

- Product Information -

No Special Tools Required

- Hand fastened (hammered or screwed) or fastened with a nail/screw gun.
- Sharp utility blade or a standard circular saw.
- Tape measure, pry bar, tin snips.
- Chalk line with blue chalk (do not use red chalk as this can stain the product).



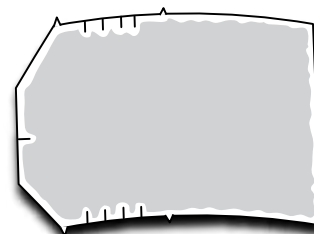
Storing the Product

For proper installation, the slates need to be stored on the original pallet on a flat surface. Proper storage of the product at the job site is important. Classic slates are cambered to ensure that maximum pressure is transferred to the leading edge of the slate during installation and should be stacked face down (as originally delivered). **Do not double stack pallets.**

Conditions: Perform work when existing and forecasted weather permits. Work should be performed in a safe and professional manner and when ambient weather conditions are within the limits established by Tapco Roofing Products.

Storage: TapcoSlates should not be stored on roof decks in such a manner as to over-stress and/or damage the deck and supporting structure.

Cold Weather Installation: TapcoSlates should be stored in original packaging in a storage facility where the temperature meets or exceeds 7°C. Use protective coverage over all pallets while being temporarily stored on-site. TapcoSlates must be conditioned at a temperature no lower than 7°C for twenty-four (24) hours prior to use. TapcoSlates may be installed at temperatures as low as 0°C but must be hand fastened, the use of a pneumatic gun below 7°C will result in cracking and webbing in the fastened area. Be sure to follow the manufacturer's installation requirements for all underlay or membrane and any other applications. Comply with any and all local building regulations. **Note of Caution:** The slates can be slippery under certain conditions and job site safety procedures should be enforced.



Product Description

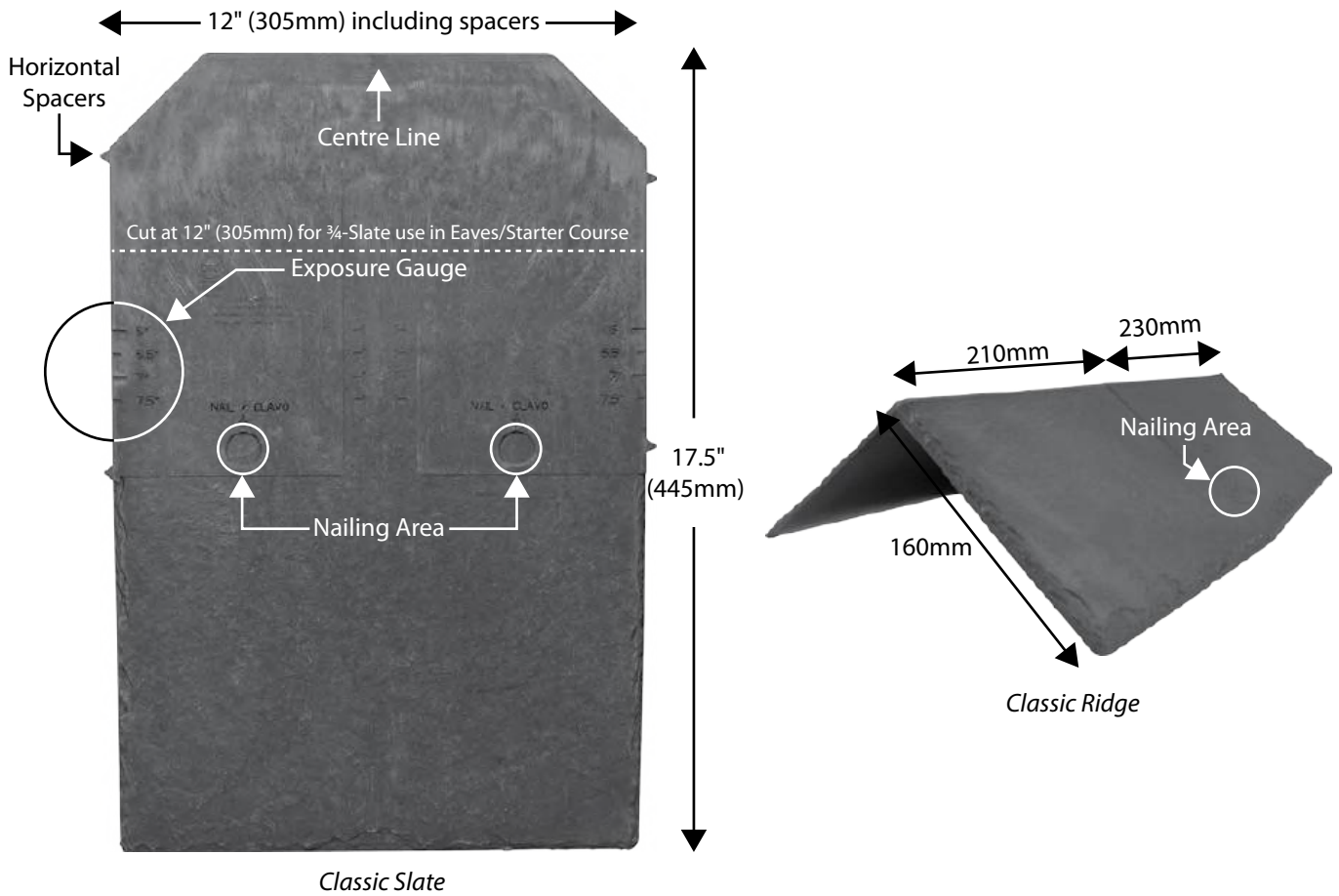
TapcoSlates are manufactured from a blend of limestone and virgin polypropylene, and are made from multiple natural patterns. TapcoSlate is not made from recycled materials but can be recycled at the end of its long lifespan.

