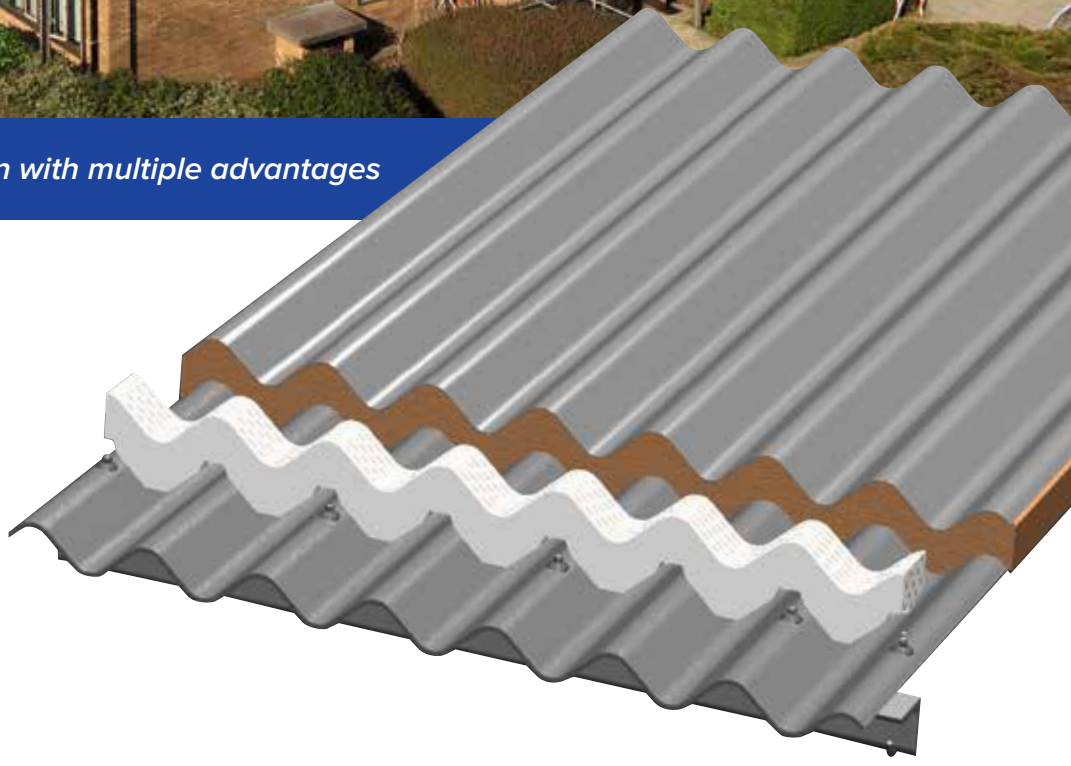
FILON®

OVER-ROOFING
for lightweight roof refurbishment

The cost-effective solution with multiple advantages



OVER-ROOFING
for lightweight roof refurbishment

The cost-effective solution with multiple advantages

The Filon Over-Roofing system provides a durable, lightweight, weather tight solution for the refurbishment of old roofs on factories, warehouses and other metal or fibre cement clad buildings.

Suitable for all kinds of profiled roofs

Although the system was designed for use on old fibre cement profiled sheet roofs it may also be easily adapted for old metal profiled sheet roofs. The sheets can be specified to match the profile of the existing roof and are available with a matt finish as standard and in any colour.

No compromise in daylight levels

By matching the existing roof profile, sheets can be laid to accurately match existing rooflight openings, ensuring maximum daylight levels are maintained.

Fast, easy, cost-effective installation

Filon Over-Roofing sheets are available in long lengths to reduce the number of end laps required which can also speed up the installation time. As a one-fix system, Filon Over-Roofing can make considerable savings in on-site time.

Minimal disturbance to building users

The Filon Over-Roofing system is designed to minimise disturbance within the building so that normal operations can continue. In almost all cases and there is no need to remove fasteners from the existing roof.

Minimal extra load on roof structure

The system is very light and is therefore suitable for roofs that are at the limits of their design load capacity. It should be noted that old asbestos fibre cement roof sheets can absorb around 30% of their dry weight in water, therefore once the Over-Roofing is installed and the existing roof has dried out, the extra load on the roof structure is minimal. In some cases the overall weight of the roof can even be less, due to reduced moisture levels.

Improved insulation

Glass fibre quilt can be incorporated into the system to upgrade insulation values to improve thermal performance and energy efficiency.

No asbestos handling or disposal problems

Filon Over-Roofing eliminates considerable costs and landfill taxes implemented when asbestos has to be removed.

Proven in use

Filon Over-Roofing has been proven in hundreds of applications around the UK for clients including: British Steel; Royal Mail; Granada TV; Jewsons; Rolls Royce; Comet; Marks & Spencer and many, many more.

