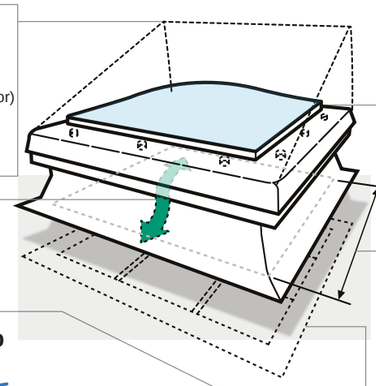
Secured by Design
Police Preferred Specification

Design Features
- Contemporary low rise profile (dome and pyramid options).
- Ud-value to as low as 1.03 W/m2K.
- Constant separation of glazing skins across full width of dome including fixing flange on triple skin and better glazing options. This avoids cold spots and minimises the risk of condensation.
- Components of powered opening domes (230V) are hidden for a unobstructed light well.
- Options to satisfy requirements for light transmission, thermal performance, ventilation and acoustics.
- For ease of installation the tapered kerb foot does not require timber fillets and provides a clean external finish for all roofing types.
- Secured by Design option.
- Suitable for flat roof applications with a pitch of typically 0°-15° – speak to technical for pitches greater than this.

Product Options Summary

Variants
- Fixed
- Fixed Secured by Design
- Manual opening
- Powered with wall-switch (chain actuator)
- Optional Remote Controlled Operation
- Optional Rain Sensor Operation
- Access Hatch

Optional Ventilation
- Manual Hit-and-Miss
- Automatic Humidity Controlled
- Powered extraction



Glazing Shape
- Dome
- Pyramid

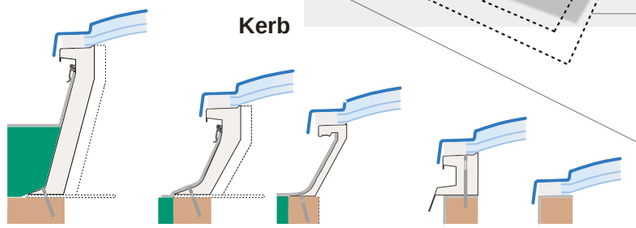
Glazing Tint
- Clear
- Patterned
- Bronze
- Opal

Glazing Type
- Single Skin Polycarbonate
- Double Skin Polycarbonate
- Triple Skin Polycarbonate
- Quad Skin Polycarbonate
- Polycarbonate Dome over:
  - Structured Polycarbonate
  - Argon Filled Glass

Size (roof opening)
See table on page 3

Optional Security Grille

Kerb



Tall 300mm PVCu*

Standard 150mm PVCu*
- kerb type varies with specification

Builders upstand - Direct Fix kerb supplied for vented and opening variants

*Acoustic Pack available for noise reduction

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Appearance
Mardome Trade Rooflights provide a clean interior, and unobtrusive external appearance and therefore complement the surrounding environment. The low profile dome improves the aesthetics and also the clarity of light, whilst the PVC-U kerb can conceal actuators and wiring for an obstruction free lightwell.

Composition
The outer dome of Mardome Trade is manufactured from 3mm impact resistant Marlon FSX Longlife polycarbonate sheet which is co-extruded with a UV protective coating to both sides. The inner domes are manufactured from 2mm impact resistant Marlon FSX Longlife polycarbonate sheeting for double, triple and quad skin options. The kerb and hinge frames are manufactured from Lead & Cadmium free un-plasticised PVC rigid multi-wall extruded profile with internal gloss white finish. The polycarbonate, PVC-U and aluminium which comprise the product can be recycled at the end of useful product life.

Durability
Mardome Trade Rooflights are expected to remain fit for purpose in normal industrial conditions for a period of 20 years (with a warranty available providing a 10 year guarantee) i.e. they will not become perforated, lose significant structural integrity, or distort to the extent of losing weather-tightness. The available warranty also guarantees:
- Polycarbonate used in Mardome rooflights against loss of light transmission, discolouration or loss of impact strength for 10 years.
- Electrical actuators (where present), for a period of 1 year (actuators have a design life of at least 10,000 cycles).
- Insulated glass (where present) used in the construction of the rooflight for 5 years.