WARRANTY:	40 Years	ROOFING BOARD:	0.7" (18mm) OSB.
WEIGHT (CLASSIC SLATE):	0.7 kg	MINIMUM PITCH:	14° (Felt & Batten and Fully Boarded).
WEIGHT (CLASSIC RIDGE):	0.7 kg	MAXIMUM PITCH:	90° (Felt & Batten and Fully Boarded).
DRILLING:	No drilling required	SORTING:	No sorting required.
PACKAGING (CLASSIC 12"):	Pallet: 1600 slates (1.04 tonnes), Bundle: 25 slates (16.25 kg).	BATTEN SIZE:	2" x 1" (50mm x 25mm) treated battens (minimum).
ROOFING MEMBRANE:	Recommended use of impermeable (non-breathable) Type HR roofing membrane.	CUTTING:	Fine-toothed handsaw, jigsaw, circular saw, or sharp utility blade (score and break).
FIXING:	Large 10mm diameter head, galvanised 1.2" (30mm) by 0.1" (2.5mm) steel nails or 1.2" (30mm) by 0.14" (3.5mm) outdoor Phillips bugle screws (using hammer/screwdriver or nail/screw-gun). Longer 2" (50mm) nail or outdoor Phillips bugle screw required for fixing ridges and hips. Corrosion resistant fasteners are always recommended, especially in coastal areas. In Scotland we recommend the use of Stainless Steel nails for fixing. 7.1mm diameter nail heads are recommended when using a nail gun.		

Please note: the diagrams in this guide are for illustration purposes only, actual sizes/placement may vary from those shown. If in doubt, please contact your local area manager for advice, or contact our technical department: +44 (0)1482 880478.

IMPORTANT: Advice from our technical department should be sought when installing on high buildings and/or in exceptionally windy areas. Telephone: +44 (0)1482 880478.

TapcoSlate Information (all measurements are approximate)



Pitch, Gauge, and Coverage

TapcoSlate Classic

ROOF PITCH	GAUGE	SLATES PER M ²	RIDGE & HIP CAPS	1 METRE LENGTH
14* to 25 degrees (fully boarded or felt & battens)	6" (152mm)	22	Ridge Cap	6 Units
25 to 27.5 degrees (fully boarded or felt & battens)	6.5" (165mm)	20	Hip Cap	6 Units
27.5 to 30 degrees (fully boarded or felt & battens)	7" (178mm)	19		
above 30 degrees (fully boarded or felt & battens)	7.5" (191mm)	18		

* The minimum recommended pitch and lap may be influenced by special circumstances, please contact our technical department for advice.

Recycling

TapcoSlate is 100% recyclable, but is not marked with a recycling symbol/logo and so the contractor should contact a local recycler to make the necessary arrangements, stating that the product is "mineral-filled Polypropylene" plastic. If there is any difficulty in locating a recycling facility, please contact us. Note that skip companies will send the product to the correct recycler.

Fastener Recommendations

Slates should be applied using two (2) large 10mm diameter head, galvanised 1.2" (30mm) by 0.1" (2.5mm) steel nails or 1.2" (30mm) by 0.14" (3.5mm) outdoor Phillips bugle screws (using hammer/screwdriver or nail/screw-gun). Corrosion resistant fasteners are always recommended, especially in coastal areas. In Scotland we recommend the use of Stainless Steel nails for fixing. 7.1mm diameter nail heads are recommended when using a nail gun. All slates will be attached with two fasteners, as per these instructions.

The length of the Hip & Ridge fastener should be a minimum length of 2" (50mm) over the slates and 3" (75mm) over ridge vent.

Note: Caution should always be used to ensure against over/under penetration of the fastener. **Do not over-drive the fastener.** The fastener head should be contacting the slate within the centre of the nailing target circle.

Improper fastening can compromise the roof system and voids the manufacturers' warranty.

Roof Decking Materials

- Minimum of 23/32" (18mm) plywood decking, solid wood decking, or oriented strand board (OSB).

Roofing Membrane/Underlay

TapcoSlate Classic roofing slates are classed as **insufficiently air-open** products and therefore, following the guidance within BS 5250, a **vapour impermeable (HR)** roof membrane/underlay should be used. Tapco Roofing Products recommends *Protect Wunderlay* for TapcoSlate Classic and offers the following guidance:

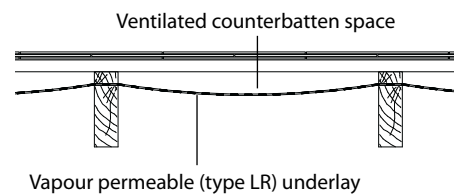
Air Permeability

The detail below explains how a vapour permeable (LR) roofing membrane allows water vapour to escape the structure and requirements for ventilation of the counter batten space when using a roof covering that is insufficiently air-open.

Roof coverings and batten space ventilation using vapour permeable underlays (type LR)

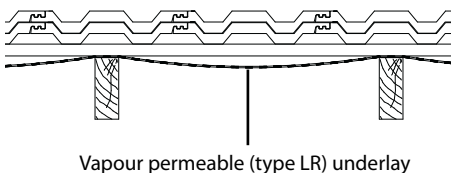
Where vapour permeable underlays (type LR) are used in both cold and warm roofs to contribute to the control of condensation, they do so by allowing water vapour to escape through the material by diffusion. It is important that this water vapour can escape through the roof covering to atmosphere from the tiling batten space. BS 5250 defines the level of air openness required of the roof covering and the test method. Traditional concrete and clay tiles should be sufficiently air open, but advice should be sought from the roof covering manufacturer/supplier.

Roof covering insufficiently air-open



For roof coverings that do not meet the required air openness, provide a counterbatten space at least 25mm deep, with ventilation of 25 000mm²/m at eaves or low level and 5000mm²/m at ridge or high level. This is in addition to the ventilation already specified for cold and warm roofs.

