

Eternit

FarmTec Fixing Guide





**When it
comes to
building a
new shed**

**Eternit
FarmTec
has got you
covered**



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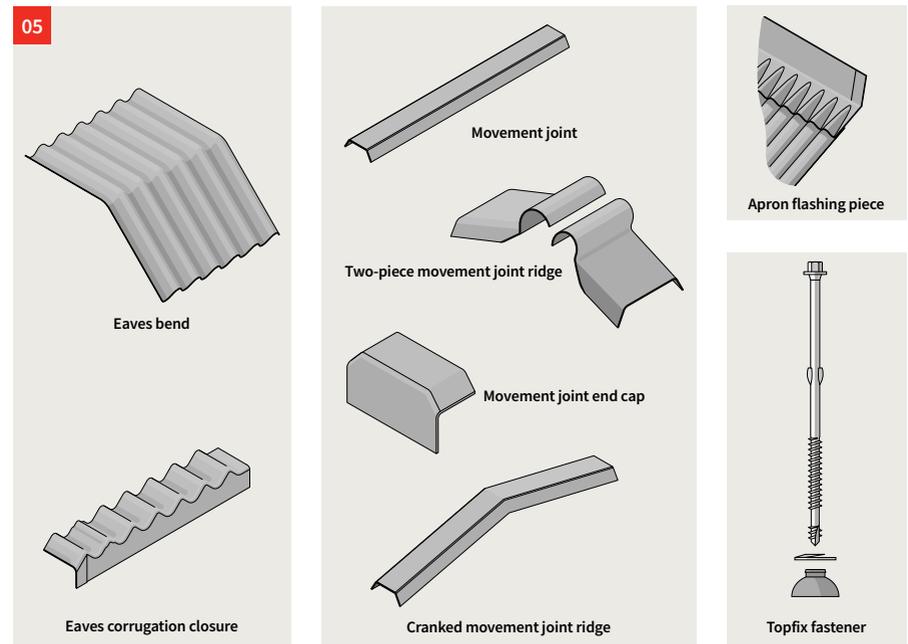
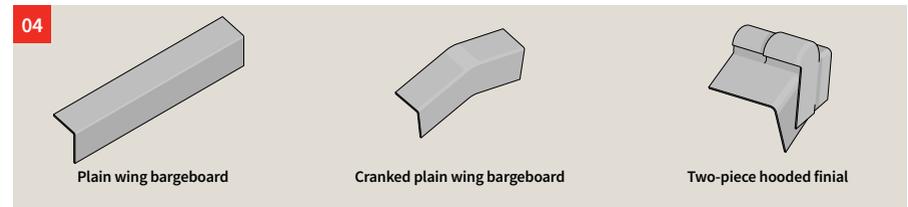
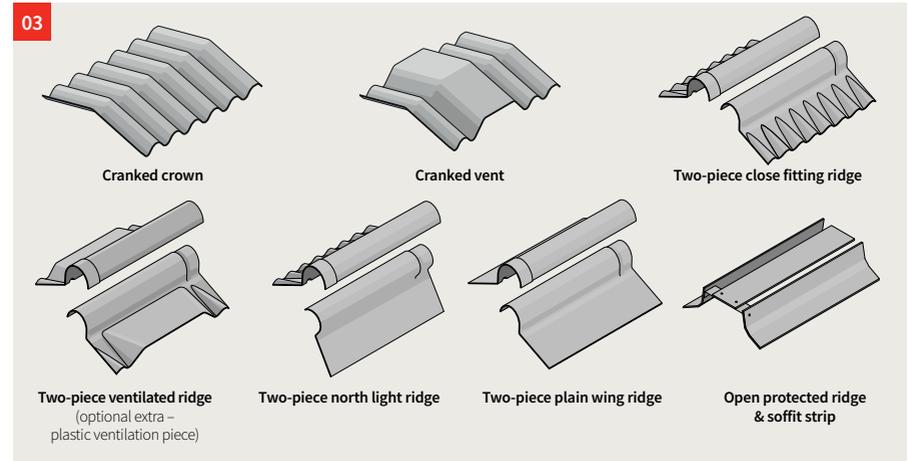
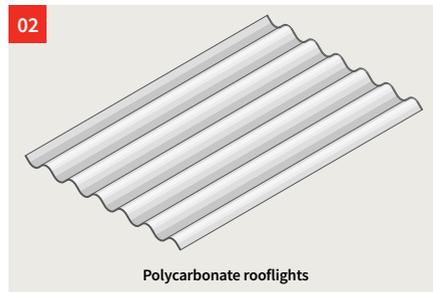
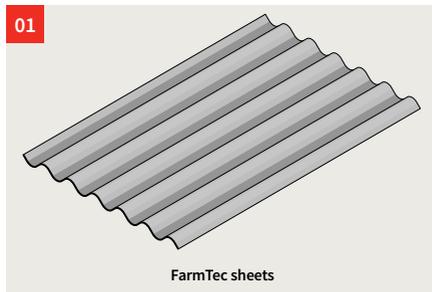
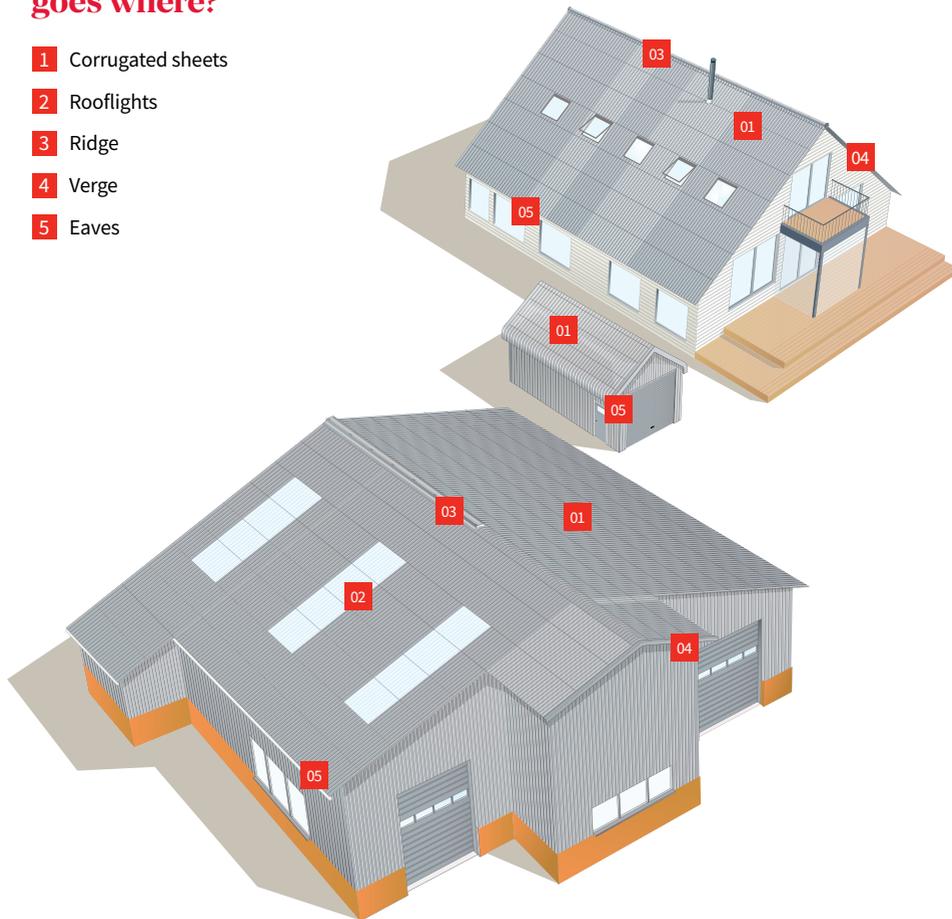
The recommendations of HSG 33 should always be followed:

- A safe and well-ventilated place of work should be provided.
- Health and Safety Provisions should comply with current regulations and be suitable for working at height. The use of safety nets and fall arrest equipment should always be considered.
- Eternit sheets, when new and first installed in accordance with our recommendations, can be classified as a non-fragile Class C roof assembly in accordance with ACR[M]001. Once the roof has been completed and the netting/scaffolding removed, if any subsequent access is required on the roof, the sheets should be treated as a fragile assembly.
- Always use HSE recommended roof access systems whenever required.
- Use crawling boards or similar when installing sheets to spread the load of the installer(s) plus the sheet being carried to prevent damage of the sheets just laid.
- Where regular access is required to reach rooflights, ventilation and service ducts, properly constructed walkways should be provided.
- Sheets must not be less than four corrugations wide.

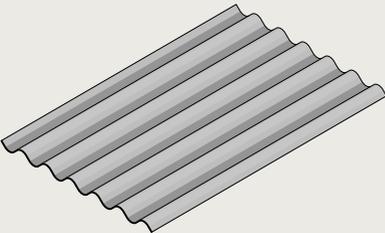
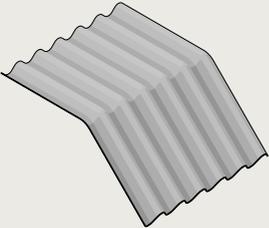
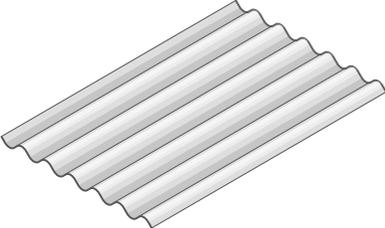
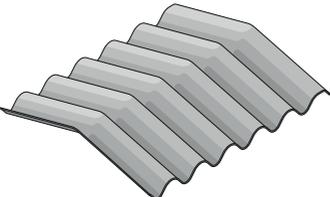
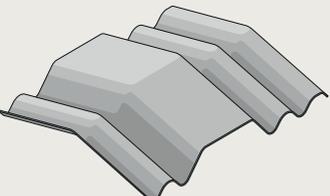
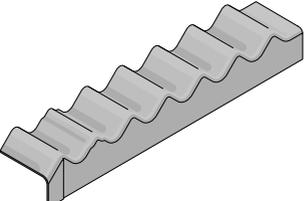
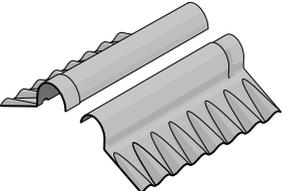
Product selector

What product goes where?

- 1 Corrugated sheets
- 2 Rooflights
- 3 Ridge
- 4 Verge
- 5 Eaves



Fittings

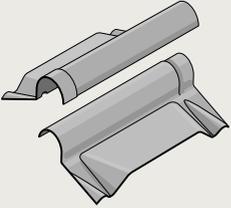
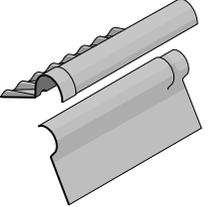
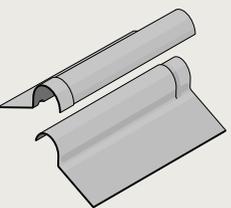
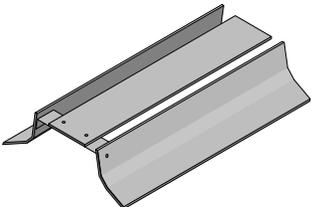
<p>FarmTec sheets</p> 	<p>FarmTec</p> <p>Overall width - 1095mm Cover width - 1050mm</p> <p>Sheet lengths: 1220, 1375, 1525, 1675, 1825, 1975, 2125, 2275, 2440, 2600, 2750, 2900, 3050mm</p>	<p>FarmTec</p> <p>Eaves bend</p> 	<p>Standard girth - 1000mm Suitable for roof pitches - 15°</p>
<p>Polycarbonate rooflights</p> 	<p>Overall width - 1097mm Cover width - 1050mm</p> <p>Sheet lengths: 1525, 1675, 1825, 2440, 2750, 2900, 3050mm</p>	<p>Cranked crown</p> 	<p>Overall width - 1087mm Cover width - 1050mm</p> <p>Girth - 750mm or 900mm Suitable for roof pitches - 12.5°, 15°</p>
<p>Topfix fasteners</p> 	<p>Timber purlins (50x75mm) - 6,5 x 130mm Carbon Steel 6,5 x 130mm Stainless Steel</p> <p>Steel purlins (1-3mm) - 6,3 x 105mm Carbon steel 6,3 x 120mm Bimetal / stainless steel</p>	<p>Cranked vent</p> 	<p>Overall width - 1087mm Cover width - 1050mm</p> <p>Girth - 750mm or 900mm Suitable for roof pitches - 12.5°, 15°</p>
<p>Eaves corrugation closure</p> 	<p>Cover width - 1050mm Leg height - 70mm</p>	<p>Two-piece close fitting ridge</p> 	<p>Overall width - 1130mm Cover width - 1050mm</p> <p>Suitable for roof Pitches - 10° - 45° (adjustable)</p>

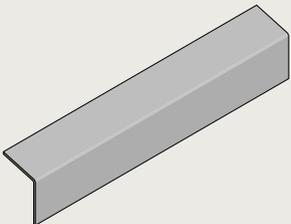
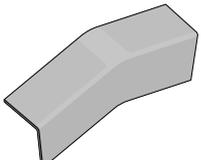
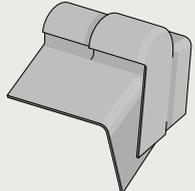
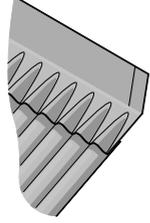
Note: Cover widths indicated make allowance for overlap

Fittings

FarmTec

FarmTec

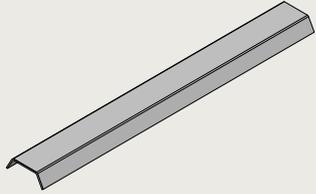
<p>Two-piece ventilated ridge (optional extra – plastic ventilation piece)</p> 	<p>Overall width - 1130mm Cover width - 1050mm Suitable for roof Pitches - 10° - 45° (adjustable)</p>
<p>Two-piece north light ridge</p> 	<p>Overall width - 1130mm Cover width - 1050mm Suitable for roof pitches - 10° - 45° (adjustable)</p>
<p>Two-piece plain wing ridge</p> 	<p>Overall Width - 1130mm Cover width - 1050mm Suitable for Roof Pitches - 10° - 45° (adjustable)</p>
<p>Open protected ridge & soffit strip</p> 	<p>Overall width - 2300mm Cover width - 2200mm Wing length - 250/250mm</p> <p>Soffit strip available in: Fibre cement - Sizes: 300mm or 400mm Thickness: 9mm</p> <p>Polycarbonate: Sizes: 300mm or 400mm Thickness: 6mm</p>

<p>Plain wing bargeboard</p> 	<p>Overall lengths - 1800mm, 2440mm, 3000mm Wing dimensions - 300 x 300mm</p>
<p>Cranked plain wing bargeboard</p> 	<p>Girth: 1300mm Suitable for roof pitches - 12.5°, 15° Wing dimensions - 300 x 300mm</p>
<p>Two-piece hooded finial</p> 	<p>For use with two-piece ridge systems and 300 x 300mm plain wing bargeboards Suitable for roof pitches - 10° - 45°</p>
<p>Apron flashing piece</p> 	<p>Overall width: 1100mm Cover width: 1050mm Angle: 120° Height: 131mm</p>

Fittings

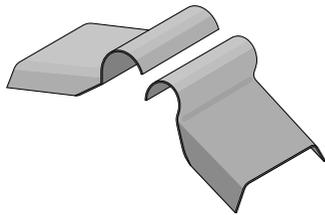
FarmTec

Movement joint



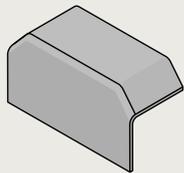
Overall lengths: 1525, 2440, 3000mm
Width: 310mm

Two-piece movement joint ridge



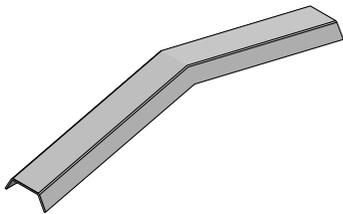
Width: 330mm
(for use with the two-piece ridges)

Movement joint end cap



Width: 310mm

Cranked movement ridge



Girth: 1300mm
Width: 330mm
(for use with the crank ridges)



Product composition and production method

Product composition

Eternit FarmTec fibre cement corrugated sheets are manufactured from cement, cellulose and manmade fibres which contains the following components:

Portland cement

This is the main component of the corrugated sheets and ensures the hydraulic bonding of the mixture.