Safety Requirements and CDM
Mardome Trade Rooflights achieve Class B non-fragility to ACR[M]001 when new and fully installed in accordance with Brett Martin Daylight Systems' installation guides. Foot traffic on rooflights should always be avoided; impacts such as foot traffic or a falling person may cause damage which could necessitate rooflight replacement.

Security
The design of the Mardome Trade rooflight is such that individual fixings are concealed inside security caps. Removal of these caps to gain access to the fixings is extremely difficult. In addition, polycarbonate rooflights have good resistance to impact, making breakage very difficult. The Mardome security grill option is designed to fit beneath the foot of the kerb to provide additional security where required. It is powder coated in a white finish, and available in all sizes.

Fixed variants of Mardome Trade (SBD option) are accredited by Secured by Design (SBD) based on independently assessed testing in accordance with PAS24:2016.

Please refer to BBA Certificate 06/4385, Section 14 for more details.

Secured by Design
SBD
Police Preferred Specification

Fire Ratings
Building Regulations Approved Document B: Fire Safety, Volume 2 - Buildings other than dwellings (2019 edition, amended May 2020) sets out the fire safety rules for buildings other than dwellings, which can be met by achieving specific European class fire ratings to European standard BS EN 13501. Mardome Trade Rooflights achieve Class B-s1,d0 to BS EN 13501: Part 1, and can therefore also be regarded as B_{ROOF}(t4) as defined in Approved Document B2 paragraph 14.7. For more information please see TB413.

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MARDOME TRADE

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Mardome Trade Datasheet

Available Sizes & Opening Options
Mardome Trade Rooflights are available in a domed or a pyramid profile in a range of sizes listed in the table below.

Mardome Trade Rooflights can also be opened on concealed hinges using actuators (manual or powered) to create a large ventilation area, or with gas struts to provide an access hatch. Opening rooflights can contribute to room ventilation as required by Part F of the Building Regulations. Available sizes for opening units are shown in the table below. Please note that restrictions on opening units apply due to wind loading and weight.

Square Size		Rectangular Size									
600 x 600	450 x 450	**600 x 750**	450 x 600	**750 x 1650**	600 x 1500	**1050 x 1500**	900 x 1350	**1200 x 2400**	900 x 2100	**1500 x 2400**	1350 x 2250
750 x 750	600 x 600	**600 x 900**	450 x 750	**750 x 1800**	600 x 1650	**1050 x 1650**	900 x 1500	**1350 x 1500**	1200 x 1350	**1650 x 1800**	1500 x 1650
900 x 900	750 x 750	**600 x 1050**	450 x 900	**750 x 1950**	600 x 1800	**1050 x 1800**	900 x 1650	**1350 x 1650**	1200 x 1500	**1650 x 1950**	1500 x 1800
1050 x 1050	900 x 900	**600 x 1200**	450 x 1050	**900 x 1050**	750 x 900	**1050 x 1950**	900 x 1800	**1350 x 1800**	1200 x 1650	**1650 x 2100**	1500 x 1950
1200 x 1200	1050 x 1050	**600 x 1350**	450 x 1200	**900 x 1200**	750 x 1050	**1050 x 2100**	900 x 1950	**1350 x 1950**	1200 x 1800	**1650 x 2250**	1500 x 2100
1350 x 1350	1200 x 1200	**600 x 1500**	450 x 1350	**900 x 1350**	750 x 1200	**1050 x 2250**	900 x 2100	**1350 x 2100**	1200 x 1950	**1650 x 2400**	1500 x 2250
1500 x 1500	1350 x 1350	**600 x 1650**	450 x 1500	**900 x 1500**	750 x 1350	**1200 x 1350**	900 x 1050	**1350 x 2250**	1200 x 2100	**1800 x 1950**	1650 x 1800
1650 x 1650	1500 x 1500	**600 x 1800**	450 x 1650	**900 x 1650**	750 x 1500	**1200 x 1500**	900 x 1200	**1350 x 2400**	1200 x 2250	**1800 x 2100**	1650 x 1950
1800 x 1800	1650 x 1650	**750 x 900**	600 x 750	**900 x 1800**	750 x 1650	**1200 x 1650**	900 x 1350	**1500 x 1650**	1350 x 1500	**1800 x 2250**	1650 x 2100
		750 x 1050	600 x 900	**900 x 1950**	750 x 1800	**1200 x 1800**	900 x 1500	**1500 x 1800**	1350 x 1650	**1800 x 2400**	1650 x 2250
Rooflight size Daylight area		**750 x 1200**	600 x 1050	**900 x 2100**	750 x 1950	**1200 x 1950**	900 x 1650	**1500 x 1950**	1350 x 1800		
		750 x 1350	600 x 1200	**1050 x 1200**	900 x 1050	**1200 x 2100**	900 x 1800	**1500 x 2100**	1350 x 1950		
		750 x 1500	600 x 1350	**1050 x 1350**	900 x 1200	**1200 x 2250**	900 x 1950	**1500 x 2250**	1350 x 2100		