Roof covering sufficiently air-open



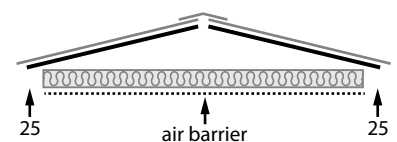
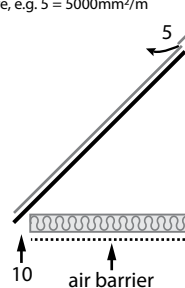
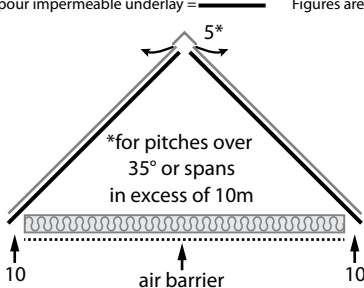
With impermeable underlays (type HR) this ventilation is unnecessary as there will be relatively little moisture transfer from within the building to the batten space.

Cold Roof Applications

When installing TapcoSlate Classic onto either battens or OSB a **vapour impermeable (type HR)** roof membrane/underlay should be used. When installing directly onto OSB, ventilation in accordance with BS 5250 to the loft void should be adhered to. Insulation should be installed on the horizontal ceiling below. To further enhance this construction, improving thermal performance of all insulation by reducing convection flow and help to avoid interstitial condensation risk within insulation in accordance with BS 5250, we would recommend installing an air barrier on the warm side of the insulation, a suitable product would be *Protect BarriAir* – an air barrier membrane with some vapour control properties.

Cold Roof: with large voids above horizontal insulation using impermeable underlays (type HR)

Vapour impermeable underlay = Figures are given in 000s of mm² per metre, e.g. 5 = 5000mm²/m



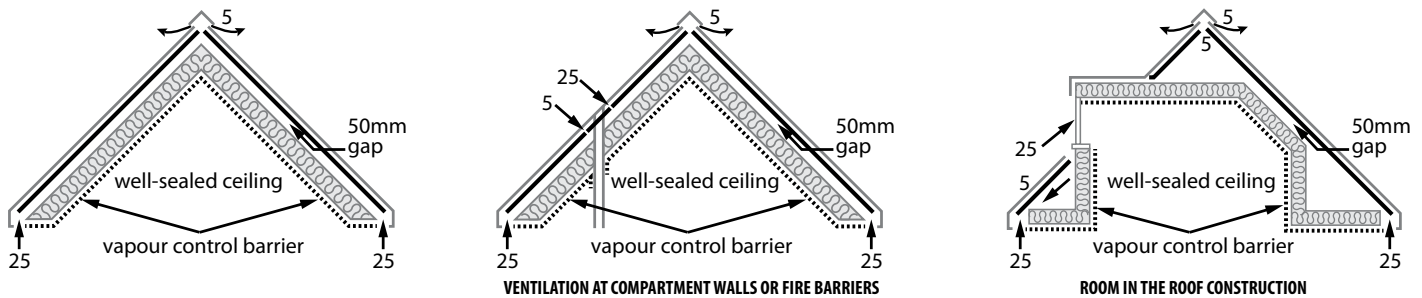
Warm Roof Applications

When installing TapcoSlate Classic onto either battens or directly onto OSB a **vapour impermeable (type HR)** roof membrane/underlay should be used. Insulation should follow the line of rafters, with a 50mm deep void between the top of the insulation and the underside of the underlay/OSB. This void to be ventilated in accordance with BS 5250. An air and vapour control barrier membrane to the warm side of the insulation must also be installed, we recommend the *Protect VC Foil Ultra* – low emissivity air and vapour control layer product.

Please note that the preceding is purely manufacturers guidance and should not supersede local building authority recommendations.

Warm Roof: with small or no voids above sloping insulation using impermeable underlays (type HR)

Vapour impermeable underlay = Figures are given in 000s of mm² per metre, e.g. 5 = 5000mm²/m



– Installation Guidelines –

Spacing Between the Slates

0.25" (6mm) spacer tabs are provided on every Classic slate to aid in maintaining consistent spacing. The spacers will allow for any movement of the roof deck and expansion/contraction of the slate (although thermal expansion is highly unlikely in European climates). **DO NOT remove the spacer tabs** unless finishing at the end of the course.

Laying Out ½ Slates or Cut Slates

When beginning or finishing with a cut piece of slate, the cut edge should be installed inward. The manufactured edge should be installed to the outside edge of the roof. This is to maintain an acceptable roof appearance along the gable edge of the roof.

The centre mark of the slate can be used as a guide to cut ½-slates. This can also be used as a guide to keep courses straight and to assist in maintaining the proper Classic slate 0.25" (6mm) spacing when aligning with intermittent vertical chalk lines. **DO NOT install slates smaller than 3" (76mm).**

Preparation

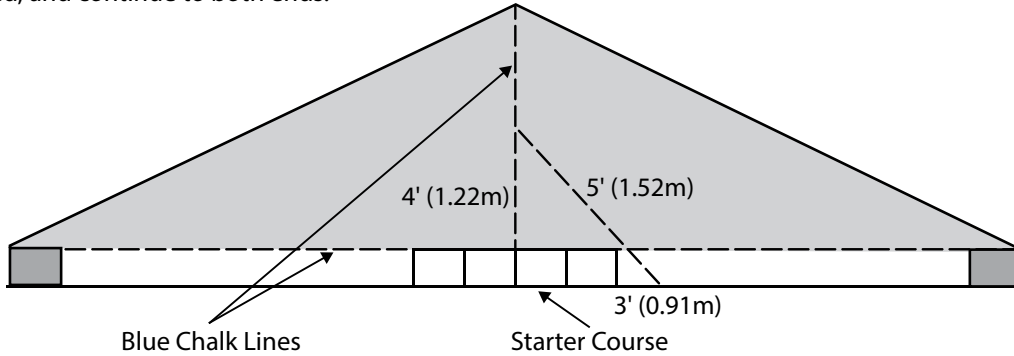
Inspect all areas of the roof surface to be covered.