Before Over-Roofing

During the project

After Over-Roofing

SYSTEM COMPONENTS

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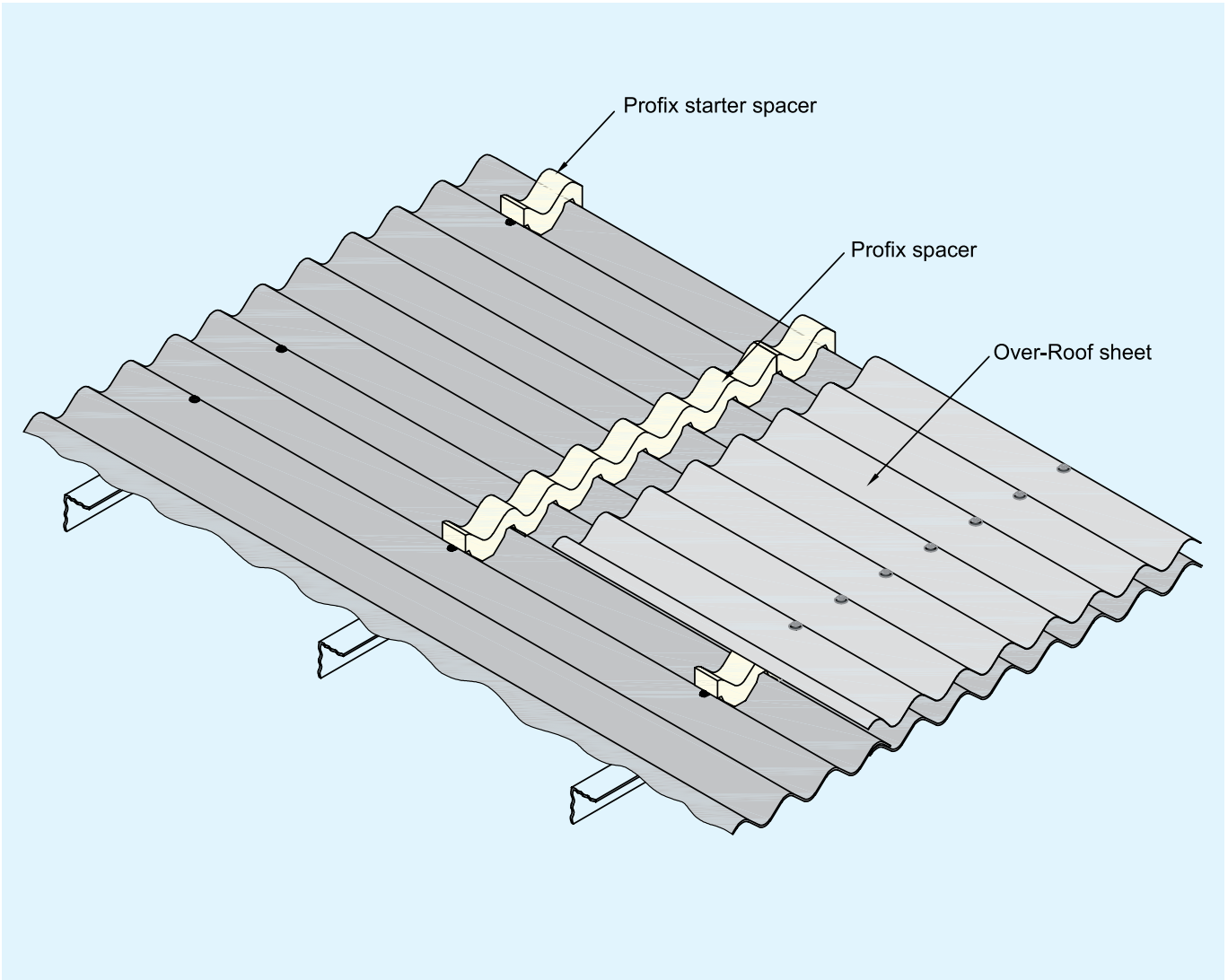
The Filon Over-Roofing system is comprised of opaque, profiled Glass Reinforced Polyester (GRP) sheets for the main roof areas and translucent GRP sheets for any rooflight areas. The Filon Over-Roofing sheets match the profile of the existing roof sheets.

There are high compression resistance Filon Profix polyethylene double profiled spacers that match the existing roof sheet profile and the Filon Over-Roofing sheet profile. Profix spacers have a design feature that allows them to fit over the existing fasteners so that they remain undisturbed.

Filon ridge flashings are available to match certain small ridge types. Large ridge flashings, other flashings, fasteners, and sealants are supplied by others.