Available Sizes Key

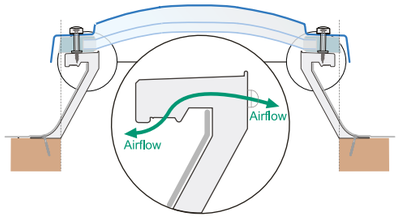
Key	Fixed	Powered Opening (PCD,PCR & PCS)	Manual Opening	Access Hatch
	✓	✓	✓	✓
	✓	✓	✓	
	✓	✓		
	✓			

Opening Options

Opening Type	Description	Geometric Ventilation Area Min	Geometric Ventilation Area Max
Manual Opening (MLD)	Hinged opening rooflight which is operated manually via a worm gear drive with an extension pole	0.300 m^2	0.714 m^2
Powered Opening (PCD/PCR)	Powered hinged opening rooflight with completely concealed operating mechanism. Opened and closed using a control switch or remote control	0.210 m^2	1.176 m^2
Sensor Controlled Powered Opening (PCS)	Powered hinged opening rooflight which includes rain sensors for automatic operation	0.210 m^2	1.176 m^2
Access Hatch*	To gain entry to a roof. Unit held open by two gas struts	N/A	

*Not available with dome over glass

Ventilation
Ventilation can help reduce humidity, and reduce risk of condensation and should be considered in any areas of high humidity. Mardome Rooflight kerbs may be unvented or can incorporate vents. These can either be hit-and-miss manually controlled trickle vents, automatic humidity controlled vents or high powered extraction ventilation.



Ventilation Options

Ventilation Type	Description	Rating
Trickle Ventilation (Hit-and-Miss)	Manually operated trickle ventilation provides background ventilation to the interior	Provides 8400mm² Equivalent Area Ventilation*
Automatic Humidity Controlled Trickle Ventilation	Humidity controlled trickle ventilation is sensor controlled to open and close in response to room humidity levels	Provides 7822mm² Equivalent Area Ventilation and provides superior protection against condensation*
'Powervent' high extraction ventilation	Kerb mounted, electrically powered fans providing excellent extraction rates for a variety of applications	Ventilation levels between 55-880 m³/hr depending on number of fans and rooflight size**

* Trickle ventilation may be restricted on some Access Hatch options.
**1-4 extraction fans available - maximum quantity dependent on rooflight size.

Security Grille Option
Designed to fit beneath the foot of the kerb to provide additional security where required. It is powder coated in a white finish, and available in all sizes where a PVC kerb is an option.