Cellulose and man-made fibres

To help the cement bind and form the sheets shape.

Mineral additives

These are added to obtain the typical high quality product characteristics.

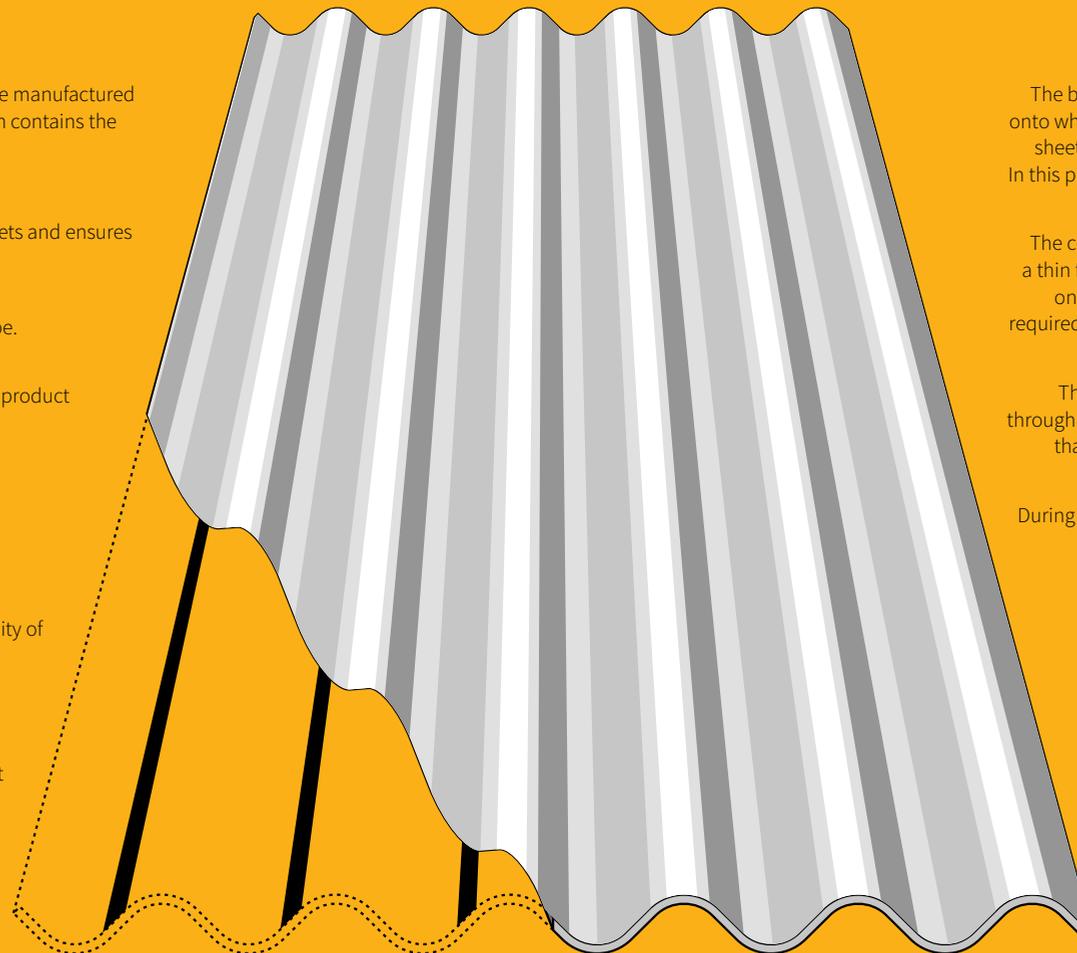
Manufacturing process

The manufacturing process is predominantly a filtration process. In order to optimize the filterability of the mixture, additives, primarily of cellulose fibres are added.

Reinforcement fibres

The mechanical characteristics of the fibre cement corrugated sheets are primarily defined by the interaction between the reinforcement fibres and the cement matrix.

With this in mind, high-quality natural and synthetic organic fibres are used.



FarmTec corrugated sheets with polypropylene strips.

Production method

The basis of the corrugated sheets is a profiled fibre cement slab, onto which a finishing layer is later applied. This profiled base plate sheet is manufactured in accordance with the Hatschek process. In this process, an aqueous solution of the components is collected in a central mixer.

The cement and fibres are collected by a filtering process to form a thin flat continuous layer of fibre cement that is then transferred onto a drum that is continually building up the layers until the required thickness is obtained. This is then passed down the line as a flat panel. The drum then starts its process again.

The typical sinuous shape of the corrugated sheet is obtained through the still pliable flat panel, by being placed on a steel former that replicates the shape of the sheet being made. This is then allowed to harden before being removed.

During production, they add a polypropylene strip between two of the laminations to one side of each corrugation.

Standard fitting of reinforcement strips

The presence of reinforcement strips does not imply that the corrugated sheets can be walked on. They're included to help with impact and handleability.

For safety, both during, and after installation of the corrugated sheets, the requirements must be followed, as specified in the HSG 33.

FarmTec

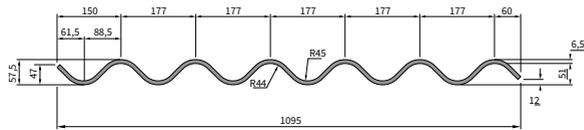
Eternit FarmTec fibre cement corrugated sheets have a side lap of a ¼ corrugation. The side of the sheets finishes with an upwards edge for the underlap and a downward edge for the overlap.

The FarmTec sheets are available in Natural Grey, Farmscape Anthracite or a diverse range of colours.

In order to guarantee consistent quality, they are produced by the means of the most advanced process technologies.

The coloured sheets are finished with a premium two layer acrylic coating system. Farmscape Anthracite fittings may weather at a different rate to the sheets, this is due to the manufacturing process for the fittings. Corrugated fibre cement sheets exposed to an aggressive environment may have a reduced service life due to chemical attack/deterioration.

Please contact our technical department for more information.



FarmTec Natural Grey, and painted sheet lengths (mm):

1220, 1375, 1525, 1675, 1825, 1975, 2125, 2275, 2440, 2600, 2750, 2900, 3050.

FarmTec Farmscape Anthracite lengths (mm):

1525, 1675, 2440, 2750, 2900, 3050

Colour range

Natural Grey



Farmscape Anthracite



Dark Brown



Dark Green



Midnight Blue



Black



Description, performance and properties

Technical data

	FarmTec
Overall Width	1095mm
Net covering width	1050mm
Thickness	6.5mm
Corrugation height	57.5mm
Depth of profile	51mm
Pitch of corrugations	177mm
Side lap	47mm
Minimum end lap	200mm
Maximum purlin centres	1375mm
Maximum rail centres	1730mm (up to 10m) 1425mm (above 10m)
Maximum unsupported overhang	300mm
Min roof pitch	10°

Approx weight of roof laid, with 200mm endlaps, including fixings, **Single span** - approx 24kg/m². **Double span** - approx 16kg/m².

(Does not include fixing purlins or roof structure)

Note: For individual sheet and fitting weights please contact the technical team directly.

Properties

	FarmTec
Profile height category	C
Density (nominal)	1400kg/m ³
Reaction to fire	A2, s1-d0
Fragility	Class C
Thermal conductivity	0.4W/mK



Weather-resistant

Provides long-term protection against all weather conditions.



Breathable, moisture and climate-regulating

Humidity in the form of water vapour is purposefully absorbed and reduces the formation of condensation droplets.



Soundproofing

Sound-suppressing fibre cement helps manage noise in the indoor environment.



Lightweight

With the use of reinforcing fibres, allows for a light weight roof covering per m².



Fire rating Class A2-s1,d0

Fire classification when tested against the EN13501-1, is A2-s1-d0.

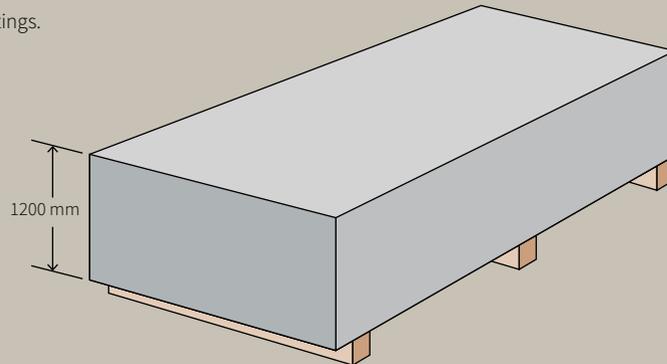
Working with the material

Stacking

Profiled sheets should be stored as close as practically possible to the area of works, on a firm level base, using the profiled bearers (on which the sheets are delivered) to raise the sheets off the ground.

Sheeting stacks may only be at a maximum of 2 delivered pallets high, a separate stack should be made of each length of sheet; if this is not possible, stack with the longest sheets at the bottom and the shortest at the top.

Sheets should always be stored weather (smooth) side upwards. Do not stack pallets of fittings.



Packaging and storage

Stacks of sheets should not be stored in full sun during the summer months as the differential temperature across the sheets can result in unacceptable stresses in the sheets and can lead to edge cracking.

They should be stored in a ventilated and frost-free space where there is no risk of condensation at low temperatures.

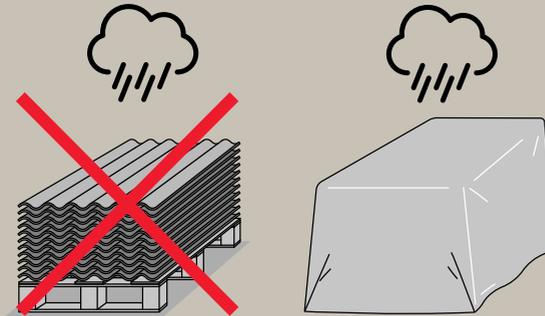
If sheets are to be retained in the packs for more than 3 months, they should be stored inside a building where they can be protected from extreme variations in temperature and moisture.

Ingress of moisture into packs of profiled sheets may cause efflorescence staining, bowing during installation or permanent distortion.

Natural Grey sheets: The plastic wrapping should be retained for as long as possible to control the environment around the sheets. Once the pack has been opened, or if the wrapping is damaged and allowing the ingress of water, the sheets should be stored under cover.

Coloured sheets: Coloured sheets should be always stored under cover, preferably inside a building, but if this is not available, they can be stored under a coloured tarpaulin. The tarpaulin should be spaced off the top and sides of the sheets to allow effective air circulation and avoid condensation.

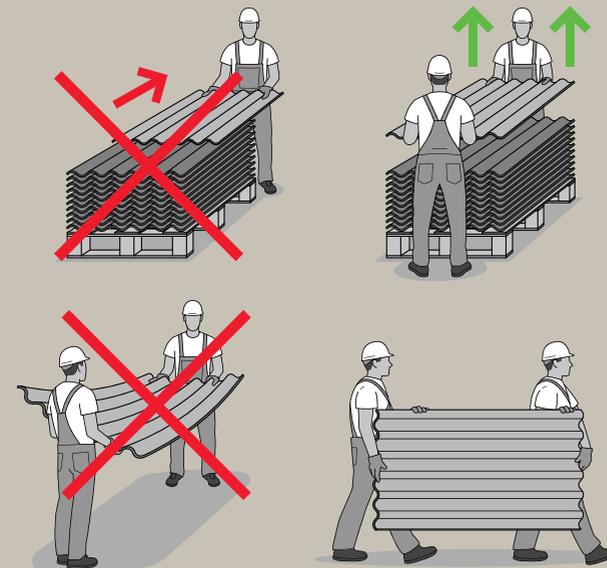
The plastic wrapping on coloured sheets is only designed to protect the sheets in transit. It should be removed and carefully disposed of as soon as possible.



Handling

When handling the Eternit sheets, lift by the ends only, lifting them up from the sheet beneath. (Do not drag over the sheet below)

- Carry the Eternit sheets on their side to prevent bowing



Working with the material

During the installation process of the sheets, dust may be released which can be irritating for the airways and eyes. Accordingly, correct breathing apparatus/mask and eye protection should be worn. Following the recommendations of the HSG 33, minimum grade dust mask is FFP2.

Please refer to the COSHH data sheet for further information.

Cutting

Preferably sheets should be cut using equipment suitable for fibre cement materials, in a well-ventilated area at ground level on suitable rigid supports using hand or powered saws. Powered saws should be of the reciprocating saw type and NOT disc or circular blade devices. Experience has shown that hand or powered saw blades having 3-3.5mm tooth pitch are most suited.

- To minimise dust, cut sheets with a handsaw or slow speed reciprocating power saw. The use of angle grinders is not recommended.
- Sheets should be laid so they are flat and in one plane. For cranked ridge units do not distort or twist when installing. The requirement for the crowns to be twisted is an indication that the corrugations of the two roof elevations being joined by the ridge unit are not aligned. Sheet alignment must be corrected.