Roof edge detail showing Filon Profix Spacer

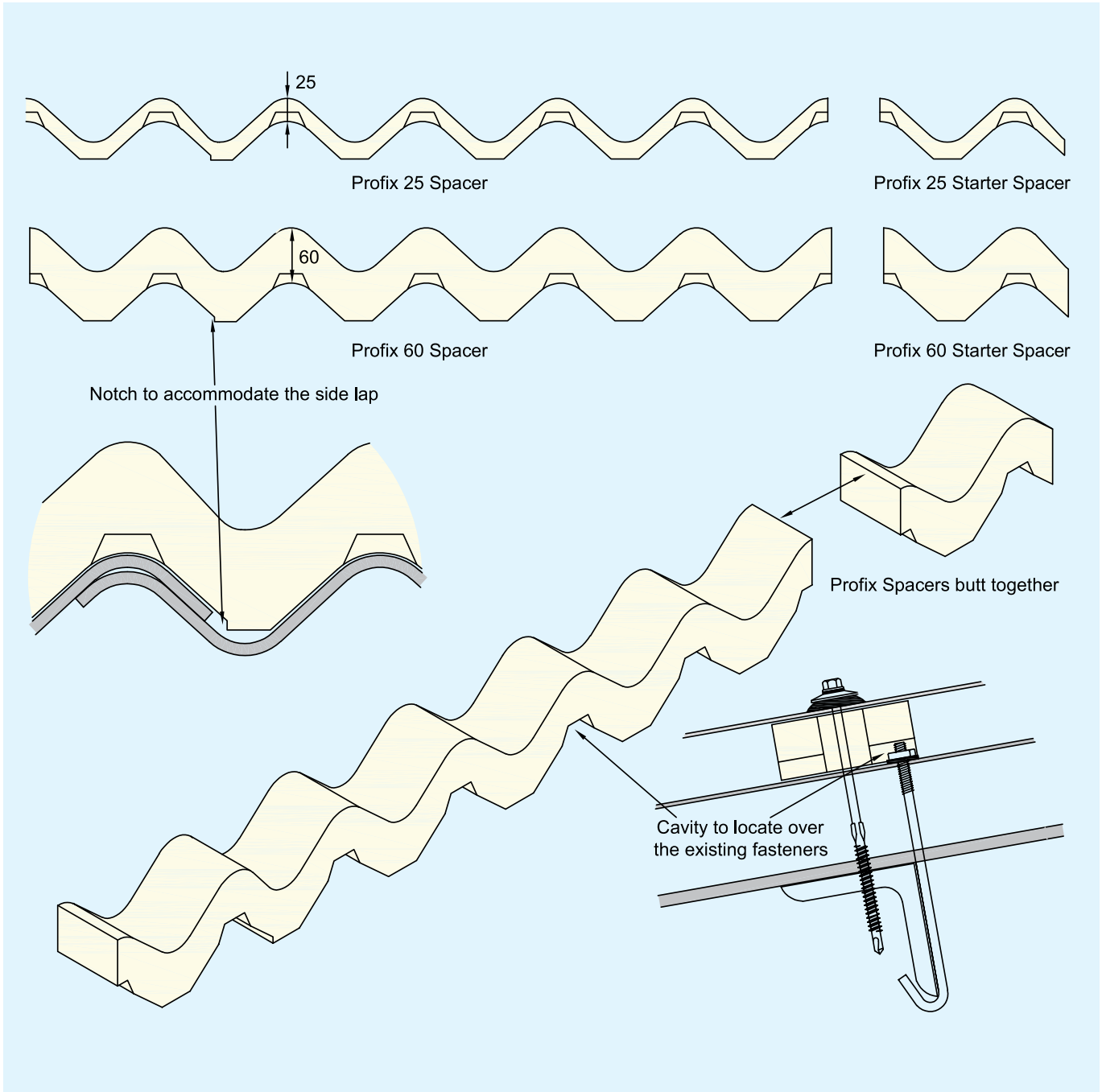


PROFIX SPACERS

Filon Profix spacers are available in two depth sizes: 25mm and 60mm.

The 25mm deep Profix 25 may be used when there is no or little requirement for the inclusion of insulation as part of the installation. The 60mm deep Profix 60 will allow the use of quilt insulation up to 100mm depth that will compress within the cavity between the existing roof and the Filon Over-Roof. Multi-foil insulation may also be used with Profix 25 and 60 spacers.

Profix spacers are 75mm wide and when used on an asbestos fibre cement roof for example, secured with hook bolts, they will fit over the bolts once they have been cropped close to the nut. The Profix spacer will be aligned over the purlin allowing the Filon Over-Roofing sheets to be fixed to the purlins with conventional roofing screw fasteners provided that the purlins are hot rolled or cold rolled steel or timber. Alternative fasteners are available for other purlin types, contact the Filon Technical Department for details.