Brett Martin

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Brett Martin Daylight Systems operates a policy of continuous product improvement, and reserves the right to alter specifications at any time without notice. Every effort has been taken to ensure all details contained in this document are correct at the time of going to press but this document should be used only as a guide and does not in any way form part of a contract or warranty. It is the customer's responsibility to ensure that the product is suitable for the actual conditions of use, which are beyond the control of Brett Martin Daylight Systems.

Mardome Trade

TB200
Mardome Trade
Datasheet

Standard Glazing Values

Mardome Trade Rooflights are available with a selection of glazing tint options depending on the required level of light transmission.

Glazing Performance										
Tint	Light Effect	Light Transmission			Shading Coefficient			Transmittance (G-Value)		
		Double Skin	Triple Skin	Quad Skin	Double Skin	Triple Skin	Quad Skin	Double Skin	Triple Skin	Quad Skin
Clear	High Visibility	85%	78%	72%	0.84	0.76	0.70	0.73	0.66	0.61
Opal	Diffused light & Solar Control	35%	32%	30%	0.38	0.34	0.32	0.33	0.30	0.28
Patterned	Privacy	78%	72%	66%						
Bronze	Solar Control	39%	36%	33%						

Thermal Performance

The thermal transmittance of Mardome Trade Rooflights is measured by the Guarded Hot Box method according to BS EN ISO 12567-2: 2005. The performance is declared as the U_d-value (defined in accordance with NARM NTD2). This performance, and the centre pane U-value of the glazing system, is shown in the table below.

Part L Building Regulations require a U-value of at least 2.2W/m²K: Brett Martin Daylight Systems recommend the use of at least triple skin rooflights in all applications.

Mardome Trade (triple skin and better insulated variants) are designed for optimal thermal performance and resistance to condensation. This provides full insulation across the whole width of the rooflight (including the fixing flange), eliminating any cold spots associated with traditional methods of dome rooflight construction and giving a much higher f-factor. The elimination of cold spots and the highly insulated frame means that these areas are even more resistant to condensation than the main areas of glazing, where performance is governed by U-value. See BBA certificate 06/4385 section 8 ”Condensation risk” for further details.

Thermal Performance		
Rooflight Variant	Centre Pane U-Value (W/m²K)	Ud-Value (W/m²K)
Double Skin Polycarbonate	2.7	1.39 - 2.41
Triple Skin Polycarbonate	1.8	1.17 - 1.67
Quad Skin Polycarbonate	1.4	1.08 - 1.35
Structured Polycarbonate Inner Glazing	1.2	1.03 - 1.19
Argon Filled Glass Inner Glazing	0.9	0.93 - 1.02

*Ud value varies by size and specific configuration

Acoustic Performance

For applications where acoustic performance is particularly important the Mardome acoustic pack is an option. The acoustic pack is not available with opening or vented products, but is offered with all other variants and has a positive contribution on acoustic attenuation levels and rain penetration noise and can assist in achieving BREEAM credits. For a triple skin polycarbonate glazed Mardome Trade the addition of an acoustic pack reduces the rain noise penetration by LiA=15dB, (when every 10dB represents a halving of noise levels).

An alternative to the acoustic pack is to specify a dome with the argon filled double glazed glass inner option. Whilst not as effective as the Acoustic Pack, this option is a available in conjunction with ventilation, and in some opening options, if required. Mardome Rooflights are independently tested for Rain Noise Penetration to BS EN 140-18: 2006.

Acoustic Performance		
Rooflight Variant	Rain Noise Penetration (LiA)	Airborne Sound Index (Rw)
Standard Single Skin Polycarbonate		12 dB
Standard Double Skin Polycarbonate		20 dB
Standard Triple Skin Polycarbonate	61.8 dB	22 dB
Argon Filled Glass Inner Glazing	53.9 dB	
Triple Skin Polycarbonate with acoustic pack*	46.7 dB	

10dB reduction equates to a drop of 50% in the sound level.
*Acoustic pack is only available with fixed, unventilated products.

