

Slating & Tiling

TIPS 35

Installing underlay

Underlay is something we all take for granted. It must be used under the battens, and rolled out in horizontal bands lapped progressively up the roof slope and over any ridge or hip – whether bitumen or plastic-based. However, there are some rules that need to be observed to ensure the underlay is installed correctly.

Lap

Underlay will inevitably lap over another, ensuring that any water on the underlay stays outside and does not find a way in.

Horizontal laps, or headlaps, are the easiest laps to install correctly – by measuring down from the top edge of the underlay the amount of lap required, and marking with a wet chalk line or a temporary batten. The next layer of underlay is rolled out with the lower edge against the marked line or batten and is temporarily nailed into position. A 100mm lap is permissible provided the underlay is not laid directly onto rigid insulation or boarding, and the rafter pitch is 35° or steeper.

Below 35° the lap needs to be increased. From 15° to 34° the lap should be increased to 150mm, and between 12.5° and 14° the lap should be 225mm. If the underlay is laid directly onto rigid insulation or boarding then the laps can be reduced to 75mm for 35° and above, 100mm for 15°-34°, and 150mm for 12.5°-14°.

Vertical laps or, side-laps, should always be 100mm regardless of the rafter pitch of the roof. On a fully supported roof the lap is easily supported, with no rigid insulation or boarding, but a 100mm side lap is sometimes compromised if the end of a roll occurs between rafters. The 100mm lap should be taken from the end of the new piece of underlay to the furthest edge of the last rafter (not the end of the lower piece of underlay).

If you are laying underlay on a curved roof it will be impos-

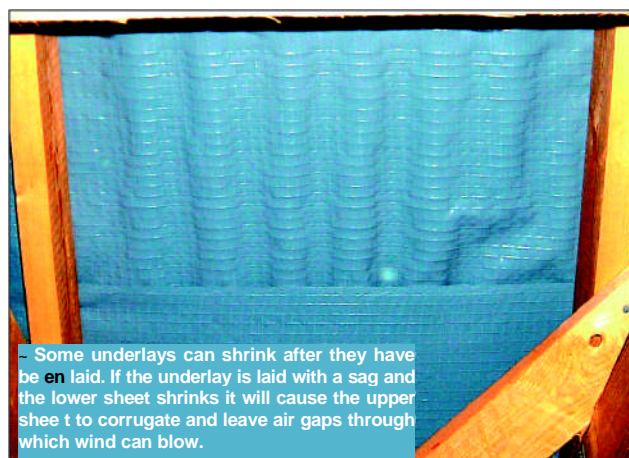
sible to lay it in horizontal bands due to the changing radius of the roof. Therefore, the underlay ends up being laid in sweeping curves so that the laps are neither horizontal nor vertical. In this instance the larger head-lap figure pitch should be used.

Where quilt insulation has been installed to the full depth of the rafters, and the underlay is in direct contact with the insulation, this is not classified as fully supported. Over time the insulation is likely to shrink down and leave the underlay unsupported.

Sag

Where the underlay is laid over the rafters (with no support between the rafters) there should be a sag in the underlay. This forms a trough down which any water can run, passing under the tile battens and exiting at the eaves. However, the amount of sag will vary. The recommended 25mm of sag measured at mid span is the maximum ideal to ensure that if sucked up by the wind, it does not reach the underside of the roof tiles or slates and push them off the battens. No sag in the underlay will hold the underlay tight against the underside of the battens and will trap water and debris between the underlay and the battens, restricting air movement in the batten cavity.

A small sag is better than no sag, but unfortunately some underlay material will shrink after it has been installed and go drum tight. In some instances it will pull apart in a similar way to the old building paper underlay of the 1920s and 30s. Additional sag should be created to compensate for the natural shrinkage in some material, ensuring that there is some sag once it has finished shrinking. However, the amount of shrinkage can vary from one end of a roll to another and one material to another. Even the manufacturers/suppliers can only guess at a figure, with the



Some underlays can shrink after they have been laid. If the underlay is laid with a sag and the lower sheet shrinks it will cause the upper sheet to corrugate and leave air gaps through which wind can blow.

exception of Type 1F Hessian reinforced bituminous underlay, which is very stable.

The shrinkage of the underlay can present problems with the laps in the underlay. If the upper sheet shrinks more than the lower sheet, the laps will open up and allow wind to blow into the roof – in some instances this can generate a vibration or whistle through the open lap. If the lower sheet shrinks more than the upper sheet then the upper sheet will start to corrugate as it has nowhere to go (see photo).

Once an underlay, in the course of shrinking, has taken up all the sag, and the underlay is flat, further shrinkage will cause the nail holes through the underlay to elongate. There will always be nail holes through the underlay. Water trapped between the underlay and the batten will track along the batten and may find its way down through a hole. This will show itself as a damp spot on the rafter, especially with a lowpitch roof.

Wind

Before the battens are installed the underlay is vulnerable because the battens are its secure fixing. Felt tacks, or batten nails turned over, are only temporary fixings until the battens are installed. Severe winds can rip the underlay off. In Scotland counter battens hold down the underlay onto the rigid sarking, so the wind does not remove it and to provide a gap between the underlay and the tile or slate battens.

Wind can lift the free edge of any sheet of underlay very easily. It is advisable to always hold down all laps with an extra batten, as battening progresses. Once the slates or tiles are installed the wind can still suck up the free edge of the underlay,

making contact with the underside of the tiles or slates if unrestrained. Underlay material that is stretchy can also elongate under severe wind suction loads, causing the underlay to make contact with the underside of the tiles or slates. The recommendations for these materials are to lay the material tight with a 25mm counter batten above, plus 25mm tile or slate battens, making a 50mm distance between the underlay and the underside of the tiles or slates.

Conclusion

While some underlay materials are light, clean, vapour permeable, and strong enough to stop a man falling through them, they still need to have the same lap, sag, and resistance to shrinkage as traditional bituminous underlay.

Tips

- Always measure the rafter pitch with a pitch gauge before you start work, as it may vary from the drawings/specification.
- The head-lap in the underlay will increase as the rafter pitch gets lower.
- There must always be a gap between the top of the underlay and the underside of the tile or slate battens at mid span.
- Hold down the free edge of the underlay, within 50mm of the edge, with an additional batten to prevent the wind lifting it and making contact with the underside of the tiles or slates.

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