OVER-ROOFING SHEETS

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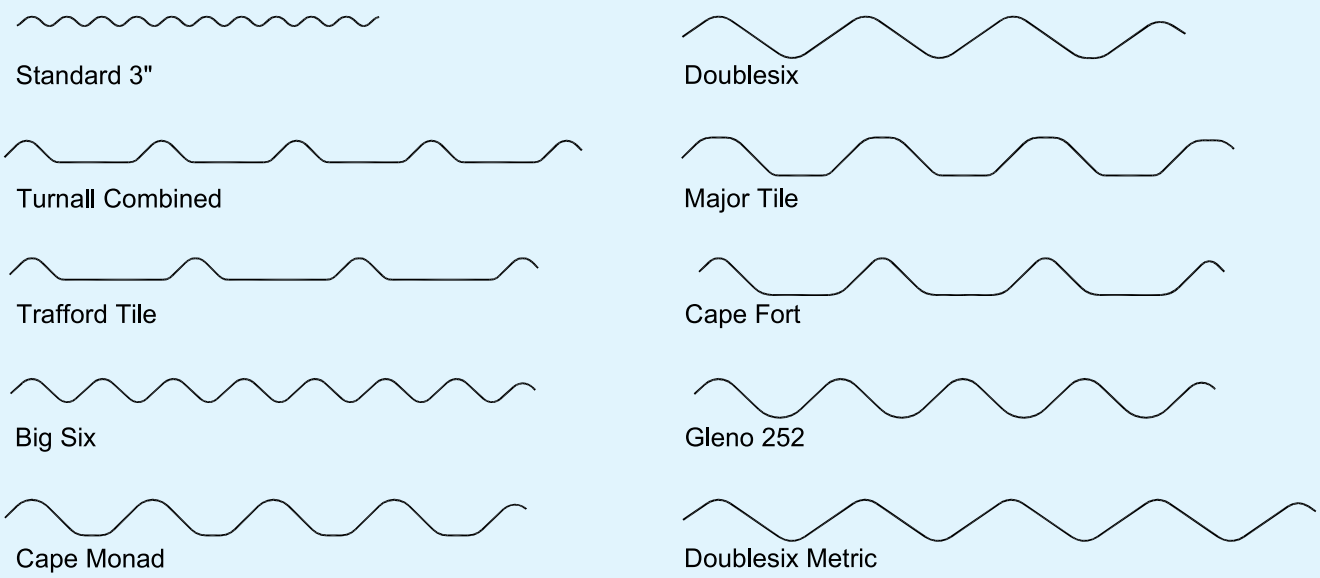
Filon Over-Roofing sheets are available to match most asbestos cement profiles, fibre cement profiles and metal profiles that have been used over the years. In the unlikely event that we do not have a particular profile available it is a simple matter for us to tool up to match the profile in question.

Most of the older profiles that we offer may be found in the Filon Profile Book that is available to download from our website. Some of the common asbestos fibre cement profiles and fibre cement profiles are shown below.

Profiles



Sheet Types

Filon Over-Roofing sheets are available in various thicknesses and reinforcement types to provide the level of load resistance and durability required. Note that actual sheet weight will depend on the profile type, the weights below are approximate.

Over-Roofing Sheet Type	Thickness & Nominal Weight	Reinforcement	Application	Durabilty Guarantee
OP24E for Main Rooflights CE24E for Rooflights	1.3mm 2.3 - 2.4kg/m²	Single Layer	Used for normal roof areas that are not subjected to high wind loads, foot traffic or other abnormal loads. The roof should still be treated as fragile once installation is completed.	12 years
OPDR24E for Main Roof CEDR24E for Rooflights	1.3mm 2.3 - 2.4kg/m²	Double Layer	May be used in areas of higher wind loads or to provide an increased safety factor.	20 years
OPDR30E for Main Roof CEDR30E for Rooflights	1.7mm 2.9-3.0kg/m²	Double Layer	May be used in areas of higher wind loads or to provide an increased safety factor.	25 years
Opaque Supasafe E for Main Roof. Translucent Supasafe E for Rooflights	2.3mm 4.0-4.3kg/m²	Triple Layer	May be used to provide optimum safety and load resistance.	30 years

OVER-ROOFING SHEETS (contd.)

Length

Filon Over-Roofing sheets are supplied in lengths up to 13m. The Filon Over-Roofing sheets may be supplied in lengths to match the existing roof sheets or in longer lengths to reduce the number of end laps. It should be noted that longer length sheets may become distorted along their length if the existing underlying roof sheets are not straight and true from ridge to eaves.

Extra care should be taken when handling and moving longer length sheets which should be avoided in windy conditions.

Fire Resistance

To meet the requirements of Building Regulations Filon Grade 300, designated SAB to BS476 Part 3, may be used as an external roof covering, including rooflights, without restriction irrespective of distance to a boundary.

For the inner skin of a double or multi layered rooflight, Filon Grade 104 that is rated Class 1 to BS476 Part 7 should be used.

Filon Grade 101 that is designated Class 0 by definition in Building Regulations is also available.

For further information, please refer to Filon Technical Information Sheet TIS003.

Colours and Finish

Filon Over-Roofing sheets for the main roof are available in standard cement grey, Filon reference 931, British Standard colour 00A05, but any British Standard or RAL colour may be supplied subject to availability and minimum order.

Filon Over-Roofing sheets and externally exposed rooflights are protected by a UV absorbing clear film as follows: -

Filon Protect Anti-Glare: This provides excellent UV and weather resistance, has a matt finish and is the standard protection offered for the main Over-Roofing areas.

Filon Protect: This provides the same level of protection as Protect Anti-Glare and has a gloss finish. It is the minimum level of protection offered for rooflights.

Filon Citadel Plus: This is the next level of protection and may be used where there are higher levels of pollution, UV exposure or a marine environment. It provides 50% extra protection compared to Protect Anti-Glare and Protect.

Filon Fortress: This is currently the top level of protection offered and may be used in very harsh environmental conditions. It provides 100% extra protection compared to Protect Anti-Glare and Protect.

Typical Values

Average Glass Content:	35%
Barcol Hardness:	50 - 55
Thermal Conductivity (K):	0.15W/m°C
Thermal Transmittance (U):	5.7W/m²K
Thermal Movement, Coefficient of Linear Expansion:	25 x 10^{-6} per °C
Constant Operating Temperatures:	-20°C to +80°C
Liquids:	Water absorption 0.25% after 24 hours at 20°C
Biological:	Resistant to micro-organisms, fungi, larvae, insects
Compatibility:	No chemical reaction with other construction materials

U-VALUES

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The Filon Over-Roofing system provides a lightweight roof refurbishment system for roofs that may be at the limit of their load bearing capacity or that have a requirement to maintain the original appearance of the roof as closely as possible.