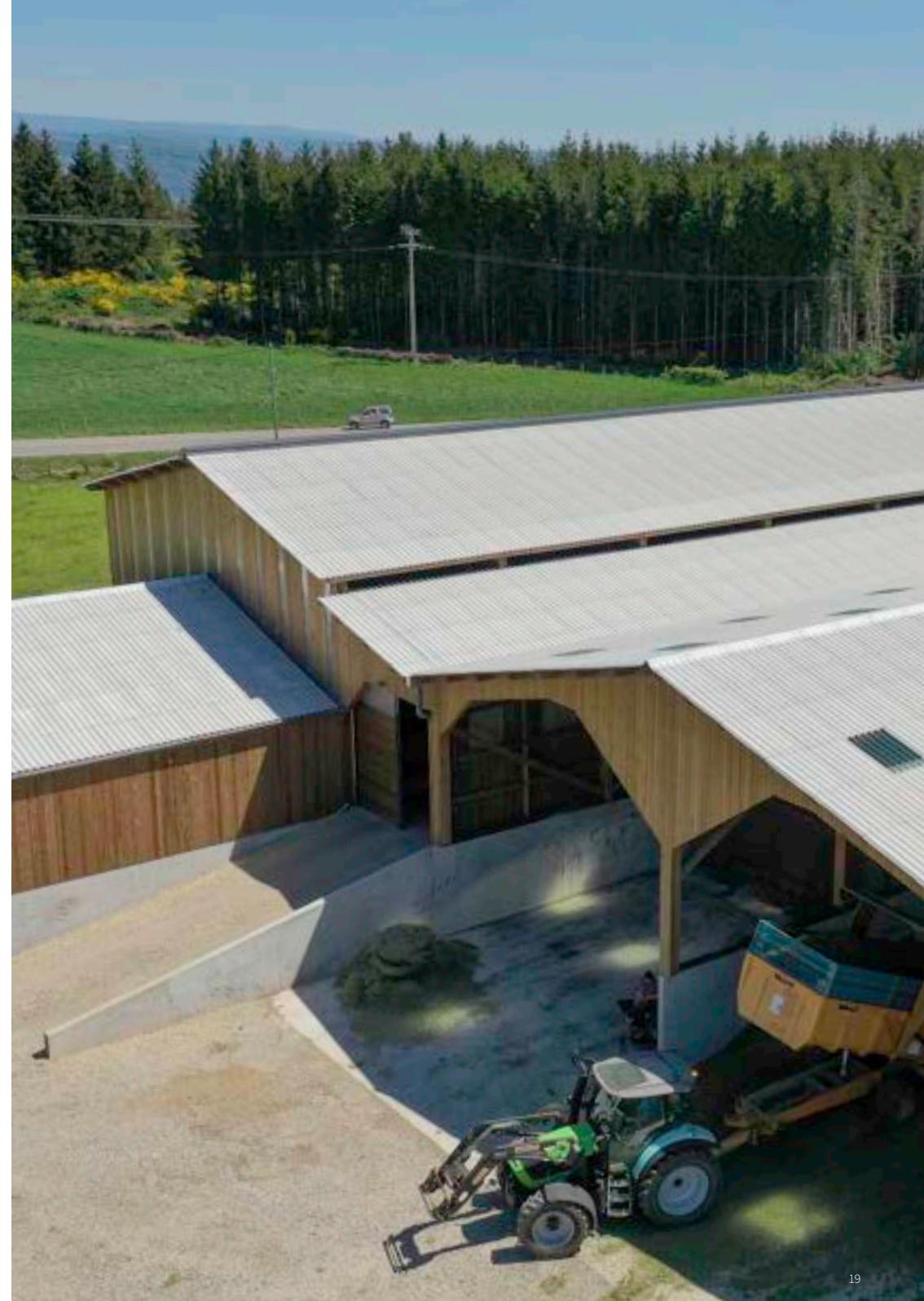
Drilling

- For holes, a rotating drill bit for fibre cement products.
- For larger holes, such as flues, windows etc, a reciprocating saw or saw holes for fibre cement products can be used.

Important

Any cutting dust must be wiped off the sheets and fittings immediately using a dry cloth. If not removed this could cause spots and stains.

Note: Please request the safety data sheet from our technical department for further information regarding health and safety when working with the Eternit sheets.



Lap and sealing requirements

When using profiled sheeting the wind loadings of a location are critical to ensure the optimal sealing requirements.

Step 1 – Exposure

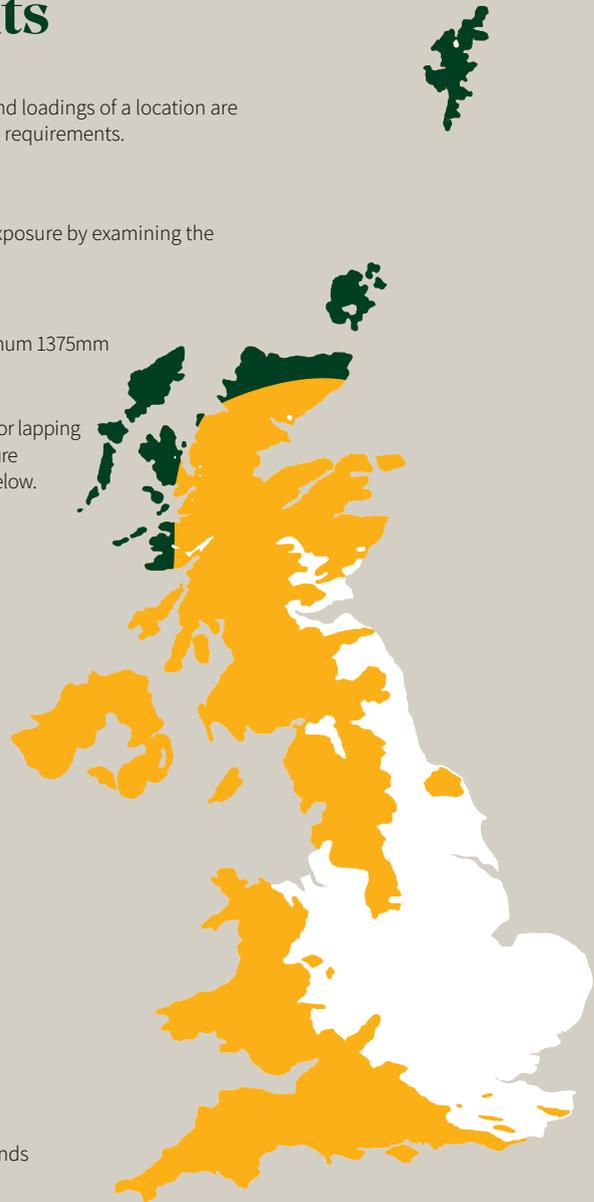
Determine the expected degree of exposure by examining the adjacent map. See map below

Step 2 – Centres of support

For FarmTec: Purlin centres at a maximum 1375mm

Step 3: Lap and seal:

Lap and seal: Establish requirements for lapping and sealing by reference to the exposure zones map of the UK and the tables below.



- less than 56.5
- equal to or greater than 56.5
- contact the Eternit Technical Advisory Service for the Highlands and Islands recommendations

Note: Buildings that stand above their surroundings or are in an area with no wind breaks within 1km, such as coasts or hilltops, should be considered areas of exposure one category above their geographic area.

Sheltered exposure

Exposure to wind driven rain less than 33 l/m² per spell

Minimum Roof pitch	Max Slope Length (eaves to ridge)	Minimum End Lap	End Lap Treatment	Side Lap Treatment*
>20°	40m	200mm	Unsealed	Unsealed
>15° to <19°	40m	200mm	Unsealed	Unsealed
>12° to <15°	35m	200mm	Sealed	Unsealed
>10° to <12°	30m	200mm	Sealed	Sealed

*Mitre joint to be sealed

Moderate exposure

Exposure to wind driven rain 33 to less than 56.5 l/m² per spell

Minimum Roof pitch	Max Slope Length (eaves to ridge)	Minimum End Lap	End Lap Treatment	Side Lap Treatment*
>20°	40m	200mm	Unsealed	Unsealed
>15° to <19°	35m	200mm	Sealed	Sealed
>15° to <19°	35m	300mm	Unsealed	Unsealed
>12° to <15°	30m	200mm	Sealed	Sealed
>10° to <12°	25m	200mm	Sealed	Sealed

*Mitre joint to be sealed

Severe exposure

Exposure to wind driven rain 56.5 to less than 100 l/m² per spell

Minimum Roof pitch	Max Slope Length (eaves to ridge)	Minimum End Lap	End Lap Treatment	Side Lap Treatment*
>20°	30m	200mm	Unsealed	Unsealed
>15° to <19°	30m	300mm	Unsealed	Unsealed
>12° to <15°	25m	300mm	Sealed	Sealed
>10° to <12°	20m	300mm	Sealed	Sealed

*Mitre joint to be sealed

Very severe exposure

Exposure to wind driven rain >100 l/m² per spell

Minimum Roof pitch	Max Slope Length (eaves to ridge)	Minimum End Lap	End Lap Treatment	Side Lap Treatment*
>20°	40m	200mm	Sealed	Sealed
>15° to <19°	40m	300mm	Sealed	Sealed
>12° to <15°	35m	300mm	Double Sealed	Sealed
>10° to <12°	30m	300mm	Double Sealed	Sealed

*Mitre joint to be sealed

Checking the structure

Before sheeting is commenced, the structure should be checked to ensure that all purlins and rails are in a true plane, correctly spaced and securely fixed and adequately restrained.

Profiled sheets are fixed to purlins on a roof and rails on walls. There are 3 general types of purlins and rails:

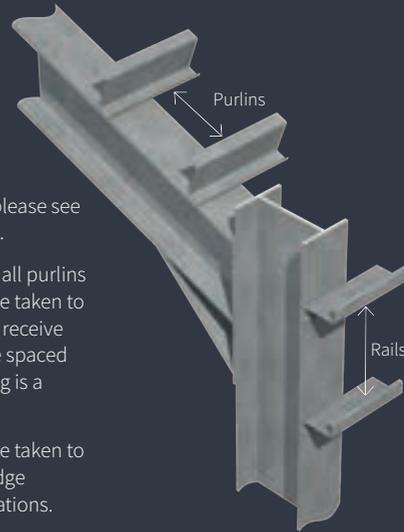
- Timber – 50 x 75mm Minimum
- Cold rolled steel - 1.2 – 3mm
- Hot rolled steel - > 3mm thick

Centres of support

For FarmTec: purlin centres are at a maximum 1375mm, please see table below for advisory purlin centres for each sheet size.

Prior to sheeting, a responsible person should check that all purlins and rails are connected securely. Measurements should be taken to ensure that the structure and purlins are true and level to receive the sheeting. A check should be made that the purlins are spaced correctly for the right end lap, and that the eaves overhang is a maximum of 300mm.

When the sheeting layout is being planned, care should be taken to ensure that the verge sheets are cut so that the outside edge coincides with a crown rather than a trough in the corrugations. This enhances the weather protection.



Advisory purlin centres**		
Sheet length	200mm end lap	300mm end lap
1220mm	1020*	920*
1375mm	1175*	1075*
1525mm	1325*	1225*
1675mm	737.5	1375*
1825mm	812.5	762.5
1975mm	887.5	837.5
2125mm	962.5	912.5
2275mm	1037.5	987.5
2440mm	1120	1070
2600mm	1200	1150
2750mm	1275	1225
2900mm	1350	1300
3050mm		1375

* Dimensions highlighted are single span sheets, all other dimensions are double span sheets.

** Eaves purlin to be positioned first to allow for a maximum sheet over hang of 300mm.

** Ridge purlin to be positioned to suit ridge piece see table on page no. 38 and 43.

Fixings general guidance

All sheets must be fixed in accordance with the recommendations of BS 8219.

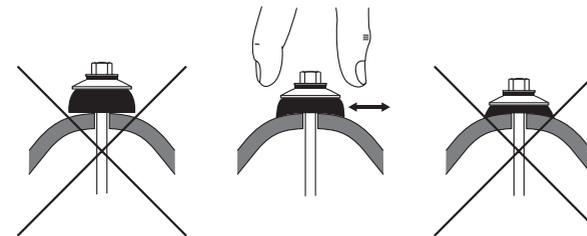
The selection of the correct sheet fastener is extremely important for the integrity of the roof covering. The type of purlin or rail system and weatherproofing with washers and caps all must be considered to avoid premature failure, corrosion, or a leaking roof.

Eternit Topfix fasteners

Self-drilling, self-tapping 'Topfix' fasteners are generally used to fix FarmTec sheets to the purlins. The Topfix fasteners are suitable for roof pitches up to 30°. For roof pitches over 30° use in conjunction with support clips.

These fasteners drill through the FarmTec sheet, creating a 3mm oversized hole and self-tap into the purlin. It is important that the fasteners are installed using the correct power tools, which should have an adjustable depth setting device to ensure the washers are seated correctly. The fasteners typically have different drill points to suit the different purlin types:

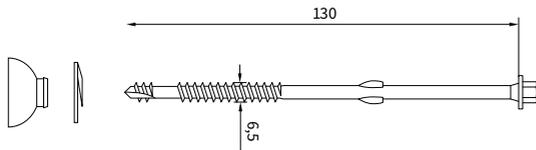
Checking the profiled sheeting self-drilling fixings for tightness



Eternit Topfix fasteners

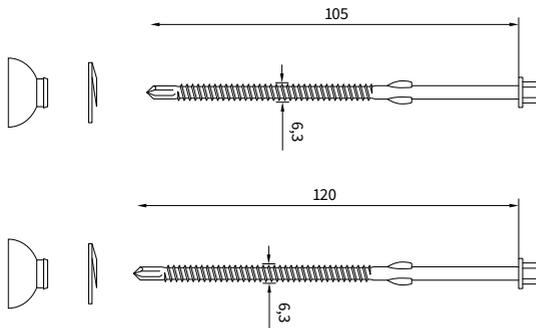
Timber purlins

Product Number	Dimensions (mm)	Material	Application
4069994	6,5x130	Carbon Steel	on min 50x75mm
4069996	6,5x130	Stainless Steel	on min 50x75mm



Steel purlins

Product Number	Dimensions (mm)	Material	Application
4070005	6,3x105	Carbon Steel	on steel purlins 1-3mm
4070009	6,3x120	Bimetal/ Stainless Steel	on steel purlins 1-3mm



Note: The minimum width of steel purlins for fixing corrugated panels must be 50mm.

Support clips

Support clips are required for roof pitches above 30° and vertical application when fixing through the crest of the sheet.

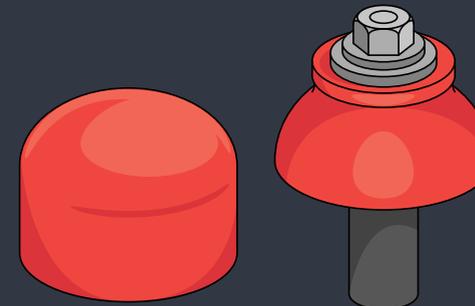
Support clips are typically fabricated from 10 x 3mm steel bar and are galvanised. Their length should be determined by the end lap of the sheeting.

The top of each course of sheets should finish 5mm below the top of the rail so the support clip can bear on the top of the rail. The clips are positioned in the valley corrugation adjacent to the fixing.