Wind and Snow Loads

Mardome Rooflights have been independently tested to show that when correctly fitted in accordance with our instructions, they will resist wind loads calculated in accordance with BS EN 1991-1-4: 2005, and imposed loads in accordance with BS EN 1873: 2005.

Please refer to BBA Certificate 06/4385, Section 9 for more info.

Resistance to Snow & Wind Loads			
Rooflight Variant	Dimensions (mm)	Snow Load (N.m²)	Wind Load (N.m²)
Domed	1200 x 2400	1125	1500
Pyramid	1500 x 1500	1750	3000

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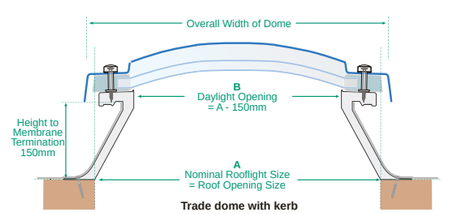
MARDOME TRADE

Mardome Trade

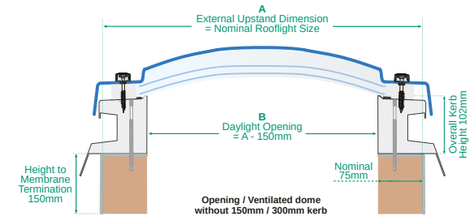
TB200
Mardome Trade
Datasheet

Product Dimensions

Mardome Trade Rooflights offer differing kerb options depending on project specification. The Mardome 150mm or 300mm Kerb is offered for use when there is no pre-existing upstand, or when over-sailing the current upstand is prefered. When the rooflight is to be fitted to an existing upstand, unventilated Trade rooflights are to be fitted directly, whilst ventilated or opening Trade rooflights are supplied complete with a Direct Fix kerb.



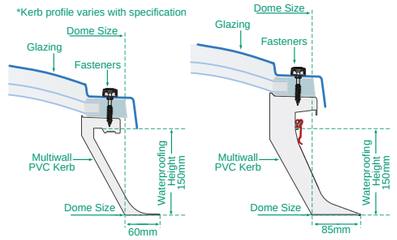
Trade dome with kerb



Opening / Ventilated dome without 150mm / 300mm kerb

Product Overall Height & Weight							
Rooflight Variant	Nominal Size	Direct Fix Kerb		150mm Kerb		300mm Kerb	
		H (mm)	W (kg)	H (mm)	W (kg)	H (mm)	W (kg)
Fixed Trade Dome	600 x 600	197	7.1	311	10.9	461	13.3
	2400 x 1800	313	62.9	427	71.9	577	79.7
Opening Trade Dome	600 x 600	232	12.1	346	15.0	496	17.4
	1800 x 1800	348	54.1	462	61.6	612	68.3

Note: Weights based on triple skin dome.
Not all product options available - contact Brett Martin Daylight Systems for advice



Mardome Trade Rooflight products have differing height and weight. As this value varies with rooflight size and specification, a range of values are quoted in the table above. For more details contact Brett Martin Daylight Systems.

Installation, Handling, Maintenance & Storage

Full installation details, maintenance and product care details, can be found in the relevant Technical Bulletins.