Filon Profix spacers will allow the use of quilt insulation up to a maximum of 100mm compressed down to 60mm or Multifoil insulation. This would provide an improvement in the roof insulation for a single skin unheated building and when Building Regulations allow for technical or cost payback reasons, on heated buildings. The Filon Over-Roofing system will provide a solution when other systems that have no provision for insulation or that are too heavy for the roof in question can not. Filon Over-Roofing sheets may also be used with a bracket and bar system if thicker insulation is required to achieve a lower U-Value.

If there are any doubts regarding what the insulation requirements are for a roof refurbishment project, consult the Local Authority Building Control office.

The table below provides the typical U-Values that may be achieved when using the Filon Over-Roofing system with various insulation types on old asbestos cement roofs.

Asbestos Fibre Cement Roof Type	Existing Roof U-Value. W/m²K	Profix 25, No Insulation. W/m²K	Profix 25, 50mm Fibreglass Insulation Compressed to 25mm. W/m²K	Profix 60, 100mm Fibreglass Insulation Compressed to 50mm. W/m²K	Multifoil Insulation with a K Value of 0.034W/mK. W/m²K
Single Skin	6.0	2.56	1.19	0.60	0.48
Double Skin, No Spacer, 25mm Fibre Insulation	1.08	0.89	0.64	0.42	0.36
Double Skin, 19mm Spacers, 25mm Fibre Insulation	0.91	0.76	0.56	0.38	0.33
Double Skin, 19mm Spacers, 60mm Fibre Insulation	0.60	0.53	0.43	0.32	0.28
Double Skin, 32mm Spacers, 80mm Fibre Insulation	0.55	0.49	0.40	0.30	0.27
Over Purlin Foil Backed Plasterboard, 19mm Spacers	1.80	1.30	0.82	0.49	0.41
Over Purlin Foil Backed Plasterboard, 50mm Spacers, 60mm Fibre Insulation	0.56	0.50	0.41	0.31	0.27

There are Multifoil insulation products on the market that can provide a range of insulation levels, the one listed in the table above being one example. Please contact the Filon Technical Department should you require assistance.

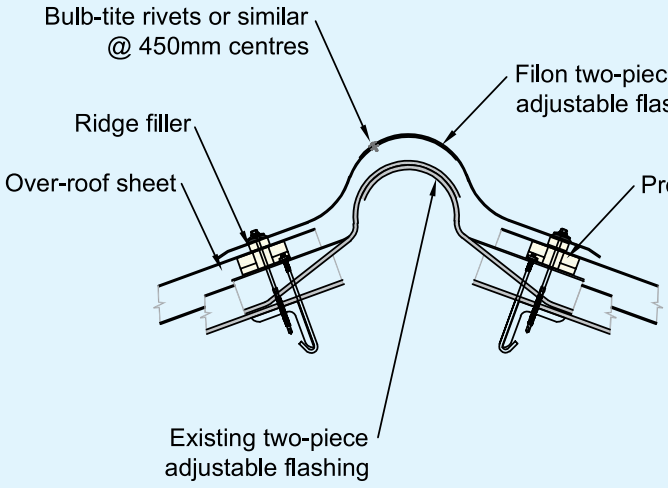
FLASHINGS

Machine made Filon GRP ridge flashings are available in 3.15m lengths that provide a 3m cover length. Two ridge flashing types are available: Two-piece, plain wing adjustable flashings to match the two-piece adjustable close fitting flashings used on older asbestos cement roofs; Filon GRP cranked crown, plain wing flashings to suit close fitting cranked crown flashings with a 900mm girth used on more recent asbestos cement and fibre cement roofs. Note that ridge fillers supplied by others, are required with Filon GRP plain wing flashings.

Moulded GRP close fitting cranked crown flashings to suit a 1.8m girth are available from others.

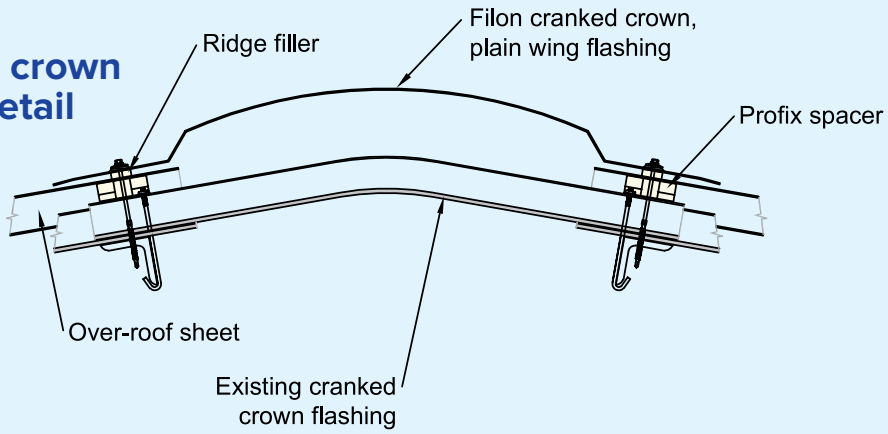
Plain wing angled, moulded GRP ridge flashings and aluminium or coated steel flashings by others may be used with the Filon Over-Roofing system when appropriate to do so. Ridge fillers supplied by others may be required.