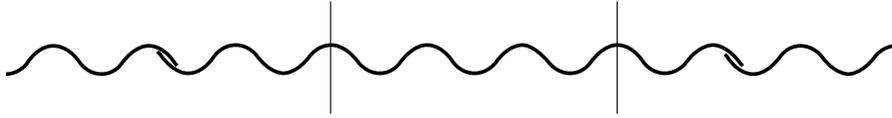
Rooflight Laplox fasteners (supplied by others)

Self-sealing fasteners with a synthetic rubber shank (laplox) with a wide bearing, should be used at 300-400mm centres for side stitching the rooflight sheets to the adjacent sheet.



Fixing position

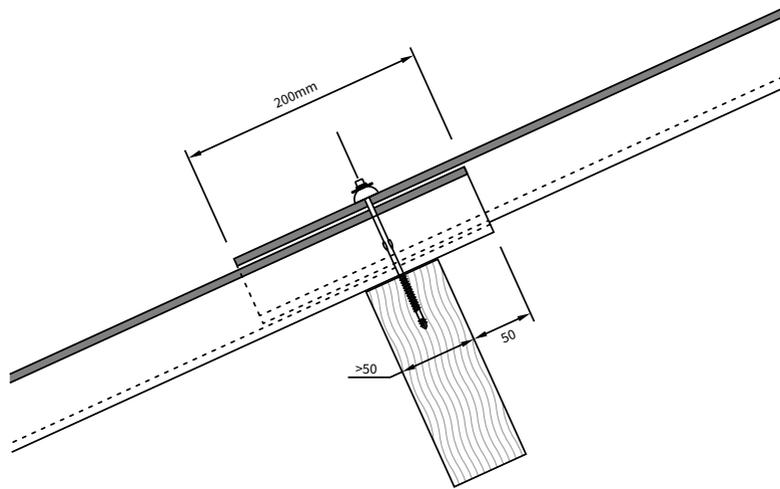
Profiled sheeting should always be fixed with 2 fasteners per sheet per purlin, no more and no less. The fixing position for FarmTec is corrugation 2 & 5.



Fasteners should be installed perpendicular to the plane of the roof.

With some types of insulated cladding, or where sealant has been used, sheet settlement can take place. It may be necessary to retighten the fixings after a suitable period.

- Fixing is central on the purlin
- 75mm from the top edge of the under sheet, 125mm up from the bottom of the top sheet when using a min 200mm head lap

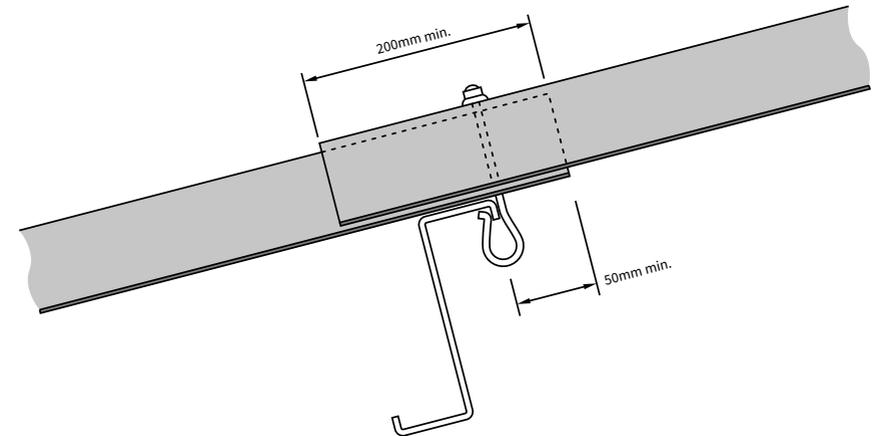
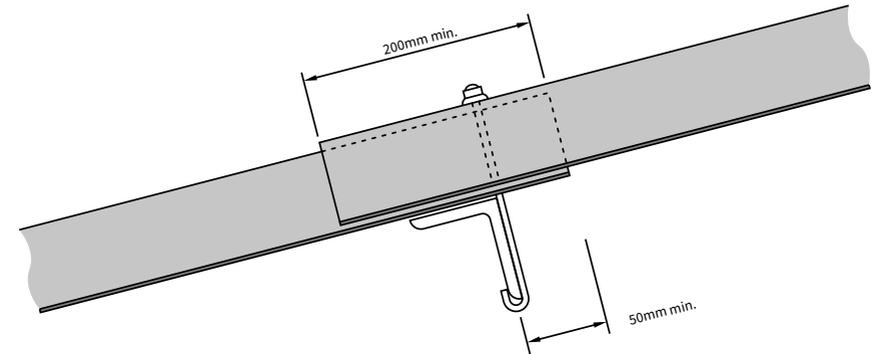


Note: When fixing to timber purlins, BS 5268: Structural use of Timber, recommends that the minimum edge distance of the fixing should be five times the fixing diameter to avoid undue splitting of the timber

Traditional fasteners

In certain circumstances it may be preferable to use traditional fasteners such as hook bolts, crook bolts and drive screws. There are, however, additional health and safety implications to consider when using these fixings.

The fasteners are generally 8mm diameter for FarmTec Sheets and are fixed through 10mm diameter pre-drilled holes in the sheet. For hook and crook bolts, the fixing should be positioned 4mm upslope from the back leg of the purlin. Drive screws should be located centrally on the purlin.



Note: It is important the fixing manufacturer recommendations for power tools and torque settings are followed.

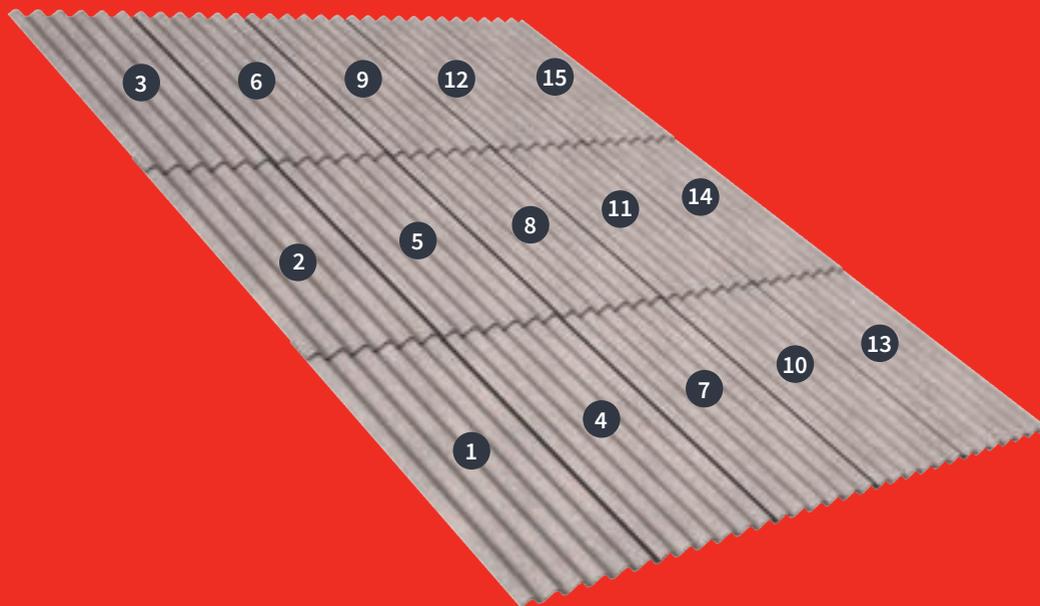
Laying the sheets

Roof sheeting should commence from one end of the building at eaves level, rising in vertical tiers, one sheet wide, from eaves to ridge.

Where cranked crown sheets are used, it is especially important that the slopes are accurately aligned with each other.

Profile setting out gauge

The gauge is used to ensure correct side lap alignment of the sheets.



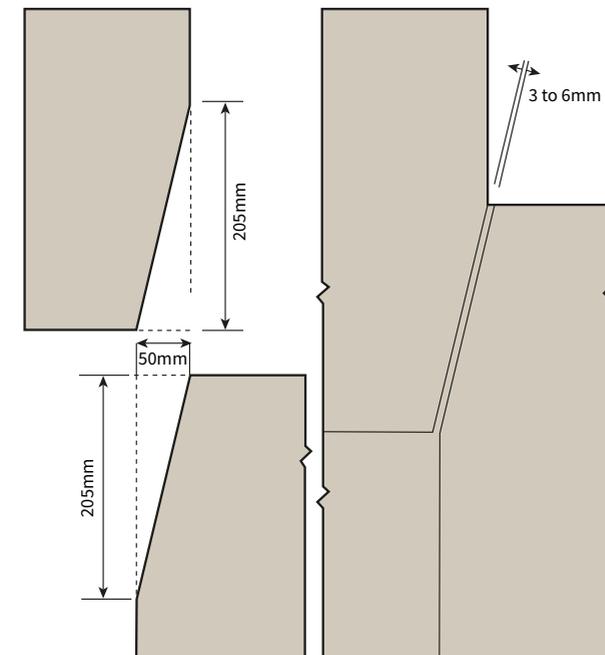
Mitring

To avoid four thicknesses of sheeting at the junctions of the side and end laps, it is necessary for two of the sheets at each junction to be mitred at the corners so that they lie in the same plane.

Mitres on FarmTec sheets should be cut from a point 205mm up the vertical edge from the corner (or the amount of the end lap) to a point 50mm along the horizontal edge, i.e., the width of the side lap by the length of the end lap.

The gap between mitres should be a minimum of 3mm to a maximum of 6mm. Box mitres should be avoided. The mitred joint is covered top and bottom by the other two sheets and is weatherproof and unseen. (See typical mitring details below.)

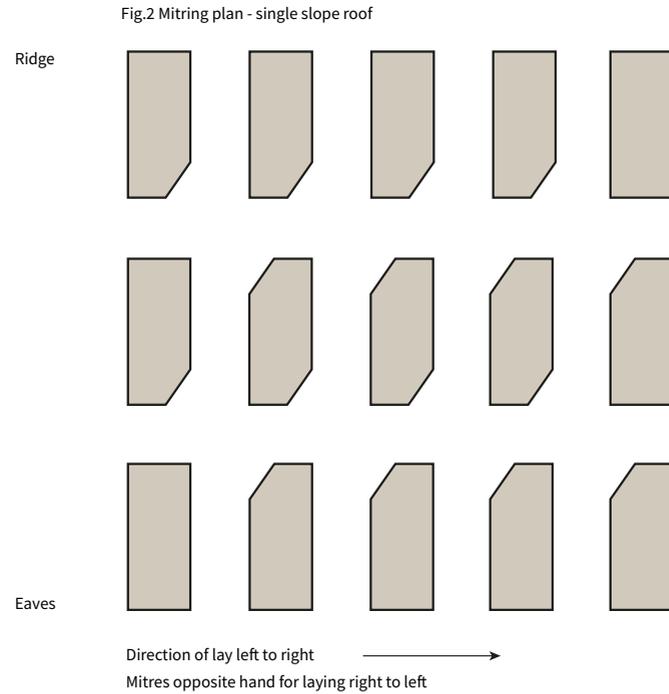
Note: Mitres must not be cut in situ.



Mitring layouts

The procedure for mitring the sheets for single and double slope roofs is indicated on the mitre plans below (Figs.2-3).

On double slope roofs with two-piece adjustable close-fitting ridges or cranked crown ridges, one slope must be laid left to right and the other right to left.

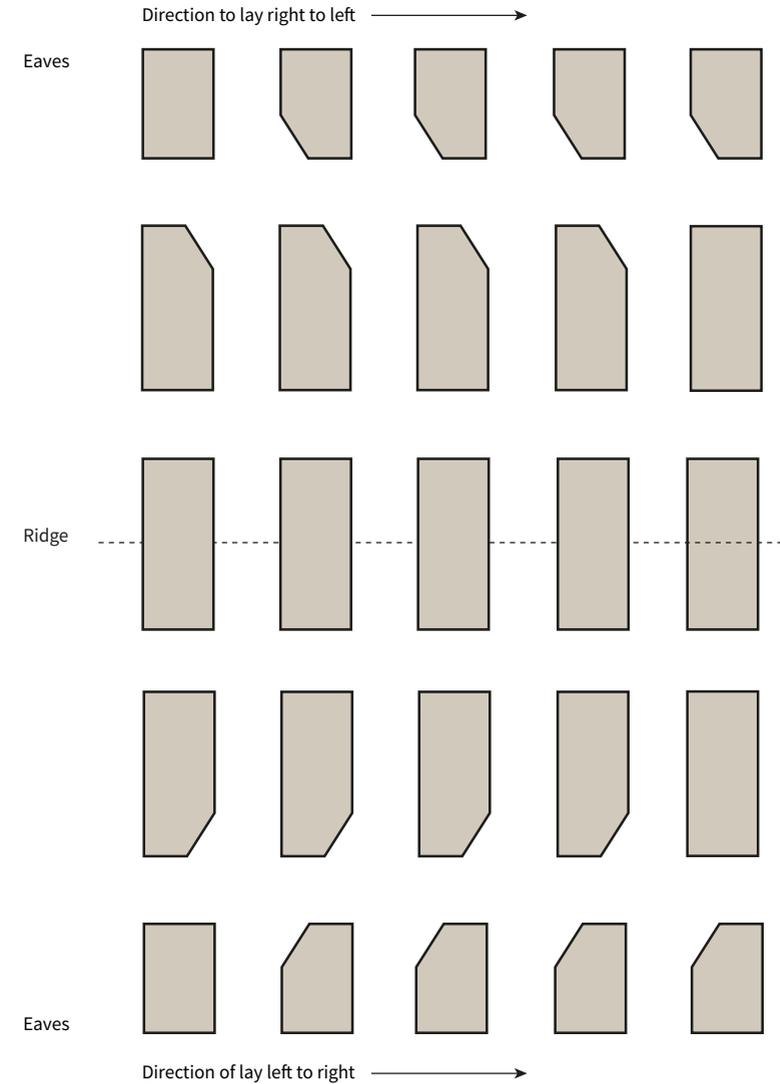


Note: All mass-produced building products are allowed certain dimensional tolerances. This applies to both profiled fibre cement sheets and steelwork. Because of these permitted variations in dimensions, regular checks should be carried out on measurements at mitres, and adjustments made as and when necessary.

Mitring requirements for ridge type

FarmTec Ridges are not required to be mitred and the top of the FarmTec sheets adjoining the ridges are also not required to be mitred.

Fig.3 Mitring plan - double slope roofs



Sealing

When installing corrugated sheets on a roof a sealing cord must be applied if required. It is used for the sealing of end and side laps of the Eternit FarmTec corrugated sheets.

Please refer to the lap and sealing requirements table on page 20-21.