1. The surface area must be uniformly flat, smooth, sound, clean and free of irregularities.
2. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking and/or metal clips.
3. Verify that substrate is sloped for drainage and completely anchored to sound framing. Any foreign particles shall be cleaned from interlocking areas to ensure proper seating and to prevent moisture intrusion and ice damming. Proper provisions must be made for flashings and roof penetrations.
4. Even though metal flashing and other specialty flashings may not be the responsibility of the roofing contractor, these items must be in place prior to the roof slate installation. Work by other trades which penetrate the roof plane must be completed.

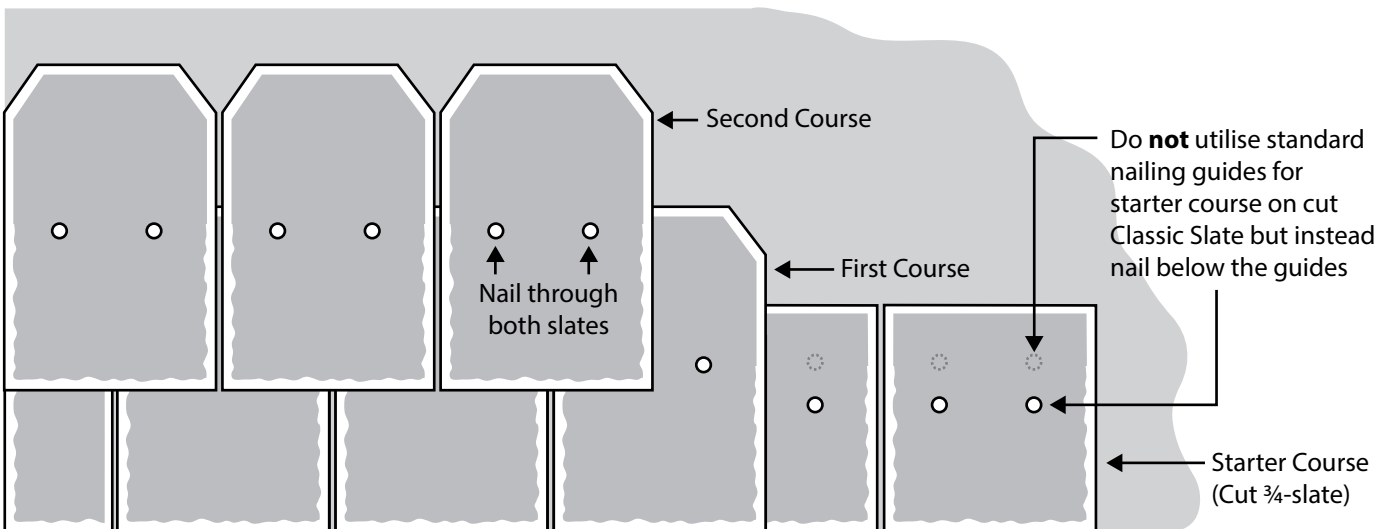
Hip Roof Layout

1. Initial starting points may be from left side, right side or centre of the area to be installed. Mechanical 0.25" (6mm) spacer tabs are provided on every Classic slate.
2. A full Classic slate should be cut into ¾ size, approximately 12" (305mm), to create an eaves or starter slate for the starter course and at the ridge if necessary.

- One method of starting on a hip roof is to locate the centre of the roof area to be covered. From both ends, position starter pieces and snap a horizontal line from the tops of the starters between these two points. Next, snap a vertical perpendicular line. This can be done easily by marking 3ft (0.91m) along the eave, then where 4ft (1.22m) and 5ft (1.52m) intersect will form a perpendicular line. As long as the ratio 3:4:5 stays the same this will hold true, for example, 21:28:35. More horizontal and vertical lines may be snapped to ensure the roof slates will stay true and plumb throughout installation. Begin by placing an eaves slate on the right and left side of the vertical line maintaining a 0.25" (6mm) or 0.5" (13mm) spacing, depending on slate type used, and continue to both ends.

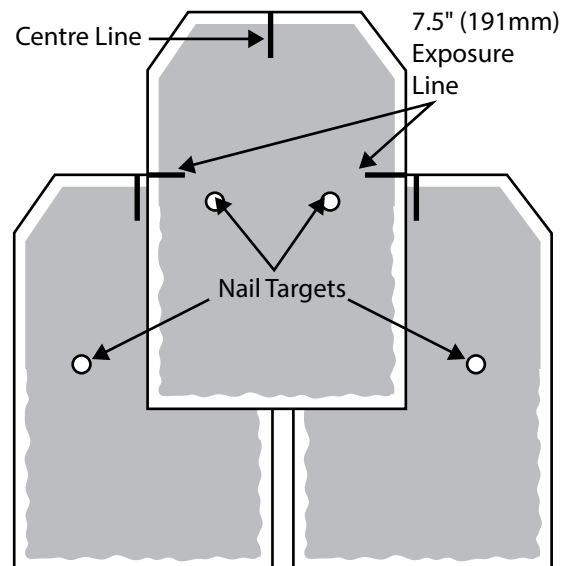


- The eaves and first course should overhang a maximum of 1½" (38mm) at the eaves for the gutter oversail.
- Begin the first course. With a full slate, align centre locator line of the slate directly over the vertical blue chalk line. Continue to both ends, maintaining the 0.25" (6mm) spacing, depending on slate type used, between slates. (See diagram above.)



