

Slating & Tiling

TIPS 100

Snow on pitched roofs

I know what you are thinking, 'why is he writing about snow in the middle of a hot summer?' Just to make you feel a little cooler, and to remind you of some of the extreme conditions that we can experience during the life of a typical roof.

There are, of course, some locations in the UK where snow is regular and plentiful, while other places where snow is a rarity and only lasts a day or so, so understanding the local climate is important. While it may be hot and sunny now, things can change dramatically for the worse in just a few months. If snow has occurred in any quantity in your location in the last 100 years, then the chances are that it can happen again, and the roof will be the element that is most affected.

There are three main issues that have to be understood. The first issue is one of snow thickness. If the rafter pitch is shallow, the ability of snow to build up is greater than for a steep rafter pitch where it will blow or slide off. The more snow that can lay on the roof the more weight there will be bearing on both the roof covering, battens and the roof structure; so steep roofs are normally found in mountain areas like Switzerland. The second issue is shear. After snow has collected on a roof, it can act like an insulation blanket. If the roof is poorly insulated, heat from inside the roof will melt the underside of the snow and the snow blanket can slide down the roof under its own weight on the snow melt water.

However, at the eaves, beyond the building line, there is no heat coming from below and so the snow will re-freeze the melt water between the snow and the roof covering, and lock all the eaves tiles, or slates, into a solid block.

Two things can happen. On a steep roof the weight of snow and ice can rip off the bottom courses of tiles, or slates, and cause an avalanche onto the ground below. With a shallow pitch roof, cause an ice dam that will encourage melt water to back up behind the ice dam and leak back through the joints in the tiles, or slates, onto the underlay below, which in turn will freeze and back up. Eventually water can leak through the laps in the underlay, or split the underlay; so a shallow pitch is the slightly better option.

Thirdly, when snow melts on the under side of the snow blanket during the day, and freezes hard at night, the ability of the roof covering to allow any water vapour to escape through the ice layer will be almost zero, and any additional water vapour will freeze and add to the ice formed in the slate and tile joints, making the risk of condensation

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forming below ever greater.

The first issue of snow build up requires the roof structure and the rafter pitch to be carefully chosen for the location of the building. Installing a house designed for southern Spain (with a shallow pitch roof) in a mountainous region, may not be a good plan.

Where a steep roof is used, snow boards should be installed above the wall line at the eaves where the risk of an ice dam starts to stop the avalanche effect. The second issue regarding snow melt is more of a problem where the roof is poorly insulated and heat loss through the roof is accelerating the snow melt.

To prevent or reduce the effect of an eaves ice dam, it is possible to install trace heating cables between the eaves and the wall line to melt the snow before it can collect. Finally, the issue of the inability of water vapour to pass through snow and ice covered roof construction. Provided soffit ventilation has been installed that ventilates between the insulation and the underlay, this should not be a problem, but surface over fascia

ventilation and VP underlay with no vents, are all likely to experience problems of condensation turning to ice. With all of these measures

The Epilogue

Some of my faithful readers may have noticed that over the last nine years I have written about 100 different issues in the Slating & Tiling Tips series; consisting of just short of 110,000 words. I decided a long time ago that I would stop at number 100 (provided I reached that number), and before I start repeating or contradicting myself. Whilst I could continue, the old adage 'quit while you are ahead' comes to mind. This does not mean I am going to stop writing about roofing and roofing issues, just a rest and a new direction. Thank you to all my readers, who have over the years told me that they read my words, and file them away, or have used the information as it was intended. Thank you to all the people who have helped me with suggestions, information, photographs and diagrams. Thanks also go to the various editors of RCI, who have over the years corrected my grammatical errors and never questioned the content. Some day I hope to meet you all under the best of circumstances, until then, here is my 100th Slating and Tiling Tips article.

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the roof should dissipate the condensation once the snow and ice has melted.

In most locations a 45 degree pitched roof with a small eaves overhang, good compliant roof insulation, roof space ventilation through the soffit and all the tiles and slates fully nailed and clipped, should reduce the chances of damage to the pitched roof from snow.

Tips

1. Avoid low pitch roofs in areas of high snow.
2. Where there is a wide eaves overhang, plan for melt water problems and install a better quality underlay up to the wall line and perhaps increase the head lap and full fix every tile in that area.
3. Do not rely on just VP underlay to allow water vapour from inside the roof to escape to the outside.

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