

Slating & Tiling

TIPS 56

laying clay interlocking roof tiles

Clay pantiles have been around for more than 2,000 years and so they have a good track record for keeping out the rain and snow. But for those that have never come across them before, they require a significantly different technique to setting out and laying to that of concrete interlocking tiles, to ensure they perform their function.

Tiles

The traditional clay pantile is made up of a rectangular clay bat of regular thickness, approximately 12mm-15mm, dried over a former into an 'S' shape with the right-hand edge turned down and the left-hand edge turned up. The top right-hand corner and the bottom left-hand corner are cut to a chamfer equal to the headlap and side lap, with a nib and nail hole fixing moulded into the top edge normally at the bottom of the trough, before being fired in a kiln. Clay double Roman tiles are similar to pantiles with the exception of the shape being a semicircular roll and flat trough combination.

Corner chamfer

Interlocking clay tiles being of even thickness are laid and fixed to horizontal timber battens just like any other roof tile with the exception that for any given tile, the tile above and the tile to the left are in the same plane. This is because for any given roof tile, both the tile above and the tile to the left both lap onto the given tile. Therefore, at each tile corner there would in theory be four thicknesses of tile.

This would create gapping problems unless the side laps were formed in the thickness of the clay tile body. This is what is done with concrete interlocking tiles and the latest generation of clay interlocking tiles from Sandtoft. By cutting off the top right hand corner and the bottom left hand corner to the same angle or patter, it is possible to butt the tile above and the tile to the left together so they lay in the same plane. Then the tile to the top left of the given tile laps over both the tile above and to the left of the given tile. While this may sound very complicated, in reality

it is very simple. But without the corners being cut off the system would not work. In reality the top left hand corner will be down and the bottom right hand corner will be up, but this is hard to see with a tile with a shaped top surface.

The traditional cut at the top right and bottom left is a straight line, but with some designs is a zigzag or a curve. Provided all the tiles have the same corner shape they will fit together. This corner cut allows manufacturers to discourage tiles from different manufacturers being mixed together. The cut starts along the top or bottom edge equal to the side lap distance in from the edge. The cut finishes down the side of the tile equal to the headlap distance. The angle of the cut will be dependent upon those two dimensions.

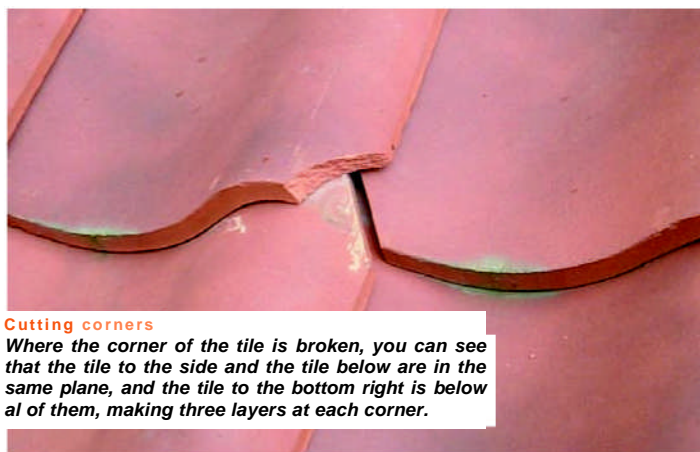
Gauge

No two clay tiles are exactly the same because clay shrinks during the drying and firing process, and will twist and move during the firing process. Therefore, the tiles have to be laid to create the best fit, and regardless of how good the tiles are there will be gaps generated that will vary from tile to tile.

Because of the corner cuts, there is in theory no variable headlap, and are considered to be fixed headlap. There is, however, some adjustment in the shape of the tiles to cope with the variance in the shrinkage of the clay.

Therefore, to determine the batten gauge that should be used, a random sample of 12 tiles should be selected and laid along the ground upside down with all the tiles shunted in. A distance should be measured over ten tiles and divided by ten. The same process repeated with the tiles shunted out and again the distance measured over ten tiles and divided by ten.

The distance should be measured from nib face to nib face where possible. The average of the two figures then used to set out the batten gauge. Theoretically, you will gain a few mm with some tiles and lose a few mm with others, but overall it will work without the tiles riding up or losing headlap.



Cutting corners

Where the corner of the tile is broken, you can see that the tile to the side and the tile below are in the same plane, and the tile to the bottom right is below all of them, making three layers at each corner.

Coursing

The same process should be used to determine the coursing. Take the same 12 tiles and lay them along the ground lapping the side laps, first shunting them in and then shunting out, measuring over ten tiles divide by ten and average the result.

The horizontal coursing should be marked on the battens from eaves to ridge onto the battens with a coloured chalk line every third or fourth tile to help maintain the perpendicular lines up the roof. When laying the tiles, the batten gauge and the coursing lines must be maintained and this will minimise the problems. As each tile is laid, an assessment by the tiler should be made to ensure that each tile fits correctly and should reject any that do not. The rejected tiles will be used somewhere else where it is more appropriate.

Fixings

Interlocking clay tiles tend to be hung on a nib that is to the left of the centre line such that gravity will try and rotate the tiles clockwise to a position where the tiles are in balance about the nib.

This will happen where wind suction lifts the tiles and drops them back into position. Each time the tile is lifted it will rotate clockwise a bit more. Nailing each tile will help resist some of the rotation, but will not stop all of the possible rotation. The traditional solution was to bed the tiles in mortar to prevent the leading edge lifting. Today this practice is

frowned upon as with many interlocking clay tiles there are now clips that will restrain the leading edge.

However many old clay pantiles still do not have a suitable tile clip that can be used. Some spring clips are positively detrimental as they pull the left hand side of the tile down, pushing the right hand side of the tile up making the gaps between the tiles worse than ever. The solution is to choose a suitable interlocking clay tile that has good nail holes and clip fixing systems.

General, and tips

Interlocking clay tiles require more sorting and care when setting out and laying than interlocking concrete tiles. The results are well worth the extra effort.

- If the pitch of the rafter is below 30° check that the tile used is suitable for the pitch.
- Never set out a roof using the gauge and coursing figures provided by the manufacturer. They are only a guide. The true gauge and coursing will need to be determined on site using the actual tiles.
- Have a fixing calculation done to determine what fixing specification should be used. This may show that nailing the tiles is inadequate for steeper pitches and more exposed locations.

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