Other flashings such as barge boards may be re-used if in good condition and circumstances allow. Moulded GRP, aluminium or coated steel flashings may also be used.



Typical two-piece ridge flashing detail

Typical cranked crown ridge flashing detail



TYPICAL FIXING ARRANGEMENTS

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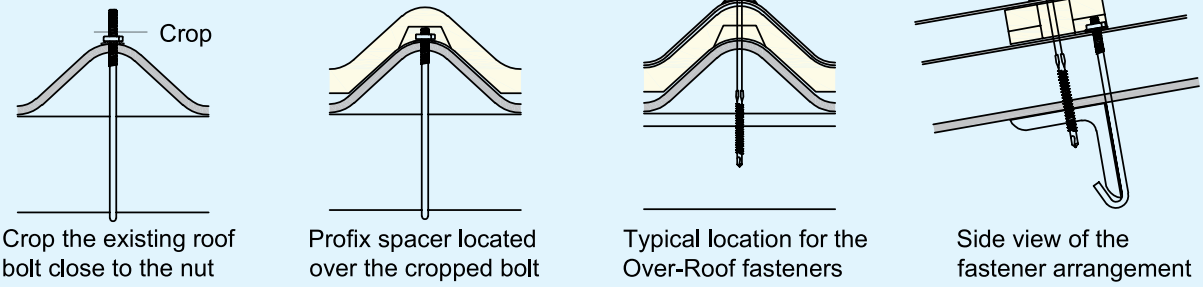
Installation of the Filon Over-Roofing sheeting should always commence at the same end of the roof as the original sheeting was started. The sheet tiers will therefore be laid in the same sequence and the direction of lay will be the same.

The Profix spacers may be temporarily secured with countersunk screws in the profile troughs prior to the Over-Roofing sheets being fixed and should be bedded in wallpaper paste or similar along the fixing line. The use of wallpaper paste will also encapsulate any fibre swarf as the fixing screw penetrates the existing roof sheeting. See Page 11 for more information.

The drawings below show the typical fixing recommendations for an asbestos fibre cement sheeted roof secured with hook bolts and self drill and tap screws for the Over-Roofing sheets. Alternative Over-Roofing fasteners are available for different purlin types. Contact the Filon Technical Department for details. Note that the Over-Roofing fasteners should incorporate suitable sealing washers such as BAZ washers.

Typical Fixing Sequence

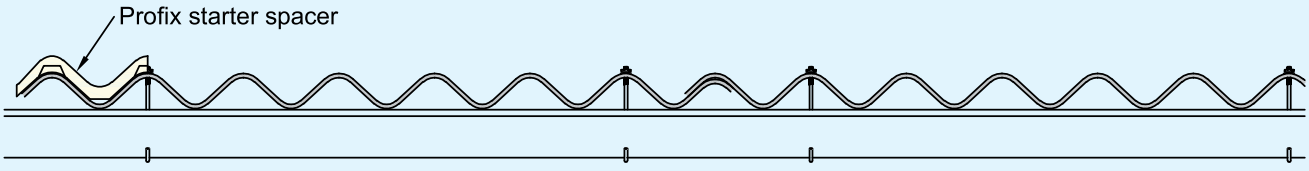


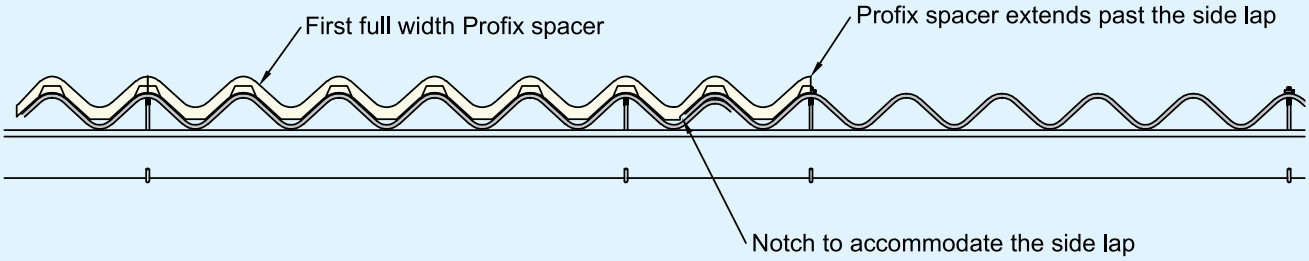
Crop the existing roof bolt close to the nut

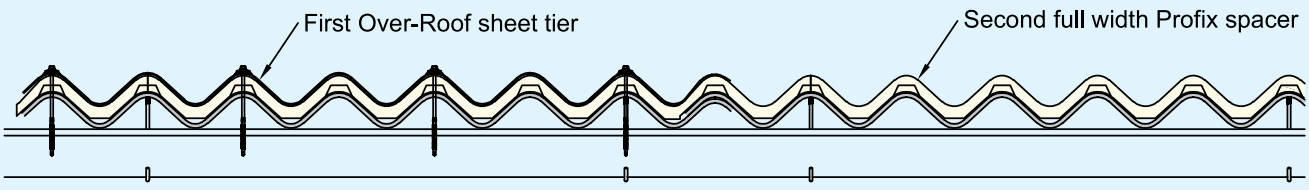
Profix spacer located over the cropped bolt