- After installing the underlay or membrane and before installing the TapcoSlate, clean the surface of debris and dirt. Foreign particles shall be cleaned and removed from interlocking areas to ensure proper seating of the product and to prevent moisture intrusion and ice damming. All roof penetrations shall be properly flashed and secured into position with deck and underlay or membrane fasteners properly driven and not protruding prior to installing TapcoSlate Classic.

- The eaves or starter slates will be used as the first row at the eaves of the roof.
- To create the offset from course-to-course, use the centre mark provided on each slate and cut the slate lengthwise. This ensures that the nail holes are covered with the next course of slates and no through-joints are exposed to the deck.
- Strike the chalk lines horizontally, at the exposure level desired, to ensure that the slates are installed straight and uniform. Vertical chalk lines will help maintain consistency in the key-ways.

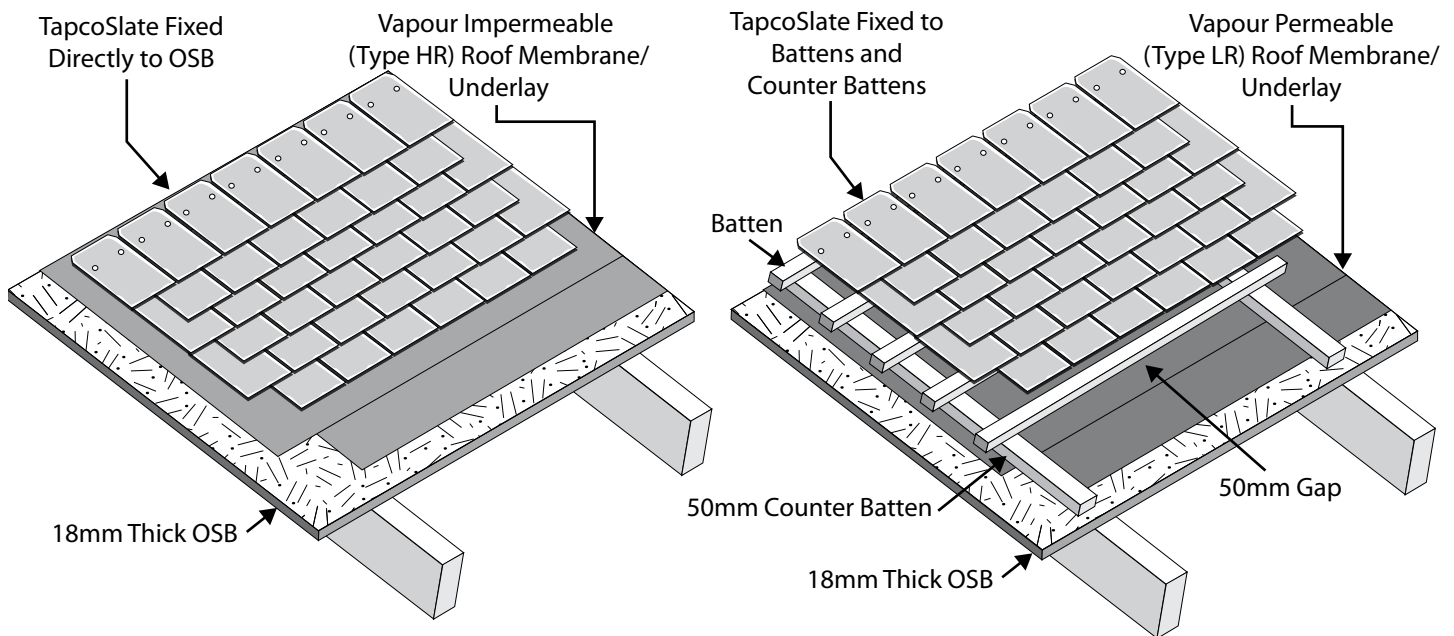


- e) Spacer tabs are provided on each Classic slate to ensure consistent spacing between slates.
 - f) There shall be no through-joints from the roof surface to the underlay or membrane.
7. Each slate shall be fastened with a minimum of two galvanised, stainless steel or outdoor roofing fasteners (clout nails or screws).
- a) It is required that the fasteners be placed within the two nailing targets on each slate. Flatten slate then fasten. Fastener must penetrate decking at least 23/32" (18mm).
 - b) Caution should be taken where the underside of the roof decking is exposed to view, such as in an overhanging eaves, where the nails or screws should be long enough to penetrate the roof decking but not so long that they may be driven through the decking.
8. Continue the second course with a full standard slate set back from the course below, the finished edge facing the gable edge. Align the full roof slate between the centreline locators from the lower course. Next, adjust the roof slate up or down to align the desired exposure lines with the top edge of the lower course. (See diagram on page 9, and roof pitch table information on page 4 for which exposure line to use.)

Fully Boarded Roof

The following instructions are just a guide, and standard roofing procedures should be applied. Apart from the lightness and ease-of-use that TapcoSlate affords, there is very little difference between it and standard slate in fully-boarded roof application. The **most cost-effective way** to fix TapcoSlate to OSB is to first use a **vapour impermeable** roof membrane/underlay, along with, we recommend, either an air barrier on the warm side of the insulation for Cold Roof applications or an air and vapour control barrier membrane to the warm side of the insulation for Warm Roof applications (see the "Roofing Membrane/Underlay" section on page 5 for more details). Alternatively, a vapour permeable roof membrane/underlay can be used along with the application of counter battens on top of the membrane. The same vapour/air barriers are also recommended for Cold/Warm Roof applications using this counter batten method and a vapour permeable roof membrane/underlay.