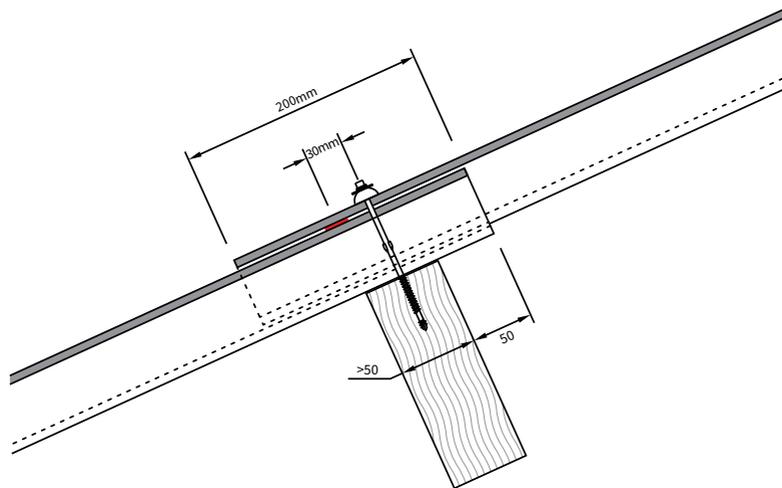
Application

The surface of the sheet where the sealing cord is to be applied must be dust and grease free. The sealing cord must be applied without stretching and following the corrugations when being applied transversally. When placing the top sheet over the sealing cord it must be placed in the correct position as sliding the sheet to correct its position will not be possible. Press the top sheet down firmly onto the sealing cord before installing the fixings.

As the sealant may ease during the time of the installation a final check of the fixings for tightness should be carried out at the end of the installation. The Sealing cord will work better when warm so keeping it in warm areas during the colder periods will make it easier to install.

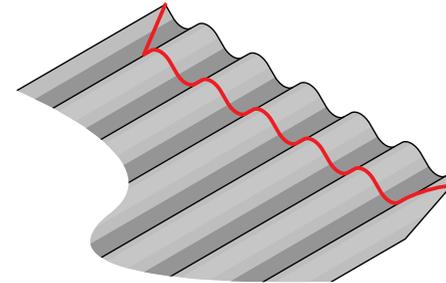
Single sealed end laps

Butyl strip sits 30-50mm below fixing



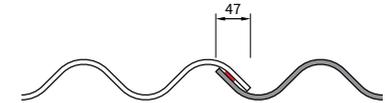
Mitres

In order not to obstruct the water drainage, the sealing cord must be drawn through along the chamfered corner up to the two panel corners.



Single sealed side laps

The sealing cord is applied 5-10mm from the top side of the upturned corrugated wave.

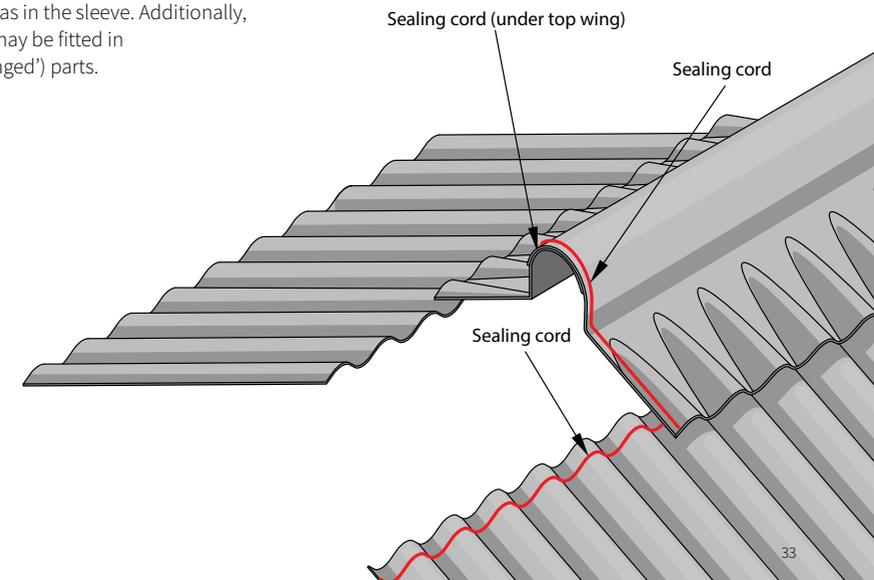


Double sealed end laps with a 300mm head lap

First Butyl strip sits 30-50mm below fixing and the second 100mm below the fixing.

Ridge sealing

A sealing cord is fitted both in the horizontal overlap as well as in the sleeve. Additionally, a sealing cord may be fitted in articulated ('hinged') parts.

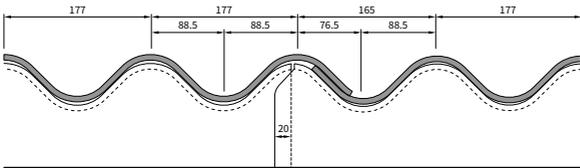
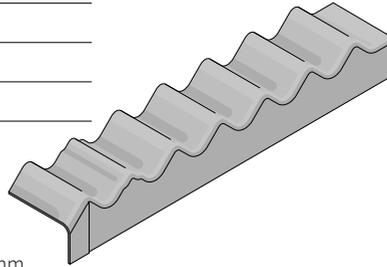


Eaves corrugation closure

Cover width	1050mm
Side Length	150mm
Leg height	70mm
Weight	3.2kg

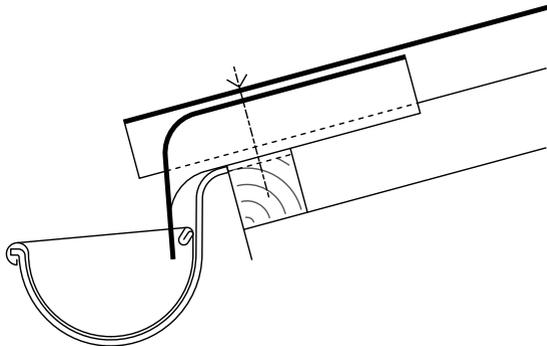
Eaves closures are used to close off the sheet corrugations at the eaves and have the same 1050mm coverage as the FarmTec sheets.

The maximum overhang of the sheets at the eaves is 300mm. The eaves closure pieces are overlapped at the side lap corrugation of the sheet. As per drawing below.



The eaves closure piece is fixed to the eaves beam or bottom purlin by the bottom sheet fasteners.

The corrugated sheets are to be laid in such a way that in front of the eaves closure a drip edge is created.



Note: The eaves closure pieces must not be used as an extension of the corrugated sheets.

Eaves bend

Eaves bend sheets provide a neat, simply detailed transition from profiled roof sheeting to vertical cladding of the same profile.

For single skin roofs

They are supplied in a standard girth of 1000mm and are available for 15° roof pitches.

The positioning of the purlins and rails is critical to achieve a non-fragile eaves construction. The most common fixing detail, illustrated below, is a fragile construction.

Fixing eaves bend sheets to the roof

Eaves bend sheets should be installed in sequence in a vertical tier of sheets from the base of the profiled sheeting to the apex of the roof. Eaves bend sheets should only be fixed to the lowest purlin of the roof slope and to the top rail of the vertical profiled sheeting.

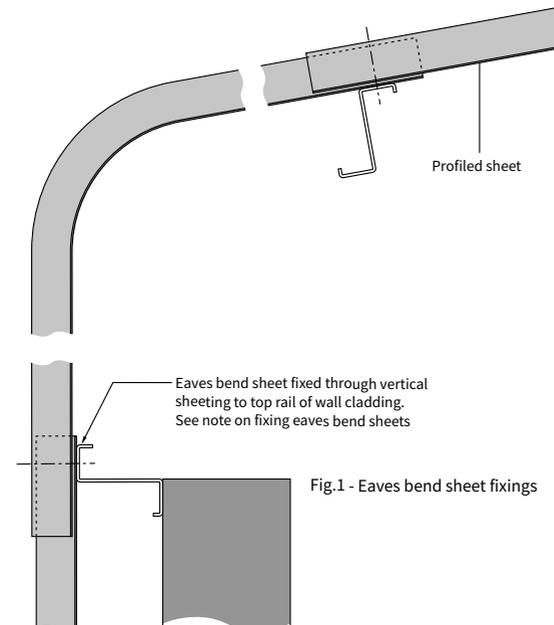
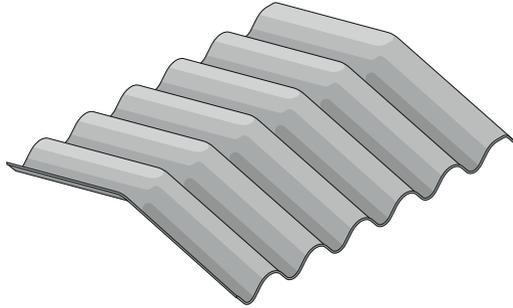


Fig.1 - Eaves bend sheet fixings

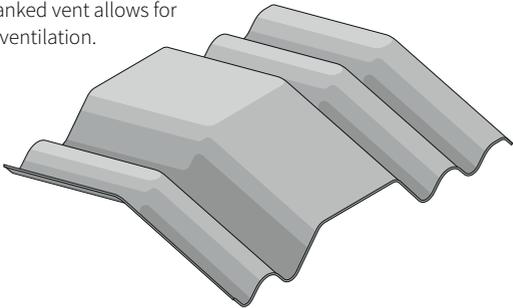
Cranked crown ridges

Cranked crown ridge



Cranked vent ridge

Each cranked vent allows for 600cm² ventilation.



Where cranked crown sheets are used, it is especially important that the slopes are accurately aligned with each other.

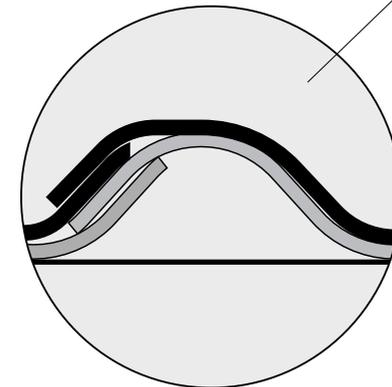
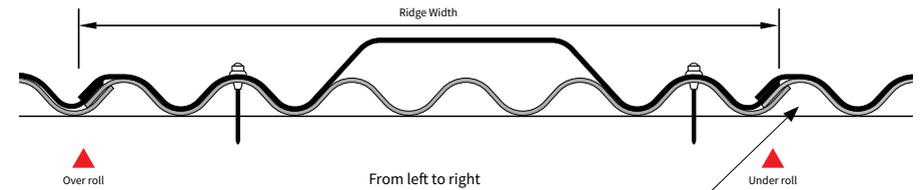
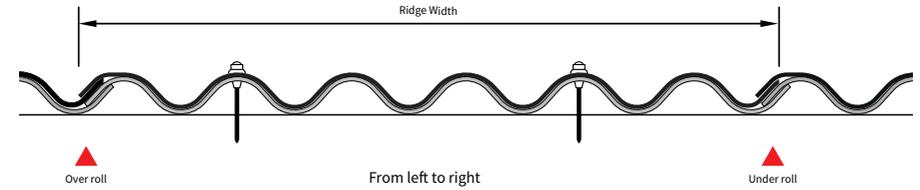
Cranked crown ridges and vents are available in girths of 750mm and 900mm.

Cranked crown ridge	Roof pitches	
	from	to
12.5°	11°	13 ¹ / ₄ °
15°	13 ¹ / ₂ °	15 ³ / ₄ °

Mitring

Cranked crown and vents are not required to be mitred and the top of the FarmTec sheets adjoining the ridges are also not required to be mitred. see page 31, fig 3 for mitring layout plan.

Side lap



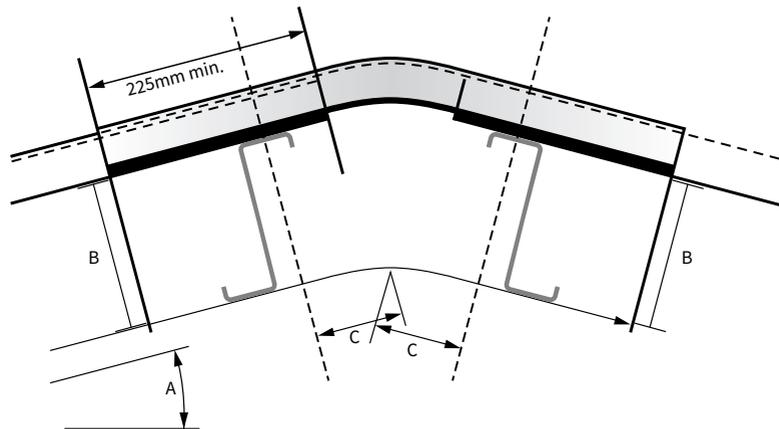
Inset for both diagrams above.

Purlin setting out

To form a non-fragile detail, 900mm cranked crowns and 750mm cranked crowns and vents must lap onto the sheets by a minimum of 225mm. The position of the top purlins must allow for a 50mm overhang of the sheet above the purlin, by using the table shown below this will give you the fixing position based on a 50mm wide purlin.

750mm crank				
Pitch	Purlin depth			
	75mm	125mm	175mm	225mm
12.5°	203	192	181	170
15°	201	188	174	161

900mm crank				
Pitch	Purlin depth			
	75mm	125mm	175mm	225mm
12.5°	282	271	260	249
15°	278	265	251	238



Fixing

The cranked crown ridges are fixed with the same fasteners as the sheets.

200mm sheet end laps =

Minimum cranked crown ridge over lap is 225mm, fixing position is 150mm up from the bottom edge of the ridge.

300mm sheet end laps =

Minimum cranked crown ridge over lap is 325mm, fixing position is 250mm up from the bottom edge of the ridge.

This will allow for a 50mm overhang of the sheet above the purlin and 75mm from the centre of the fixing based on a 50mm wide purlin.

Cranked crowns are fixed into corrugations 2 & 5.

Cranked vents are fixed into corrugations 2 & 6.

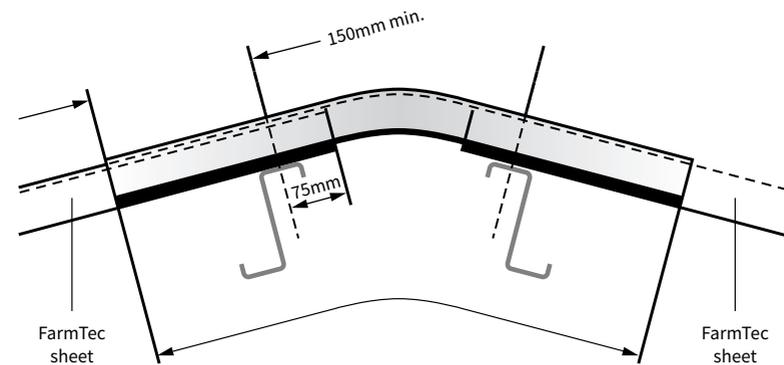


Fig 1 – Cranked crown and ventilated cranked crown fixings



Two-piece ridges

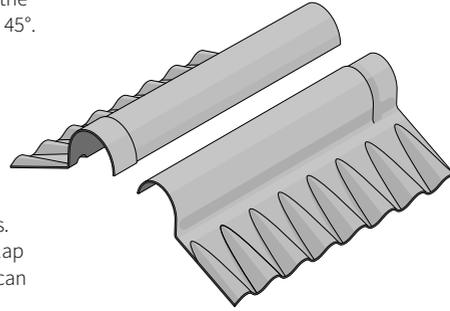
Two-piece adjustable ridges are used to close off the ridge and can be used on roof pitches from 10° to 45°.