Typical location for the Over-Roof fasteners

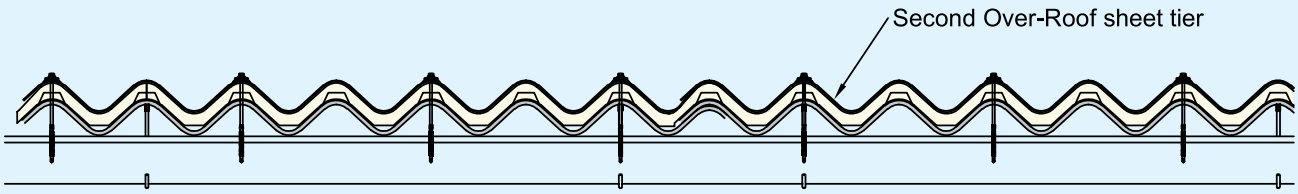
Side view of the fastener arrangement







TYPICAL FIXING ARRANGEMENTS (contd.)

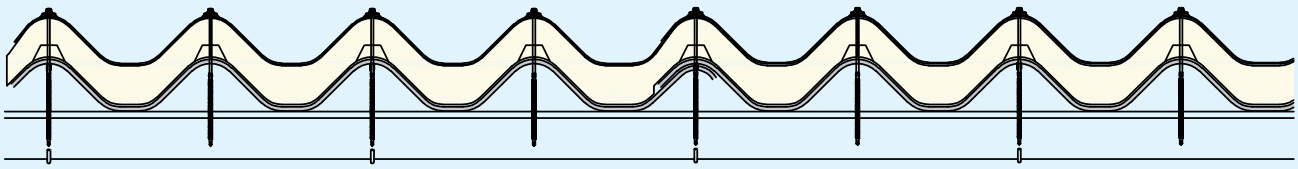


Frequency of fasteners may depend on the Over-Roofing sheet type, purlin spans, wind loads and profile type. Big Six profiled Over-Roofing sheets for example, may be fixed at alternate profile corrugations in general roof areas as shown above, to standard spanning purlins on roofs with normal exposure. For roofs that are subject to high wind loads or in roof areas that have high local loadings such as at the ridge, eaves or at verges, fasteners should be located at every profile corrugation.

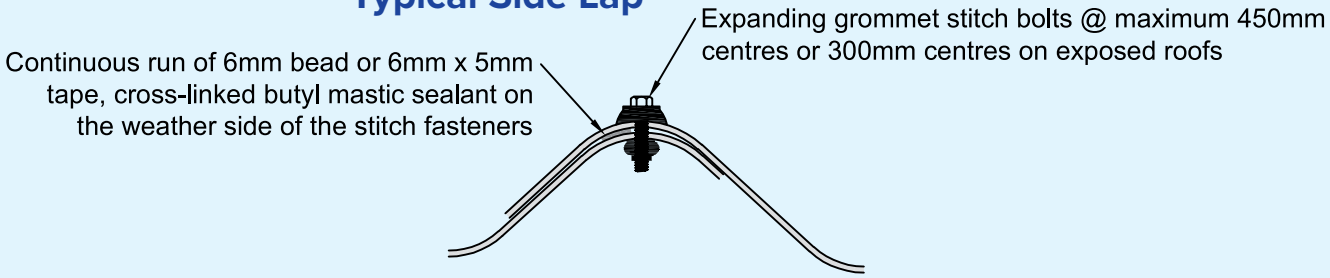
Profiles with a 200mm plus pitch between the corrugations such as the example below, should be fixed at every corrugation.

Irrespective of the profile type, with the exception of Standard 3", Over-Roofing sheets should be fixed at every corrugation at end laps.

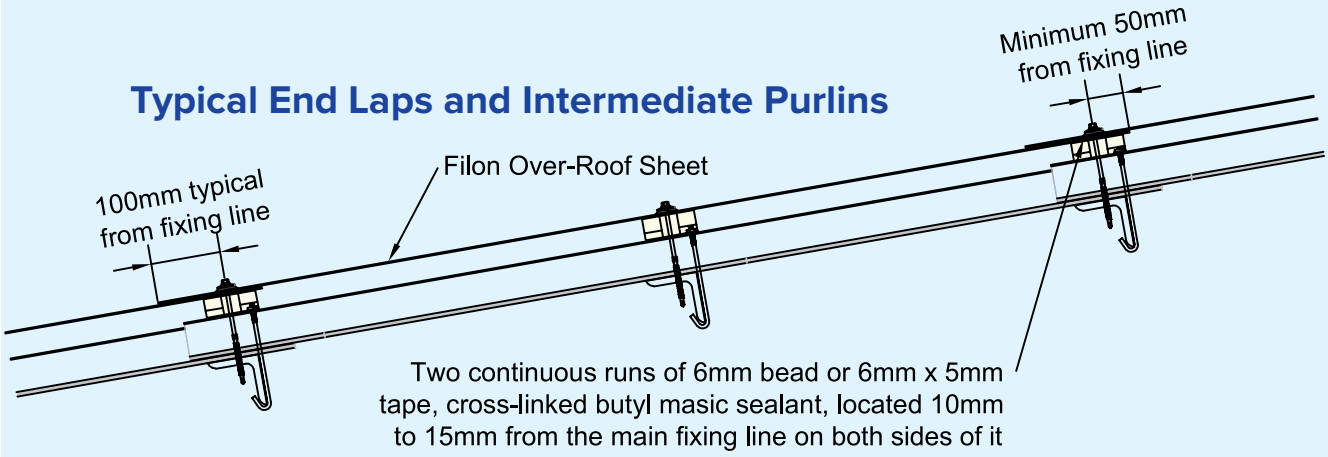
Please contact the Filon Technical Department for assistance if required.