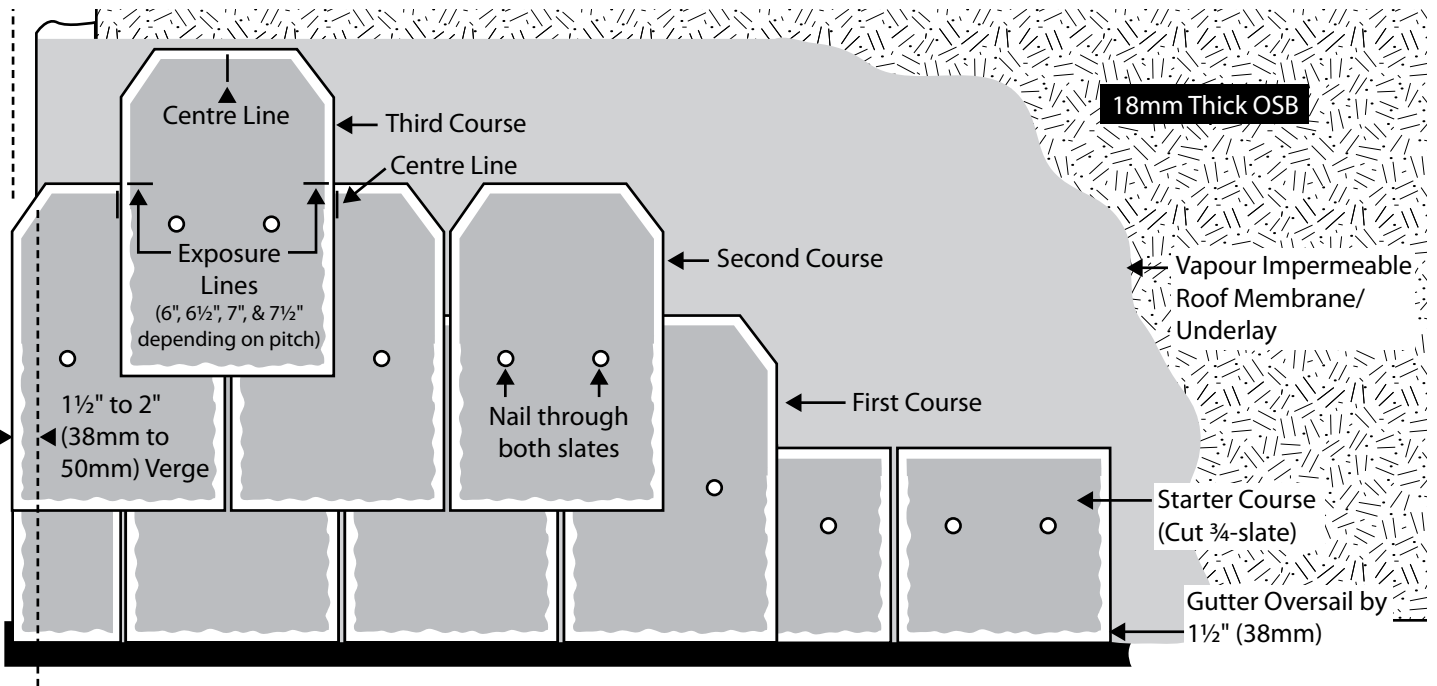
The Different Roof Structures Using Vapour Impermeable and Vapour Permeable Membrane



Being a laminar product, TapcoSlate repels water and does not absorb it, this means that water penetration is non-existent from the roof surface itself. However, vapour/air barriers minimise the risk of moisture accumulating on the underside of the slates/OSB as the most common source of moisture is generated inside the property itself. Using a **vapour impermeable** roof membrane/underlay reduces this risk even further.

The OSB sheeting should be a minimum 18mm thickness.