Technical Bulletins	
Code	Description
TB186	Installation for Mardome Trade on 150mm, 300mm AND Direct Fix kerb
TB188	Installation for Mardome Trade with Manual (MLD and Access Hatch) Opening Options
TB189	Installation for Mardome Trade with PCD/PCR/PCS Powered Opening Options
TB193	Installation Mardome Trade on 150mm and 300mm Kerb with acoustic pack
TB194	Installation Mardome Rain Senosor PCS Units Only
TB196	Installation Mardome Trade Powervent
TB203	Polycarbonate Dome: Product care before & after installation
TB287	Installation Mardome Security Grille
TB404	Installation Mardome Trade Secured by Design
COSHH12	COSHH Data Sheet for Dome Rooflights - Product Safety and Handling Data Sheet

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Brett Martin Daylight Systems operates a policy of continuous product improvement, and reserves the right to alter specifications at any time without notice. Every effort has been taken to ensure all details contained in this document are correct at the time of going to press but this document should be used only as a guide and does not in any way form part of a contract or warranty. It is the customer’s responsibility to ensure that the product is suitable for the actual conditions of use, which are beyond the control of Brett Martin Daylight Systems.

Mardome Reflex

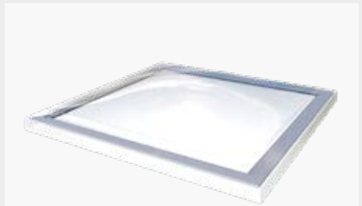
Mardome Reflex is a contemporary glazing only unit designed specifically for refurbishment projects where the glazing only needs to be replaced. It is available in a curved dome or pyramid profile in either clear, bronze or opal tint or a textured glazing option. The unit is supplied with a fixing kit including weathertight washers and cover plugs. Manufactured from Marlon FSX Longlife polycarbonate, this glazing unit is up to 200 times stronger than glass. The high resistance to breakage and adverse weather conditions means Mardome Reflex is very safe and reliable.

Key Features

- UV Protection: Outer dome sheet co-extruded with a UV protective coating on both sides
- Glazing: glazed with Marlon FSX Longlife polycarbonate and available in single, double, or triple skin units depending on level of thermal insulation required
- Thermal Performance: U-value as low as 1.8W/m^{2}K for triple skin, 2.7 for double skin, 5.5 for single skin
- Light Transmission: Determined by chosen tint and selected no. of skins (ranging from 32% up to 90%)
- Size Range: 450mm x 450mm up to 1800mm x 2400mm
- Durability: Guaranteed for 10 years (designed to remain fit for purpose in normal industrial conditions for 20 years.
- Fragility: Class B non-fragility to ACR[M]001
- Fire Rating:
  Class B-s1, d0 to BSEN 13501-1:2002

Applications

The Mardome Reflex glazing only unit is suitable for refurbishment projects on flat roofs of all modern building types.



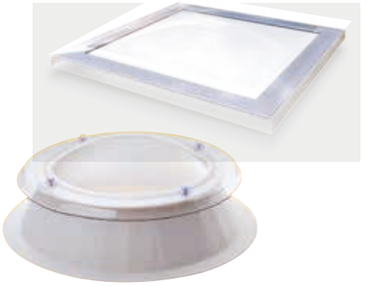
Mardome Reflex **Mardome Circular**

TB201
Mardome Reflex
& Circular Datasheet

Product Description
Brett Martin Daylight Systems Mardome Reflex is an individual polycarbonate 'glazing only' dome rooflight intended for refurbishment projects on flat roofs of all modern building types to provide natural light. Mardome Circular is available as 'glazing only' or with 175mm tall kerb, if required.

Mardome Rooflights are designed and manufactured under an ISO9001 approved quality system. Product options which will help to satisfy differing requirements for light transmission and thermal performance are available.

Brett Martin Daylight Systems Mardome Reflex and Circular Rooflight Domes have full BBA approval and are certified under 06/4385.



Design Features
- Glazing only for refurbishment or economical circular applications.
- Contemporary design (dome and pyramid options).
- Options to satisfy requirements for light transmission and thermal performance.
- Centre pane U-Value to as low as 1.8 W/m2K
- Suitable for flat roof applications with a pitch of typically 0°-15° – speak to technical for pitches greater than this.

Appearance
Mardome Reflex is a 'glazing only' specification dome to fit existing upstands. The low profile dome or pyramid shape improves the aesthetics and also the clarity of light.