Types of two-piece ridge

Two-piece close fitting ridge

(Width = 1130 / Cover width = 1050)

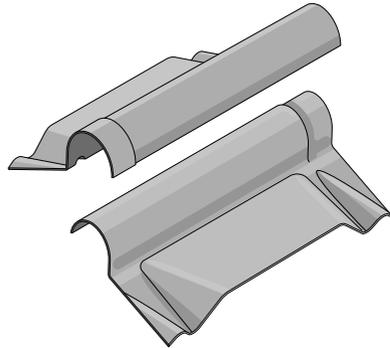
Used as a ridge connection closure on gable roofs. A sealing cord is fitted in both the horizontal overlap as well as the sleeve. Additionally, a sealing cord can be fitted in the hinged parts.



Two-piece close ventilating ridge

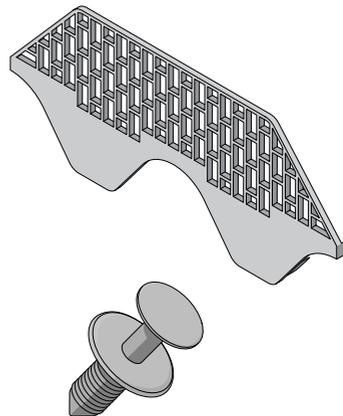
(Width = 1130 / Cover width = 1050)

Used together with two-piece close fitting ridge pieces, provided a ventilation opening is required in the ridge structure.



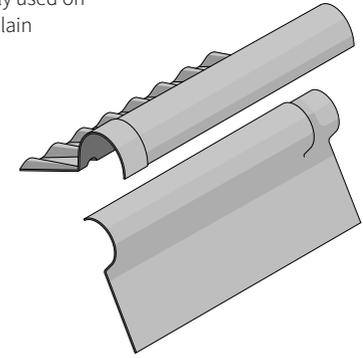
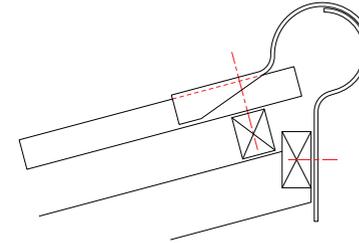
By using a plastic ventilation piece, the possibility of drifting snow and driving rain can be reduced but not eliminated. However, the reduction of the ventilation area provided decreases.

The plastic ventilation piece is supplied with two plastic rivets. The mounting holes in the moulded part or the corrugated sheet must be pre-drilled with a diameter of 8 mm.



Two-piece north light ridge

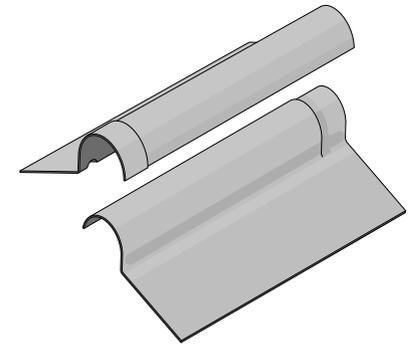
Uses the inner roll of the two-piece plain wing ridge and the outer roll of the two-piece close fitting ridge. It is mainly used on monopitch roofs. Please refer to the close fitting and plain wing ridge section for installation.



Two-piece plain wing ridge -

(Width = 1130mm / Cover Width = 1050mm)

Used for ventilating the roof ridge and hip. Positioning can be left to right as well as from right to left.

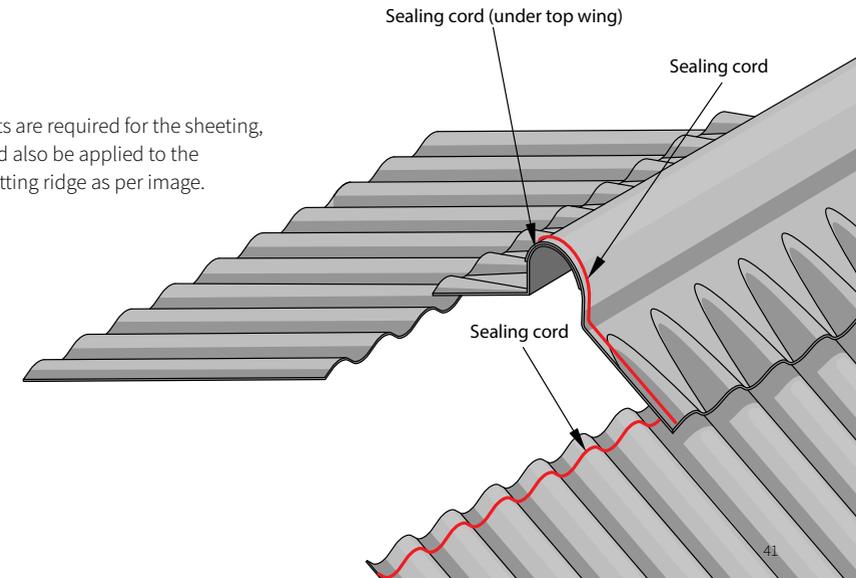


Mitring

Two-piece ridges are not required to be mitred and the top of the FarmTec sheets adjoining the ridges are also not required to be mitred.

Sealing

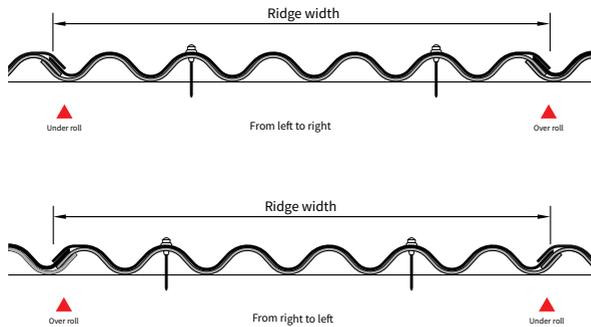
Where lap sealants are required for the sheeting, the sealant should also be applied to the two-piece close fitting ridge as per image.



Fixing

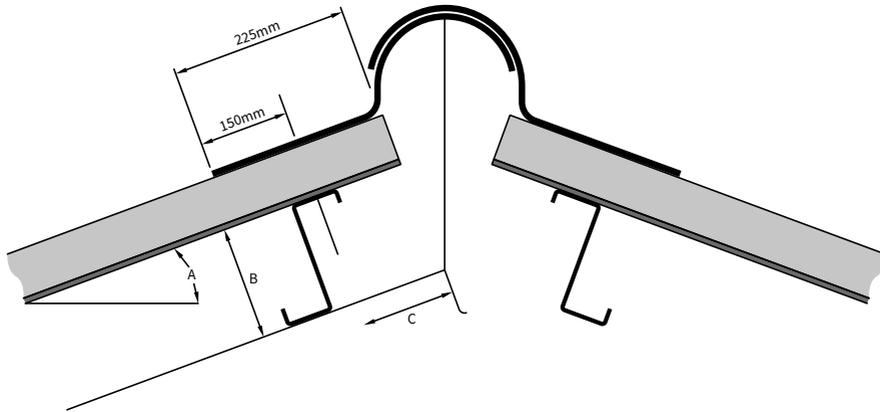
The two-piece corrugated ridges to suit FarmTec can be installed from either end of the building, i.e. – laid left to right or right to left. They're fixed through the sheets into the top purlin using the sheet fastener. The fixing corrugation for the ridges is the same as the sheets and must be pre drilled with a 15mm diameter hole.

The fixing must not be in the side lap corrugation. The inner roll of the ridge should be positioned and fixed first before the outer roll is installed.



The fixing is 150mm from the bottom edge of the ridge.

The sheets on each slope should be fixed to allow a minimum 225mm overlap with the ridge. The position of the top purlins must allow for an 50mm overhang of the sheet, above the purlin by using the table shown below, this will give you the fixing position based on a 50mm wide purlin.

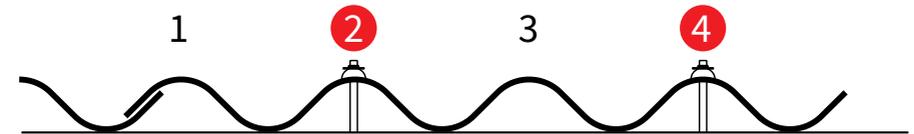


Dimension C for two-piece ridges

Pitch	Purlin depth			
	75mm	125mm	175mm	225mm
10°	143	134	126	117
12.5°	138	127	116	105
15°	132	119	105	92
17.5°	126	111	95	79
20°	120	102	84	65
22.5°	114	94	72	52
25°	108	85	61	38
30°	94	65	36	-
35°	79	44	-	-
40°	62	-	-	-
42.5°	53	-	-	-
45°	42	-	-	-

Any cut sheets should be at the ends of the building (Minimum sheet width is 4 corrugations), this is replicated in the 2pc ridges.

The fixing position for a cut ridge would be as per the below image.



Note: Ensure when installing the outer roll, that the wings of the two-piece ridges are sitting snug on the sheets and not pitched up or down.

Agricultural ventilation systems

*Please note that agricultural ventilation systems are generally used on roof pitches of 15° and above.

System 1: Open protected ridges

Overall length	2300mm
Cover length	2200mm
Wing length	250mm
Angle	112.5° (up to 22.5° pitch)

There are two types of open ridge: unprotected and protected. Both provide efficient ventilation whilst simultaneously reducing draughts. Rain falling into the ridge area will be drained away above the profiled sheeting. It is, however, important to protect the supporting rafters from the elements with a flashing.

Advantages of open ridges

- Provides an efficient outflow of air
- Designed to fit any roof design, but particularly suitable for spaced roofing
- Allows rain to be channelled away over the roof

The critical factor for open ridge ventilation is the air gap marked 'y' on the diagrams below. The clear width of this air gap relates to the number of animals that will be kept inside the building.

Eternit recommend that professional advice be sought during construction to establish the optimum air space.

To meet the requirements of HSG 33, the gap between the purlins at the apex of the roof should be no more than 300mm.

For this reason, we show two purlins on each side of the apex.

The ventilation gap (y) is therefore limited to 250mm.

Unprotected open ridges (Fig.1)

Ideal for farm buildings with central cleaning passages.

Eternit's open ridge fittings are suitable for roofs with pitches from 10° to 22.5°.

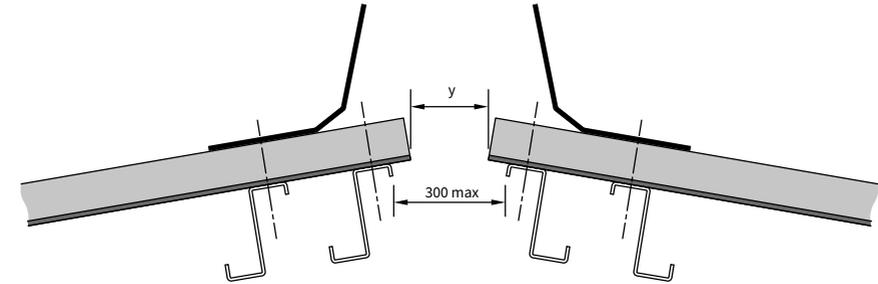


Fig. 1 Unprotected open ridge

Protected open ridges (Fig.2)

In this ventilation system, the ridge units should be installed in the same fashion as for unprotected open ridges. Additionally, however, the ridge unit is bridged at 750mm centres by galvanised metal straps manufactured to suit the pitch of the roof. The straps are fixed at an angle of 5° from the horizontal, semi compressed fibre cement flat sheet or poly carbonate soffit strip is then bolted to the straps along the length of the ridge to form a cover. This cover must be positioned 20mm minimum below the top of the upstands of the ridge units and the total gap between the cover and the open ridge (x) is such that $x = y/2$.

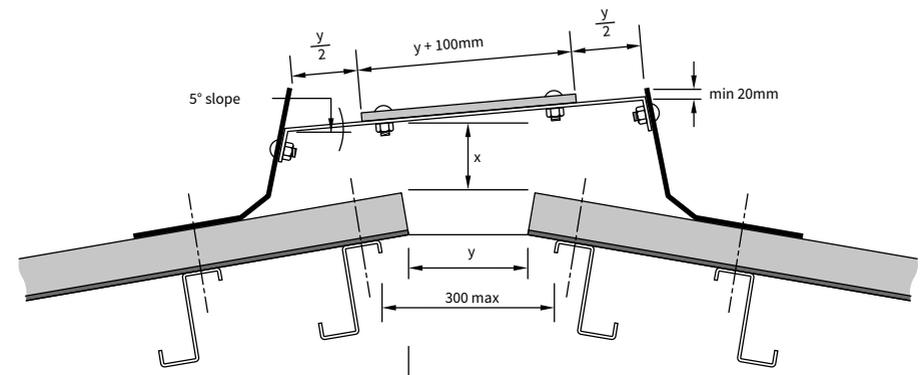


Fig. 2 Protected open ridge

System 2: Breathing roofs

The breathing roof is a simple and effective means of achieving natural ventilation in agricultural buildings such as cattle sheds or pig pens by inserting battens between courses of profiled sheeting.

Advantages of breathing roofs

- Reduction of condensation over the whole roof area
- Small ventilation opening minimises weather penetration
- Eliminates mitring

Breathing roofs with battens (Fig.3)

This form of ventilated roof is achieved simply by inserting a preservative treated 50 x 25mm timber batten between the profiled sheets at the horizontal overlap of each course.

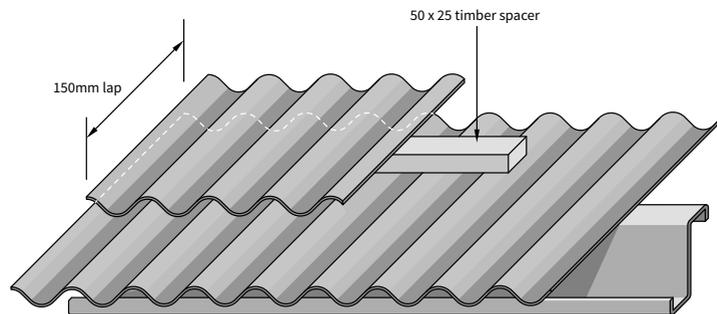


Fig. 3 Breathing roofs with battens

When installing a breathing roof or converting an existing roof, purlins should be fixed at 1375mm maximum centres, with one FarmTec sheet spanning each purlin spacing. Sheet lengths should be calculated to give a minimum end lap of 200mm. In exposed conditions, this should be increased to 300mm to minimise the penetration of driving rain or snow into the building.