Layout of a Fully Boarded Roof Using Vapour Impermeable Membrane/Underlay

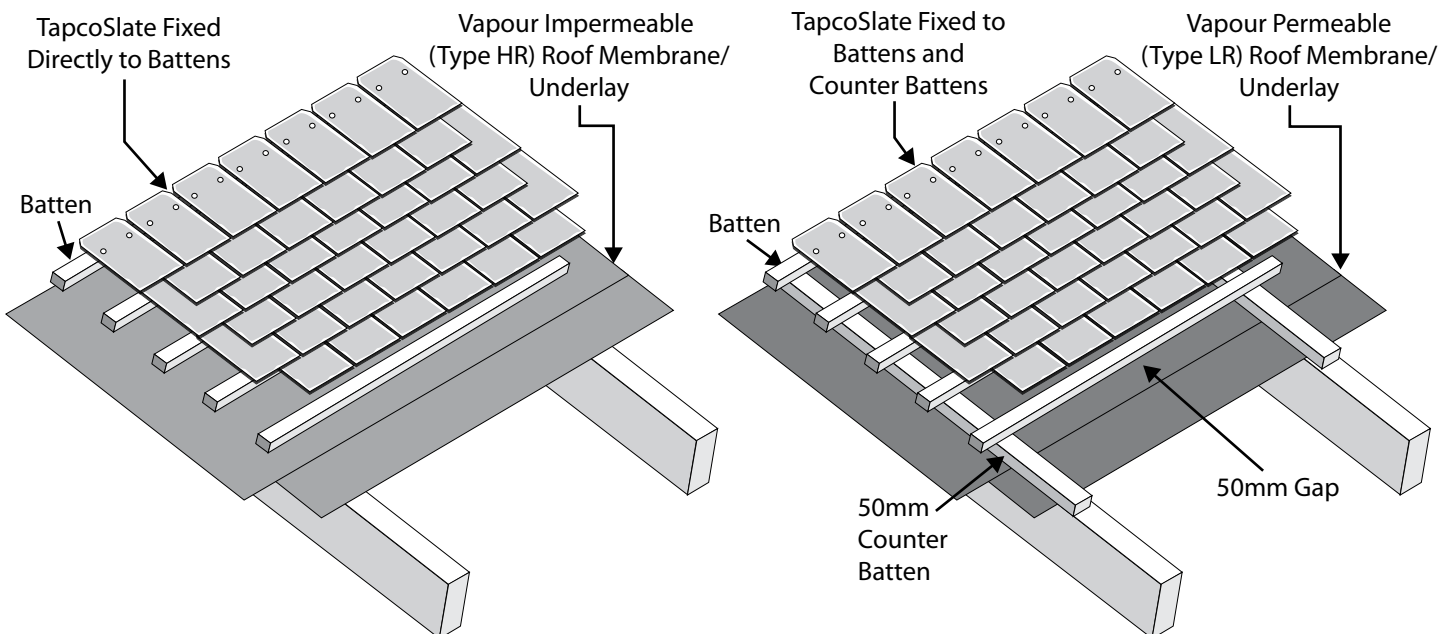


As can be seen by the above diagram, TapcoSlates can be nailed or screwed directly onto the OSB when using a **vapour impermeable** roof membrane/underlay. This is the **most cost-effective method** of fixing TapcoSlate onto a fully-boarded roof.

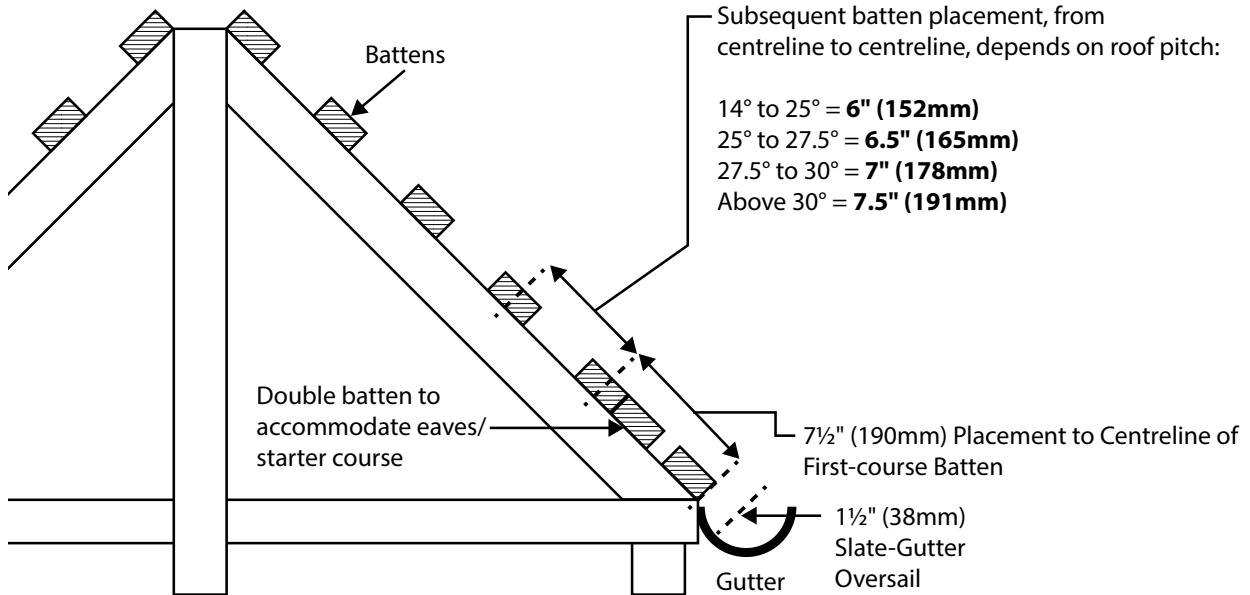
Felt and Batten Roof

The following instructions are just a guide, and standard roofing procedures should be applied. Apart from the lightness and ease-of-use that TapcoSlate affords, there is very little difference between it and standard slate in batten roof application. The **most cost-effective way** to fix TapcoSlate to battens is to first use a **vapour impermeable** roof membrane/underlay, along with, we recommend, an air and vapour control barrier membrane to the warm side of the insulation for Warm Roof applications (see the "Roofing Membrane/Underlay" section on page 5 for more details). No other barrier membrane is needed when using the **vapour impermeable** membrane in a Cold Roof situation. Alternatively, a vapour permeable roof membrane/underlay can be used along with the application of counter battens on top of the membrane. The same air and vapour control barrier membrane is also recommended for Warm Roof applications using this counter batten method and a vapour permeable roof membrane/underlay.

The Different Roof Structures Using Vapour Impermeable and Vapour Permeable Membrane



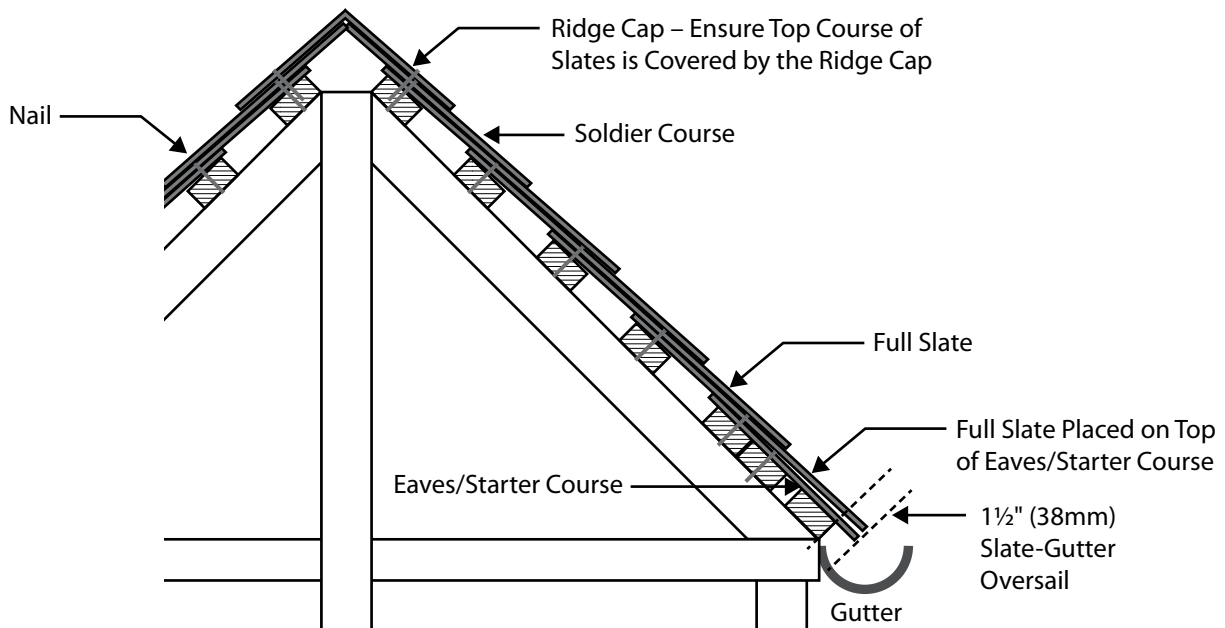
For felt and batten roofs, start by fixing battens – minimum size of 2" (50mm) by 1" (25mm) treated battens – over underlay to the required gauge. The first course and eaves (starter) course should oversail the fascia by at least 1½" (38mm), so the first course batten should be placed approximately 7½" (190mm) centrally from the start of the roof (see diagram). A second batten should then be placed directly under the first course batten to accommodate the eaves or starter course (made from a cut ¾-slate).