Mardome Circular domes provide an economical solution where circular rooflights are required. They are available to fit existing upstands or can be supplied with an insulated GRP kerb. It's contemporary design gives a clean white internal appearance and unobtrusive exterior.

Composition
The outer dome of Mardome Reflex and Circular is manufactured from 3mm impact resistant Marlon FSX Longlife polycarbonate sheet which is co-extruded with a UV protective coating to both sides. The inner domes are manufactured from 2mm impact resistant Marlon FSX Longlife polycarbonate sheeting for double and triple skin options. The polycarbonate which comprise the product can be recycled at the end of useful product life.

The Mardome Circular kerb is manufactured from insulated GRP with a gloss gel coat finish to the interior.

Durability
Mardome Reflex and Circular Rooflights are expected to remain fit for purpose in normal industrial conditions for a period of 20 years (with a warranty available providing a 10 year guarantee) i.e. they will not become perforated, lose significant structural integrity, or distort to the extent of losing weather-tightness. The available warranty also guarantees polycarbonate used in Mardome rooflights against loss of light transmission, discolouration or loss of impact strength for 10 years.

Safety Requirements and CDM
Mardome Reflex and Circular Rooflights achieve Class B non-fragility to ACR[M]001 when new and fully installed in accordance with Brett Martin Daylight Systems' installation guides. Foot traffic on all rooflights should always be avoided; impacts such as foot traffic or a falling person may cause damage which may necessitate rooflight replacement.

Security
Mardome Reflex and Circular rooflights are manufactured from polycarbonate which has an impact strength 200x greater than glass, therefore making breakage very difficult. Please refer to BBA Certificate 06/4385, Section 14 for more details.

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Mardome Reflex Mardome Circular

TB201
Mardome Reflex
& Circular Datasheet

Fire Ratings
Building Regulations Approved Document B: Fire Safety, Volume 2 - Buildings other than dwellings (2019 edition, amended May 2020) sets out the fire safety rules for buildings other than dwellings, which can be met by achieving specific European class fire ratings to European standard BS EN 13501. Mardome Trade Rooflights achieve Class B-s1,d0 to BS EN 13501: Part 1, and can therefore also be regarded as B_{ROOF}(t4) as defined in Approved Document B2 paragraph 14.7. For more information please see TB413.

Available Sizes & Options
Available in 70 mm and 100 mm flat flanges, Mardome Reflex can be mechanically fixed to existing kerbs of varying dimensions.

Mardome Reflex and Circular are fixed unventilated only specification domes. If ventilation or opening options are required, please see our Mardome Trade range of rooflights.

Square	Rectangular									Circular
450 x 450	600 x 750	750 x 900	900 x 1050	1050 x 1200	1200 x 1350	1350 x 1500	1500 x 1650	1650 x 1800	1800 x 1950	600
600 x 600	600 x 900	750 x 1050	900 x 1200	1050 x 1350	1200 x 1500	1350 x 1650	1500 x 1800	1650 x 1950	1800 x 2100	750
750 x 750	600 x 1050	750 x 1200	900 x 1350	1050 x 1500	1200 x 1650	1350 x 1800	1500 x 1950	1650 x 2100	1800 x 2250	900
900 x 900	600 x 1200	750 x 1350	900 x 1500	1050 x 1650	1200 x 1800	1350 x 1950	1500 x 2100	1650 x 2250	1800 x 2400	1050
1050 x 1050	600 x 1350	750 x 1500	900 x 1650	1050 x 1800	1200 x 1950	1350 x 2100	1500 x 2250	1650 x 2400		1200
1200 x 1200	600 x 1500	750 x 1650	900 x 1800	1050 x 1950	1200 x 2100	1350 x 2250	1500 x 2400			1350
1350 x 1350	600 x 1650	750 x 1800	900 x 1950	1050 x 2100	1200 x 2250	1350 x 2400				1500
1500 x 1500	600 x 1800	750 x 1950	900 x 2100	1050 x 2250	1200 x 2400					1800
1650 x 1650										
1800 x 1800										

Standard Glazing Values
Mardome Reflex and Circular Rooflights are available with a selection of glazing tint options depending on the required level of light transmission.