Typical Side Lap



Typical End Laps and Intermediate Purlins



Transport and Storage

Sheets are normally supplied loose. Store sheets on flat, clean, level battens at approximately 1.5m centres. Stacks should not exceed 1m in height and must not overhang excessively at ends. Protect against theft and from being blown away. Always protect sheets stored outdoors with opaque waterproof covers.

Health and Safety

When cutting or machining with power tools, operators should wear suitable dust masks and goggles and other appropriate PPE. See Filon Technical Information Sheet TIS010, COSHH Data, for more information.

Do not walk on sheets, always use crawling boards and other safe access equipment. Although the Filon Over-Roofing system will provide additional strength to the old roof, for the purpose of future maintenance the roof should still be regarded as fragile. See the Advisory Committee for Roofsafety publications **ACR [CP] 002, Guidance Note for Safe Working on Fragile Roofs or roofs with fragile elements and ACR [CP]001, Recommended Practice for Work on Profiled Sheeted Roofs.**

Drilling Through Old Asbestos Cement Roofs

Asbestos cement roofs on existing buildings do not generally litter asbestos fibres into the buildings that they cover. The asbestos fibres are encapsulated by cement and will remain in this inert form until the building is demolished or the roof sheets are removed.

When drilling through asbestos cement most of the swarf that is generated will travel up the drill shaft and out into the external environment. To overcome this, latest guidelines recommend the use of thick wallpaper paste which should be applied to the area of asbestos cement sheet to be drilled. The swarf that travels up the drill or screw will be encapsulated within the paste. Self drill/tap screws may be inserted with the fixing gun set at a low speed until penetration through the asbestos cement sheet when the gun speed can be increased to drill into the purlin. There are other measures that may be taken such as the use of drills with suction devices fitted. When the drill or screw penetrates the bottom surface of the asbestos cement sheet a small amount of debris may fall onto the purlin. As the debris from the bottom sheet surface is cement rich, any asbestos fibres that may be present will be contained within the cement. Please refer to the **HSE publication a9 Asbestos Essentials** for more information.

Over-roofing with the Filon system provides minimal risk of asbestos fibres being released compared with the alternatives and air tests conducted during installation of a Filon Over-Roof confirm that there was no increase in fibre content. When removing an existing asbestos fibre cement roof for replacement with a new roof, the old sheets may crack or break thus releasing asbestos fibres. The application of liquid coating systems or similar require that the roof is thoroughly cleaned first, a process that can also result in the release of fibres.

Supply

Filon supplies the Over-Roofing sheets, Profix spacers and GRP rooflights. Ridge flashings are available if suitable for the application.

Fasteners, lap sealants, insulation, flashings that are not in the Filon range and any other accessories are supplied by others.

Filon Products Ltd - the construction innovator

Filon has led the development of GRP profiled sheets since the late 1950s - taking full advantage of the light weight and extreme durability of GRP to make it the obvious material choice of rooflight for many types of new build and refurbishment projects. The Filon range includes:

• Standard profiled in-plane GRP rooflights • Enhanced reinforced range: DR24, DR30 and Supasafe • GRP FAIRs (factory assembled insulating rooflights) • Fixsafe safety fixing system for replacing rooflights and roof sheets from inside the building • Filon Citadel opaque and translucent profiled sheets for harsh and corrosive environments • Monarch F GRP barrel vault rooflights • DR Refurb opaque coloured GRP sheets for replacing old asbestos and metal profiled roof and wall sheets • Filon Over-roofing light weight GRP system for providing a new additional waterproof skin without removing the original asbestos cement roof sheets whilst not increasing the weight of the roof • Bespoke specialist profiled sheet products

Slate and tile roof components

• V-Flow GRP valley troughs – offer a range of configurations for dry and mortar-bonded applications

Specialist construction materials

• DSP Diffused Sign Panels for back lit signs • Isofil sheeting for use in water treatment plants for oil / water separation

• Multiclad F hygienic cladding GRP sheets for use as wall and ceiling linings in areas where hygiene is an essential requirement

• Flat sheet and bespoke profiles

1. Filon Supasafe reinforced rooflights 2. Filon Citadel profiled sheets for harsh and corrosive environments 3. Filon Fixsafe safety fixing system 4. Filon Over-roofing 5. Filon V-Flow valley troughs 6. Filon Isofil sheets for water treatment plants

FILON®

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