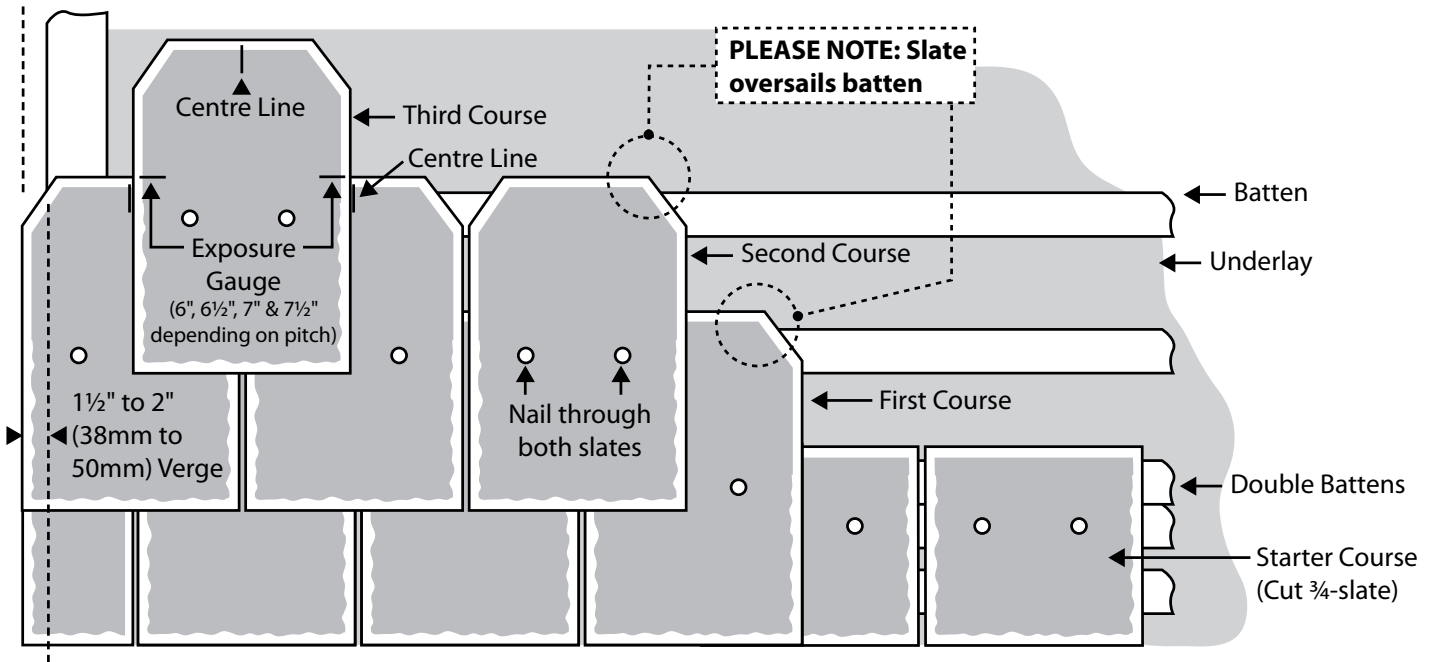
The distance from the first course batten to the second course batten, and beyond, is dependent on the roof pitch and subsequent slate exposure gauge settings. Please see the diagram of the TapcoSlate and the Pitch, Gauge, and Coverage table on page 4. The diagram above also shows an approximate guide to subsequent batten placement.

The position of the top battens should then be established to ensure that the top course of slates will be covered by the ridge cap.

Fix eaves, or starter course using a ¾-cut slate for Classic Slate which can be easily cut to size from a full slate using a fine-toothed hand/circular saw or a sharp utility blade. As stated earlier, the first course and eaves (starter) course should oversail the fascia by at least 1½" (38mm). This ensures water disperses into the centre of the gutter. This must be taken into account when calculating the gauge and positioning the battens.



The required gauge and number of courses can then be calculated. The first course should sit on top of an eaves course. Double batten as shown in the diagram to accommodate the eaves slates.



Verge slates should oversail the brickwork/barge board by 1½" (38mm), and may need to be cut to size at either end.

Lay the first course of full slates over the eaves course and fix to the second batten. Ensure that the first course and eaves course are laid "broken bond" so that the joints do not line up and the weatherproofing integrity is maintained.

Lay subsequent courses "broken bond" as illustrated. It will be necessary to cut to start and finish every other course.