Glazing Performance								
Tint	Light Effect	Light Transmission			Shading Coefficient		Transmittance (G-Value)	
		Single Skin	Double Skin	Triple Skin	Double Skin	Triple Skin	Double Skin	Triple Skin
Clear	High Visibility	90%	85%	78%	0.84	0.76	0.73	0.66
Opal	Diffused light & Solar Control	37%	35%	32%	0.38	0.34	0.33	0.30
Patterned	Privacy	84%	78%	72%				
Bronze	Solar Control	54%	39%	36%				

Thermal Performance
The thermal transmittance of Mardome Rooflights is measured by the Guarded Hot Box method according to BS EN ISO 12567-2: 2005.

Part L Building Regulations require a U-value of at least 2.2W/m²K: Brett Martin Daylight Systems recommend the use of at least triple skin rooflights in all applications.

Thermal Performance	
Rooflight Variant	Centre Pane U-Value (W/m²K)
Single Skin Polycarbonate	5.5
Double Skin Polycarbonate	2.7
Triple Skin Polycarbonate	1.8

Wind and Snow Loads
Mardome Rooflights have been independently tested to show that when correctly fitted in accordance with our instructions, they will resist wind loads calculated in accordance with BS EN 1991-1-4: 2005, and imposed loads in accordance with BS EN 1873: 2005.

Please refer to BBA Certificate 06/4385, Section 9 for more info.

Resistance to Snow & Wind Loads			
Rooflight Variant	Dimensions (mm)	Snow Load (N.m²)	Wind Load (N.m²)
Domed	1200 x 2400	1125	1500
Pyramid	1500 x 1500	1750	3000

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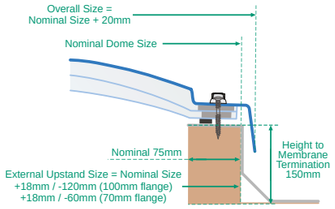
Mardome Reflex Mardome Circular

TB201
Mardome Reflex
& Circular Datasheet

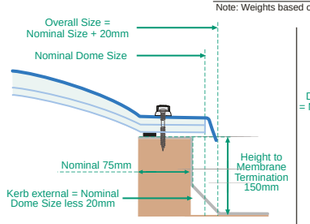
Product Dimensions
Mardome Reflex and Circular Rooflight products have differing height and weight. As this value varies with rooflight size and specification, a range of values is quoted below. For more details contact Brett Martin Daylight Systems.

Product Overall Height & Weight			
Rooflight Variant	Nominal Size	Height (mm)	Weight (kg)
Reflex Dome direct to builders upstand	450 x 450	54	2.1
	2400 x 1800	178	37.9
Circular Dome direct to builders upstand	600 x 600	80	3.1
	1800 x 1800	241	27.5
Circular Dome on GRP Kerb	600	255	6.1
	1800	416	36.6

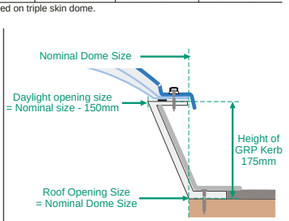
Note: Weights based on triple skin dome.



Mardome Reflex



Mardome Circular
on Builders Upstand



Mardome Circular
with GRP Kerb

Installation, Handling, Maintenance & Storage
Full installation details, maintenance and product care details, can be found in the relevant Technical Bulletins.

Technical Bulletins	
Code	Description
TB185	Installation for Mardome Reflex AND Circular
TB203	Polycarbonate Dome: Product care before & after installation
COSHH12	COSHH Data Sheet for Dome Rooflights - Product Safety and Handling Data Sheet

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