

Slating & Tiling

TIPS 54

timber battens

Slating and tiling battens have developed from the thin coppice saplings that were used to support and fix the reeds in thatching. For early peg tiling the timber was split with an axe or lathing hammer to give it a square top edge for the oak pegs to rest on. Being split, the battens were never straight, so were kept as narrow as possible to allow the tiler to bend them and achieve the straightest line possible when nailing them to the rafters.

The rafters were often a quarter of a tree trunk, and tapered from eaves to ridge, so the spacing of the rafters were at close centres of 300mm-400mm. The size of the batten was, therefore, sometimes as small as 25mm x 12mm.

With the introduction of mechanised saws it became possible to cut rafters to a regular size, allowing the rafter centres to increase. The off-cuts were sawn down to make the battens; this practice is still used today. With split timbers it was essential to have the longest knot-free length you could achieve, as the grain was impossible to keep straight, close to a knot.

With sawn timbers, knots have become more common in battens. With the introduction of trussed rafters, the rafter spacing has expanded out to 600mm, requiring battens to be larger to span between the rafters at wider centres.

Timber

Because timber is a natural material that comes from many species of coniferous trees, the characteristics of the material will be different. This will have an effect on the splitting and bending properties of the finished batten.

To reflect this, battens should be sourced from either European and home-grown Redwoods, Whitewoods, Sitka Spruce, Scots Pine, Canadian Spruce Pine and Fir, Douglas Fir- Larch and Hemfir. Timbers that do not fit into these classifications should not be used for battens.

Prior to the introduction of European competition rules, timber for battens came from different climatic zones, and the density and spacing of the growth rings could

vary. Generally, timber that grows quickly in a warm wet climate will have wider and softer growth rings than timber grown in a cold dry climate.

The spacing and density of the growth rings affects the grip of the timber to a nail fixing.; the harder it is to drive a nail into timber, the harder it will be to pull it out.

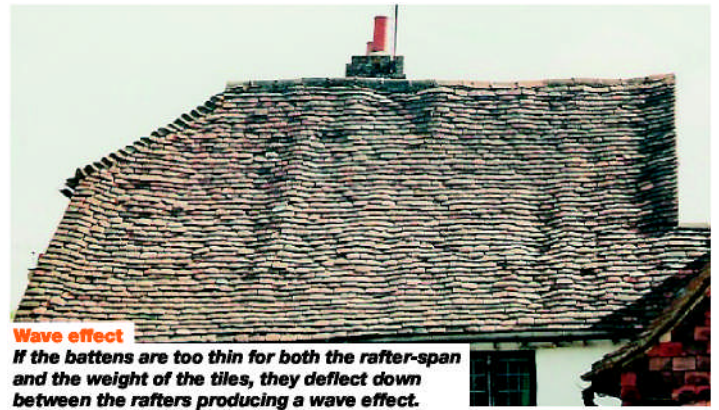
British Standards

There is no specific British Standard for timber slating or tiling battens, but there is a definitive list of species and permissible characteristics that all battens for slating and tiling should comply with, contained in BS5523: *The code of practice for slating and tiling: 2003*, which contains a table of minimum batten sizes for the common roof coverings of natural and FC slate, and single and double-lap clay and concrete tiles. For rafter centres up to 450mm centres, all tile roof coverings and FC slate should use 38mm x 25mm battens, while natural slates should use 50mm x 25mm. For rafter centres up to 600mm centres, 50mm x 25mm battens should be used for natural and FC slate, and interlocking clay and concrete tiles. Plain tiles should use 38mm x 25mm battens.

It may be possible by calculation to prove that for a specific situation, 38mm x 19mm battens are appropriate, but without valid calculations the recommendation contained in the table should be used. For rafter centres in excess of 600mm the batten size needs to be calculated. There is also a maximum and minimum tolerance: +/-3mm wide, +3mm deep.

The main reason for using 50mm x 25mm battens, particularly with natural slates, is to reduce the amount of batten bounce at mid-span when driving in nail fixings.

There comes a point, with small sections of timber, where the force required to push the nail into the timber is more than the force to bend the timber. Therefore, the batten bends before the nail goes into the batten. With head-nailed tiles it is possible to hold the batten while you nail, to stop the batten bending. But with centre-nailed



Wave effect

If the battens are too thin for both the rafter-span and the weight of the tiles, they deflect down between the rafters producing a wave effect.

slates this is almost impossible.

The reason why all the battens are 25mm deep, regardless of the rafter centres, is to ensure the maximum nail-grip for the nails specified for the tiles or slates. With a 19mm-thick batten there is the risk that the nail will pass through the batten and stick 6mm out of the back of the batten, and may puncture the underlay. Battens that are 50mm wide should not be used with plain tiles as the position of the eaves tile relative to the first whole tile is critical. If a 50mm wide batten was used, the eaves tiles would not align correctly.

Installation

It is always better to use rectangular sections of timber on the roof as they are less likely to roll if stood on. All battens generally come treated with preservative. While there are some locations where it is mandatory (Surrey), it is a wise precaution to use treated timbers, but will add a slightly higher risk of pollution entering the environment when the building is demolished. No batten should be less than 1.2m long, so that at 600mm centres the batten will rest on at least three rafters. Battens should always be joined on the centre line of a rafter and with trussed rafters; no more than one in any group of four consecutive battens should be joined on the same rafter.

For tiles and slates where the batten gauge is less than 200mm, no more than four in 12 consecutive battens should be joined on the same rafter. Knots that affect two edges, up to a certain size, may remain in a batten, but where the knot affects three edges, or is over a certain size, the knot should be cut out and the batten joined on a rafter, as knots can severely weaken

the performance of a batten and make fixing nails into, or through it, very difficult. Battens should always be set out to a calculated gauge which is measured for tiles from top of batten to top of batten. While slates are laid to the centre of the batten, the position of the eaves slates should be set out so that all gauges above that point are to the top edge of the batten.

Rigid sarking

In Scotland it is traditional with natural slates to lay ply or OSB board directly onto the rafters, and cover with underlay to keep it dry until the slates can be nailed directly through the underlay into the boarding. This method allows the roof to be constructed quickly without knowing what will cover it, as the batten gauge is irrelevant. The lack of slate battens means that where there are inclined valleys there is no natural space to form the tilt or the welt of the valley construction, without kicking up the edge slates.

Tips

- All slate or tile battens should comply with the recommendations of BS5534, for timber species, markings and sizes.
- Battens less than 1.2m long should not be used on a tiled or slated roof, except as a noggin.
- Undersized battens will sag between the rafters and appear as a series of waves in the roof covering, after a few years.
 - The same thickness of batten should be used throughout the roof to ensure the roof covering lays in the same plane.



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