System 3: Spaced roofs*

In larger span agricultural buildings and those used for high unit intensive rearing, considerable ventilation is required and can be achieved by the use of spaced roofing.

Advantages of spaced roofs

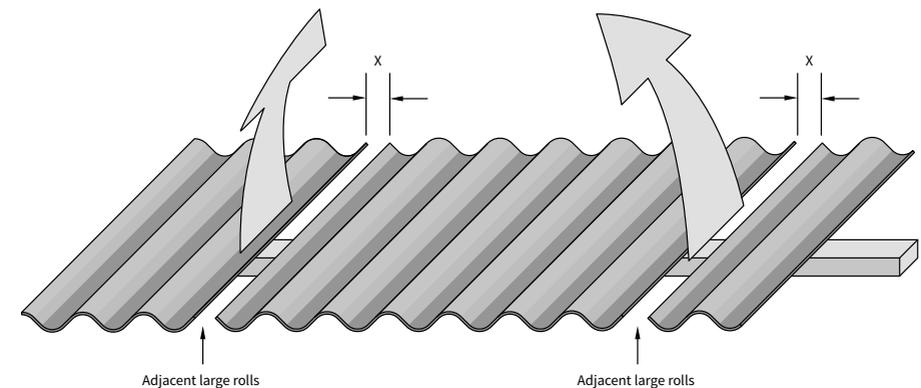
- Achieve a high degree of ventilation and natural internal light
- Minimises internal condensation levels
- Reduction or elimination of mitring

A spaced roof is best achieved by using FarmTec roof sheets specially trimmed to a width of 1,000mm. When these sheets are laid with a gap between each vertical run of sheets it provides the maximum ventilation for a building whilst minimising the potential for weather ingress.

Alternate tiers of sheets should, ideally, be turned around so that they are laid with large rolls adjacent to each other.

Trimmed sheets should be fixed with the fastener passing through the crown of the first corrugation in from the edge of the sheet and with two fixings per sheet per purlin.

The gap 'X' (see Fig. 4) will be determined by the size of the building, the amount of ventilation required and the stock units to be housed. The gap, however, should be between 15 and 25mm, to minimise snow bridging and reduce the risk of rain penetration.



The benefits of using trimmed sheets in this way is that the sheets can be installed the right way up and have well-formed edge 'gutters' to prevent water dripping into the building

during periods of heavy rainfall. Side laps are not required in installation and the building will receive natural daylight through the openings created. Should rooflights be required in a spaced roof, please contact the Eternit Technical department.

Note: A soaker or DPM should be installed beneath each gap in the roof sheeting to protect the purlins, especially where these are timber.

Note: Please note that sheets fixed in this manner will be classed as a fragile roof covering.

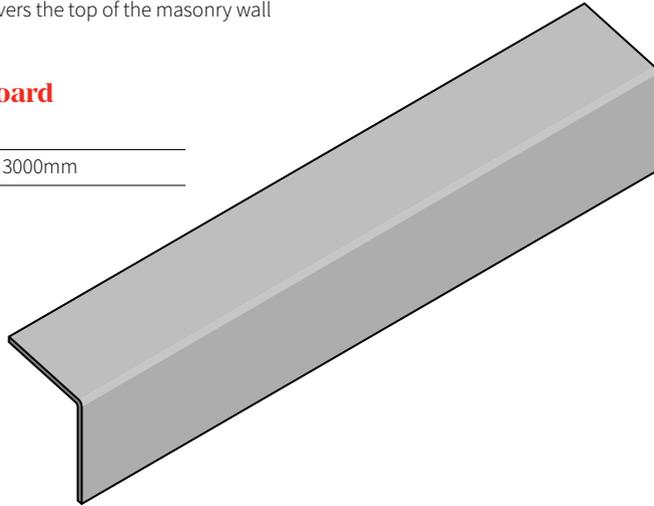
Bargeboards

The range of profiled sheeting bargeboards provides a choice of weatherproof finishes to the verges of a building. With each bargeboard, one leg extends across the roof sheeting while the other covers the top of the masonry wall or vertical cladding.

Plain wing bargeboard

Wing: 300x300mm

Length: 1800mm, 2440mm, 3000mm



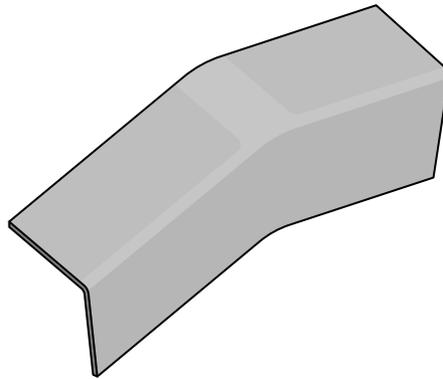
Cranked plain wing bargeboard

Note: Used with the crank crown ridge

Wing: 300x300mm

Girth: 1300mm

Pitches: 12.5° & 15°



Handing of bargeboards

Plain wing bargeboards are universal, as are all cranked crown bargeboards.

Fixing bargeboards

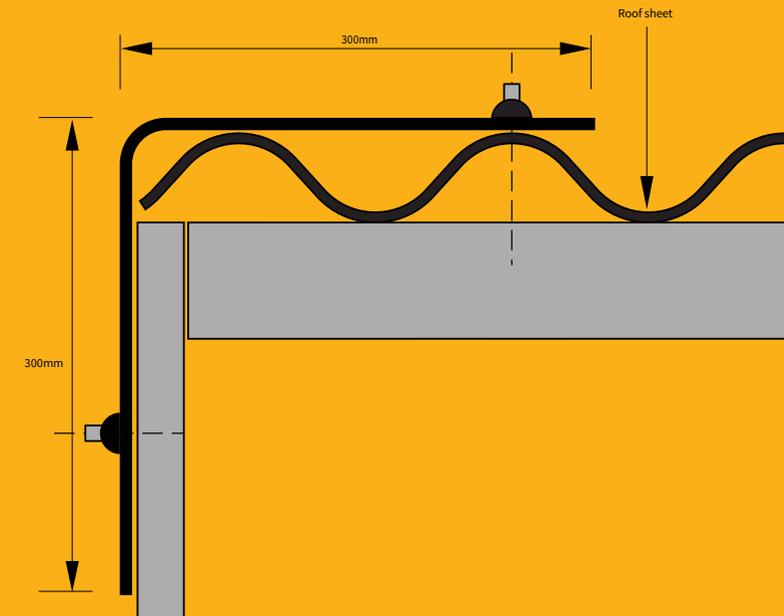
Note: Care must be taken to ensure there is at least 2 wave corrugations beneath the bargeboard.

Bargeboards are fixed with the sheet fasteners into the purlins through the sheets and screwed to the wall or vertical cladding. The sheets should project at least two crest corrugations under the bargeboard to provide optimum weather protection.

Intermediate fixings should be introduced as necessary to ensure that the bargeboard fixings are at 750mm maximum centres.

Bargeboards should be positioned so that their lap is directly below the end lap of the sheeting, with the top of the underlapping bargeboard close to the tail of the sheet in the course above.

When the gable is brick or block, position the bargeboard 25mm clear of the face of the wall. Fix both legs of the bargeboard to the roof using the Topfix fasteners and the wall at all purlin positions.



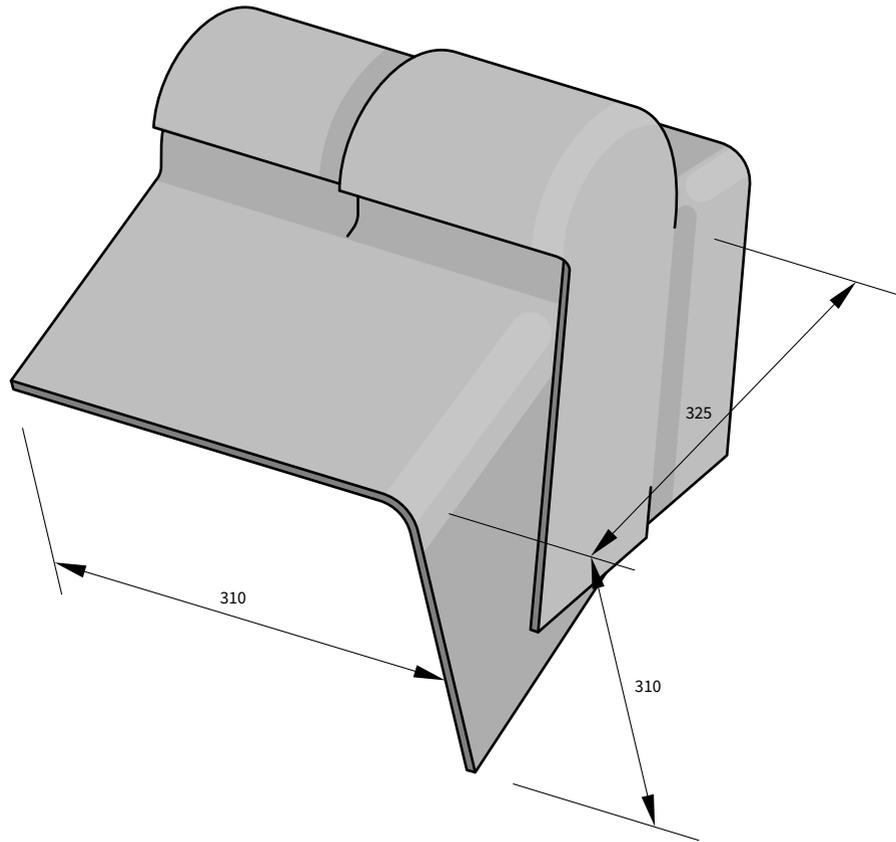
Note: As the verge is the part of the roof that is often the most vulnerable to wind damage, more fastenings are required there to ensure that bargeboards in general and the ends of the bargeboards are always securely fixed.

Finials

Finials are used to finish the two-piece ridges at each end of the building.

Two-piece adjustable hooded finial

Ordered in two parts, inner and outer roll.



Fixing

The bargeboard finishes a minimum 150mm under the two-piece ridges.

The inner roll part of the two-piece finial is fixed into place first, the fixing and fixing position is the same as the bargeboard through the crest of the corrugation of the sheet below. The large roll is then placed into position and fixed the same as the inner roll.

Fixing position should be 50mm – 200mm from the edge of the finial on the top (roof) face.

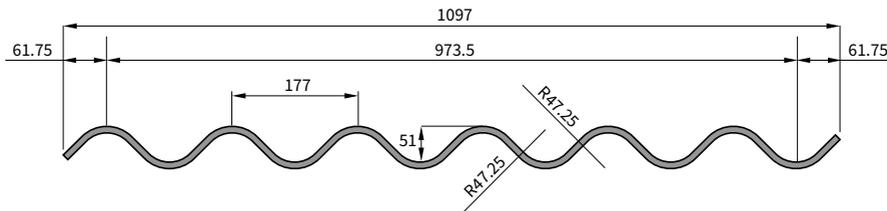
The front face (vertical) fixing should be 50-100mm up from the bottom edge and fixed into the supporting rail or vertical cladding (if metal), should a gap be required between the vertical cladding and bargeboard then an appropriate spacer batten should be fixed to the structure prior to installation.



Polycarbonate rooflights

Introduction

Eternit supplies agricultural grade polycarbonate rooflights, suitable for use with the FarmTec fibre cement sheets. These are classified non-fragile class C but should be always treated as fragile.



Description	FarmTec UV resistant polycarbonate sheet
Thickness	Approx. 1.3mm
Weight	1.88 kg/m ²
Fragility rating	Class C
Fire rating	Class 1Y (BS 476 part 7)
Colour	Clear
Light transmission	88%
U-value	5.68 W/m ² K
Storage	Rooflights should be stored on a flat, horizontal and dry surface. Stack height should not exceed 1m. It is recommended that sheets are stored indoors where possible. If sheets are being stored outdoors, they must be covered with an opaque cover, tightly secured, to protect from wind, rain and sun.

Transport and handling Rooflights should be transported horizontally on flat, sturdy pallets, equal to or longer than the longest sheet. Short sheets should be stacked on top of the longer ones. All panels should be secured and properly fastened to the pallet during transportation. Rooflights must be handled with care all times as it is a glazing material. NEVER walk on the rooflights if access to the roof is required, use walking boards placed across at least three purlins to spread the load. Sheets must be lifted cleanly off the stack. Sheets in excess of 3m long should be carried by more than one person.

Cutting

When cutting the sheets, you must support the sheet to avoid stress and vibration. The blade should only protrude through the sheet by about 10 mm. If the blade is too far through the sheet, the blade 'chips' at the sheet producing a bad cut.

Cutting multiple sheets can be achieved but extra care must be taken. Polycarbonate sheets can be cut with a variety of tools:

- Fine tooth hand saw: hold the saw at a shallow angle and cut with slow steady strokes.
- Jig saw fitted with a metal cutting blade
- Band saw fitted with a high-speed metal cutting blade
- Circular saw fitted with a diamond grit blade.
- Angle grinder with thin metal slitting disc.

The basic blade characteristics which we have used for multiple sheets is:

Circumference speed = 2400 m/min
 Tooth spacing = 10 mm approx.
 Diameter = 250 mm approx.
 Clearance angle = 20-30°
 Rake angle = 15°

Drilling

Polycarbonate sheets can be drilled by hand or power drills. If using a power drill, set to a slow speed. Support the sheet underneath the hole position to avoid vibration. When drilling holes always allow for thermal movement. Support the rooflight directly under the drill, apply light pressure and avoid creating stress or vibration.

Note: When cutting or drilling fibre cements sheets near polycarbonate rooflights, ensure all dust is removed of the sheet with a dry cloth.

Fixing instructions

The use of translucent sheets at the edge of the roof surface must be avoided. The combination of translucent sheets under fibre cement accessories is not recommended.

Filler blocks

Polycarbonate sheets must be supported at each purlin position, using profile filler blocks or the FarmTec Fibre Cement sheet.

Sealant

Polycarbonate sheets must be sealed using a 10mm diameter butyl strip sealant. Place a row of sealing strip either side of the purlin centre line, separated by about 10mm at the end laps and top of the polycarbonate sheets (so the fixing is in between the 2 strips of butyl). Side laps are single sealed, with the butyl strip positioned outside the line of side lap laplox fixings. (Ensure that butyl strip being used is compatible with polycarbonate.)

Mitring

The polycarbonate sheets do not require mitres, and the corresponding corner of the FarmTec sheet should also be unmitred. Since the build-up of compound layers at end lap situations does not occur.

Fixing positions

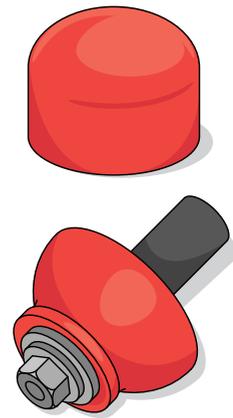
Polycarbonate rooflights should be fixed through every corrugation at the end lap and intermediate purlin using the same fasteners for the FarmTec sheets, apart from the side lap corrugations.

