Mechanical Fixings for Tiled Roofing

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The current version of BS 5534: the British Standard for slating and tiling, was published in 2014, with minor amendments in 2015 (A1) and 2018 (A2). Since then, the industry has become used to the concept of mechanically fixing all roof tiles and associated fittings such as ridge and hip tiles. A mechanical fixing is usually a nail, screw, clip, or proprietary dry fix system that provides a mechanical connection of the tile or fitting with the roof structure, such as a timber tile, ridge, or hip batten.

What does all this mean in practice? Firstly, a quick recap of the BS 5534 recommendations: -

Single lap tiles

For single lap tiles on all roof areas and rafter pitches below 45°, every tile should be mechanically fixed, either by nailing or clipping, dependent on the wind uplift exposure. For rafter pitches of 45° and over, each tile should be nailed with at least one nail. For rafter pitches of 55° and over, including vertical tiling to walls, all tiles should be nailed, and the tail of each tile should be clipped or otherwise mechanically fixed.

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Double lap tiles

For nibless double lap plain tiles, two nails should be used to secure every tile. For nibbed double lap tiles, two nails should be used in each tile in at least every fifth course on rafter pitches below 60°. For rafter pitches of 60° and above, including vertical tiling to walls, two nails should be used in every tile.

Perimeter tiles

Perimeter tiles should be secured using a minimum of two fixings; generally, this can be achieved by nailing each tile at its head and a clip to secure its tail.

At verges, one of the fixings can be a dry verge system, so long as the dry verge complies with the requirements of BS 8612: the British Standard for dry fix ridge, hip, and verge systems.

Of course, these are the minimum fixing requirements; all roof tile installations require a wind load calculation to be carried out to establish if a) the minimum fixings are adequate and, b) to establish what additional fixings are required to resist predicted wind loads for the particular building and location.

Cut tiles

Cut tiles, such as those found adjacent to valleys and hips, must also be twice fixed to comply with the BS 5534 requirements. To avoid the use of small pieces of cut tiles that are difficult to fix, double tiles or tile-and-a-half tiles should be used where available from the manufacturer.

However, there are many tiles for which double, or tile-and-half tiles are not available. This generally applies to single lap tiles that are laid in a 'straight bond' pattern. Judging from the many enquiries we receive at Wabis, there is still uncertainty about how best to twice fix cut tiles which, in many cases, cannot be fixed using standard nails and clips.

In situations where small, cut pieces of tile cannot be avoided through setting out or because wider tiles are not available, BS 5534 allows the use of a suitable adhesive as one of the two required fixings to bond small cut pieces to adjacent full tiles. Though, it must be emphasised that using the wrong adhesive product, or application of adhesive in inappropriate weather conditions can make its use on-site extremely unreliable. No adhesive will bond to dusty or loose surfaces and it is extremely important that the adhesive manufacturer's instructions be followed.

For the second required fixing of cut tiles, Wabis can supply its D-113 cut tile clips. D-113 clips are made of stainless steel with galvanized steel wire. These are quick and easy to fix and provide a high resistance to wind loads. Wabis D-113 clips are ideal for use with the Wabis dry fix ridge and hip system, for securing small cut tiles at hips.

Dry fix ridge and hip systems are now the accepted way to provide a continuous mechanical fix to ridge and hip tiles to comply with the requirements of BS 5534. Mortar, along with nails, screws or clips, can still be used, but most people now realise the benefits that dry fix system provide, not only in being quick and easy to install, without worrying about weather conditions that may spoil a mortar bedded ridge or hip line, but also extra benefits such as a means to control condensation.

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The Wabis dry ridge and hip system is suitable for use with most roof tiles and slates, with its flexible UV-stabilized ridge unions able to fit most ridge and hip tiles. Unions are available in both black and red colours to enable the system to blend in unobtrusively with ridge and hip lines. The ventilating ridge roll is available in a variety of widths, lengths, and types to suit individual requirements, with full aluminium rolls or a combination of corrugated aluminium strips with polypropylene fabrics.

Ridge straps and brackets are available, depending upon the roof design, to secure the Wabis dry fix ridge and hip system. Stainless steel screws with black galvanised steel plates and waterproof washers are supplied to secure the ridge and hip tiles.

Stainless steel clip for cut tiles fixing.

Ridge batten support bracket.

Ridge batten strap

Wabis's ventilated ridge roll.

Terracotta ridge union.

Summary

- Always mechanically secure every tile and fitting on a roof. Remember that all perimeter tiles, including cut tiles at hips and valleys, must be twice fixed.
- Always ask the tile manufacturer for a tile fixing schedule for every project.
- Where small cut tiles are unavoidable, use the Wabis D-113 cut tile clip in combination with a regular tile nail or clip, or with a suitable adhesive for small cut tile pieces.
- The use of the Wabis dry fix ridge and hip system will provide a continuous mechanical fixing in accordance with BS 5534 and BS 8612, will eliminate problems associated with mortar bedding, and will provide roofspace ventilation to control condensation.