Polycarbonate rooflights should be pre-drilled with an 11mm hole at all purlin fixing positions. (This is for polycarbonate sheets only and not the fibre cement sheets).

In addition, self-sealing fasteners with a synthetic rubber shank (laplox) or seam bolts and washers with a wide bearing, should be used at 300-400mm centres for side stitching to the adjacent sheet the hole should be pre-drilled to suit the selected side stitch fixing chosen. It is advisable to use weatherproof caps, and washers where possible, that are a distinctly different colour to the fixings for the rest of the roof. The rooflight fixings act as a warning that this location is always fragile and should be avoided. Conventionally, poppy red caps are used for rooflights.

Panel orientation

Ensure that the clearly marked UV protected surface of the polycarbonate rooflight is to the outside. Polycarbonate rooflights must always be installed with the corrugation running vertically, or up- slope.

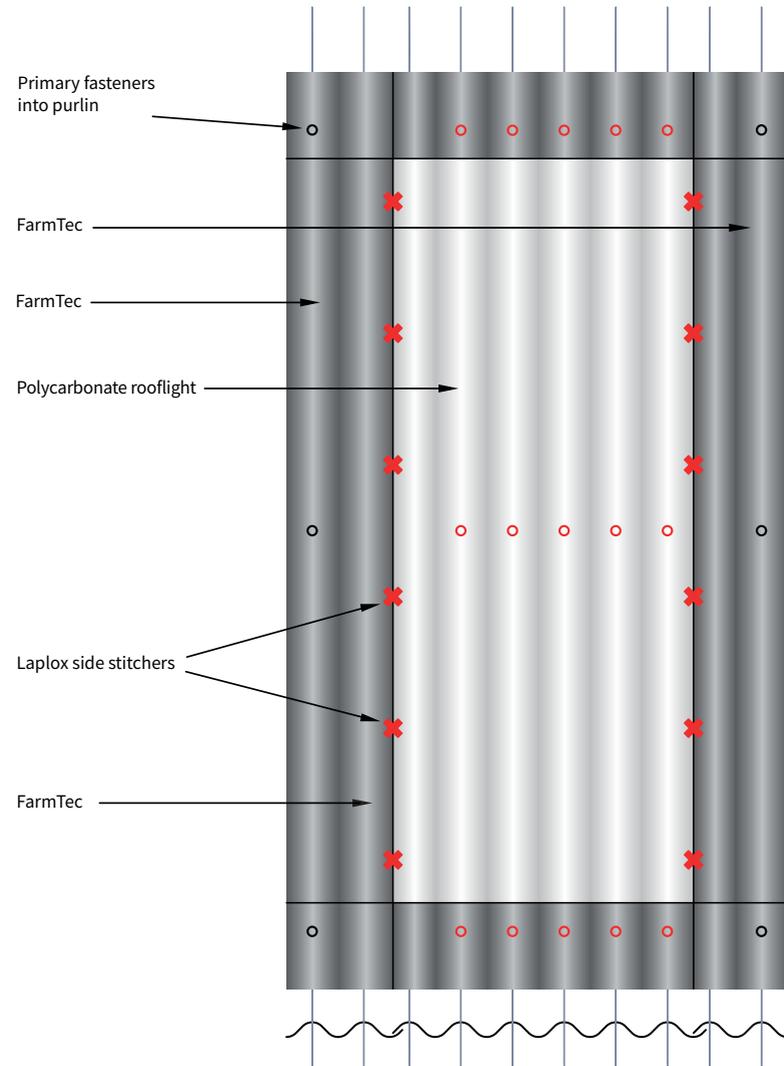


Laplox side sticher with Sela washer and cap.

Note: Self-tapping screws and blind rivets should not be used for stitching side laps.

Typical fixing arrangement

- ✗ = Laplox
- = topfix fastener with red cap
- = topfix fastener

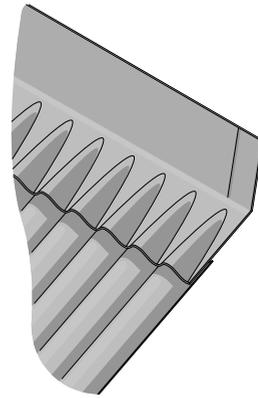


Note: The fixing recommendations will vary depending on the type, grade and supplier of the material being used.

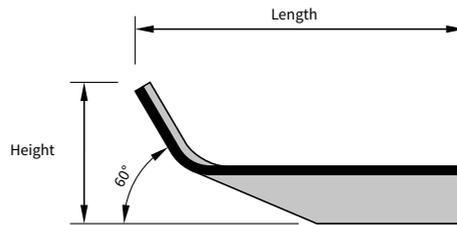
Top abutment – apron flashing piece

Apron flashing pieces consist of a corrugated wing with a flat apron. Used as a closure of the transition from the topside of the roofing surface against a vertical upstand wall.

Width	1100mm
Cover width	1050mm
Length	325mm
Height	131mm
Angle	120°



Apron flashing piece



Handing

Apron flashings are handed left or right.

Fixing

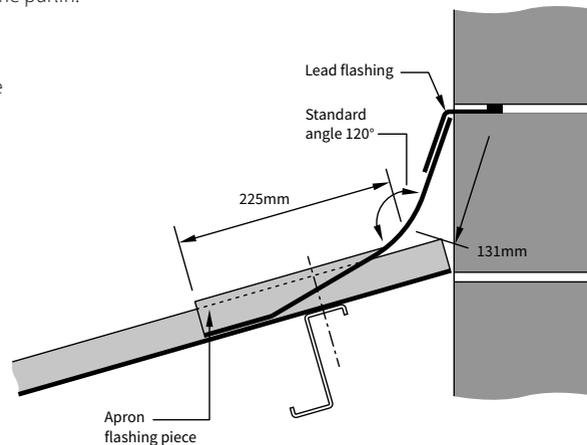
Lap the apron flashing over the sheets with a minimum overlap of 225mm, fixing position is 150mm up from the end of the apron flashing, then fix using the same fasteners as the sheets into the purlin.

Sealing

Sealing requirements are the same as the sheets.

Mitring

Not required.



Sheets laid right to left -

Laying the apron flashing
Right to Left



Laying the apron flashing
Left to Right



Sheets laid left to right -

Laying the apron flashing
Right to Left



Laying the apron flashing
Left to Right



Movement joints

When are movement joints required?

Length of building	Number of movement joints
0-45m	0
45-75m	1
75-105m	2

Plus, one extra movement joint for every additional 30m.

Applications

Movement joints are intended for use in long, continuous stretches of roofing or vertical sheeting, to accommodate thermal and other movements. BS 8219 recommends that movement joints be included in stretches of roofing and vertical sheeting on buildings exceeding 45 metres in length.

They should also be designed to coincide with any structural or movement joints provided in the building, in which case, there should always be a movement joint through the complete system.

For buildings in which the temperature or humidity is higher than normal, or which are subjected to sudden changes in temperature, the movement joints may be required at closer centres than indicated. Contact the Eternit Technical department for further advice.

For built up roofs

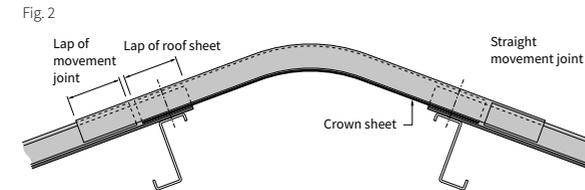
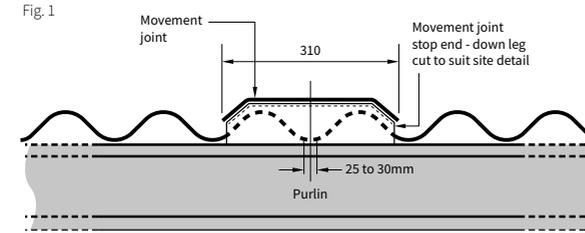
The movement joint is generally only required to allow differential movement of the fibre cement sheets, and there is no requirement for a movement joint in the lining panel or insulation system.

Forming movement joints

Where the movement joint is to be formed, each sheet is cut through the valley at the centre of the sheet, and the resulting pair of half sheets spaced 25 to 30mm apart. The movement joint should be laid with the top end butting up to the bottom edge of the next sheet upslope allowing a min 200mm lap.

The movement joint pieces are fixed to the purlins using the same method of fixing as the roof sheets, with one fixing in the centre of the movement joint at each purlin run. This fixing should pass through the gap between the two half sheets and must not be overtightened.

(Figs.1 and 2).



Cranked movement joint ridge

Cranked movement joint ridges are available to suit FarmTec ridge pieces, when laying cranked crown ridges, it forms a 25-30mm movement gap as detailed above and then cover it with the cranked movement joint ridges, screwing them directly to the ridge purlins.

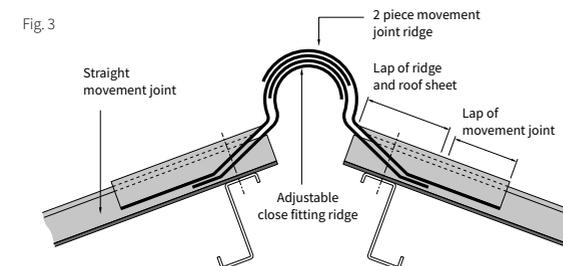
Note: When laying the straight movement joint, the top end should butt up to the overlap of the cranked crown ridge piece. The crown cap, being longer than the crown ridge piece will then correctly overlap the straight movement joint.

Movement joint end cap

Intended to close the open end of a movement joint, stop ends are made to fit over the sheeting and into a straight movement joint. They should be fixed by bolting to the movement joint.

Two-piece movement joint ridge

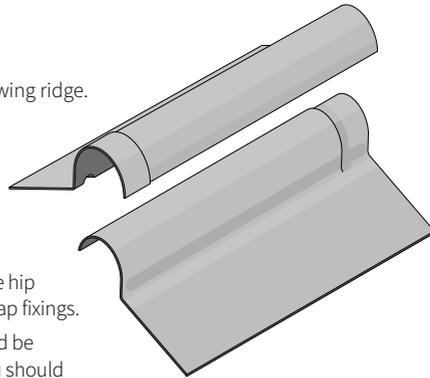
These are used in the same way as cranked movement joint ridge but designed to fit two-piece close fitting ridges (Fig.3).



Hips

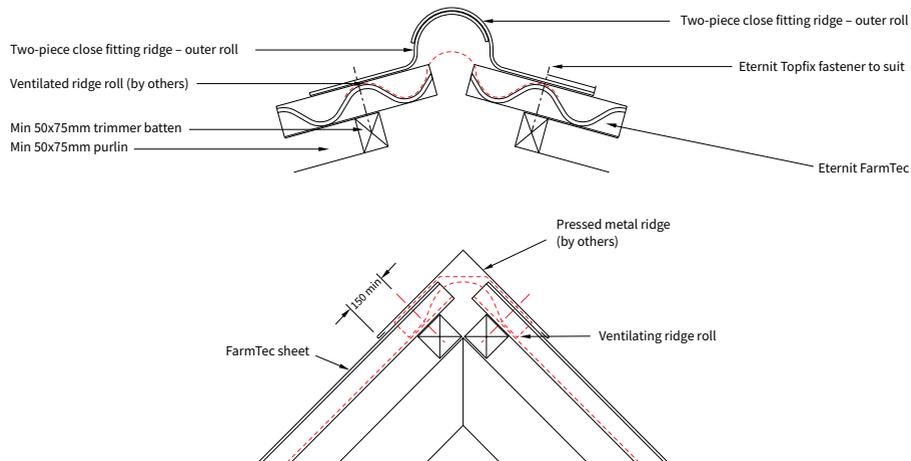
A fibre cement option for the hip is the two-piece plain wing ridge. This ridge sits across the tops of the corrugations.

Alternatively, you can also use a pressed metal plain wing ridge. (The wider the better).



Fixing

1. Fix a 50 x 75mm trimmer batten to run parallel with the hip to accept the fixing for the Profiled sheet and the hip cap fixings.
2. To prevent water ingress, the open corrugations should be closed by splay cut profile filler blocks (we suggest you should take advice from the filler block suppliers regarding their products on this type of application), or a ventilating ridge roll.
3. Fixing position for the ridge piece is 150mm up from the bottom edge of the ridge and 100-150mm in from the end of the ridge unit such that the fixing is at the crest of the sheet corrugation (please see drawing below).



Finishing a ridge hip junction:

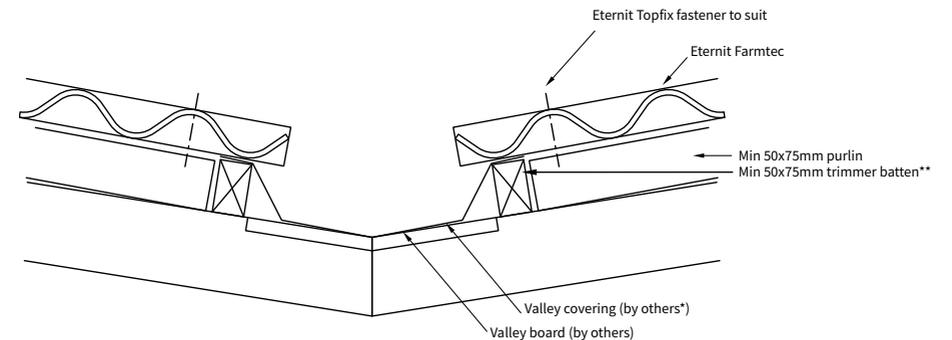
Finishing a ridge hip junction, a lead soaker (or other materials are available) is to be placed underneath the ridges at the hip, as you cannot get a weather tight joint where the ridge and hip covering meet. Then a neat cut will need to be made to finish off the ridge.

A pressed metal flashing or lead would be best dressed over the junction to give a neat weather tight finish.

Valley

Fixing

1. Fix support noggins to the inside of each rafter face at a level to receive individual valley boards between the rafters.
2. Nail valley boards to lay flush with the tops of the rafters. Minimum width valley gutter is 150mm. But the amount of water flowing off the roof into the valley gutter services needs to be calculated to ensure the gutter is deep enough or wide enough. The critical point is the lowest point of the valley gutter.
3. Fix 50 x 75mm trimmer batten to run parallel with the valley. Maximum unsupported overhang is 300mm for FarmTec Sheets.
4. Fix the lead valley gutter lining over the valley boards and dress over the trimmer batten. Form welted edges on the sides of the valley gutter lead lining, to return minimum 15mm.
5. Centre the Profile sheets, before fixing down, ensuring a clear gutter to maintain an uninterrupted flow of water from the roof.



Notes: Corrugations should be closed with splay profile filler blocks or comb fillers.

*Valley covering options GRP, Lead, Pressed Metal.

**This batten is to run parallel with the valley.



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All previous issues here within lapse, with this edition.

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