Loss Prevention
Safety Tip

Loss Prevention Program
By Red River Mutual

ICE DAM PREVENTION

Icicles, anchored in thick slabs of ice on a home's eaves, are nature's deceptively beautiful winter decoration. Homeowners even mimic the look with icicle lights during the holidays. Sadly, that glittery allure comes with a potentially steep price: water damage.

How Ice Dams Form

Most homeowners don't expect snow on the roof to melt in sub-freezing temperatures, but that is exactly when ice dams form. If some portion of the roof is above 0°C the snow cover there will melt and run down until it hits a spot, usually just above the eaves, where the temperature is below 0°C, where it will freeze. Over time, more and more ice builds up, extending from the eaves up to the point where the roof temperature reaches 0°C. When it becomes thick enough, the ice forms a dam, behind which any additional snowmelt collects.

Because the roof temperature is above 0°C behind the dam, the water remains a liquid and can eventually back up under the shingles. Initially the damage may be minor, resulting only in wet insulation. However, wet insulation does not work well, so this can set off a vicious cycle whereby the wet insulation allows more heat to escape, which allows more snow to melt and the problem keeps escalating until the damage extends into the wall cavities, resulting in mold, mildew and rotting.

Causes of Warm Roofs

In order to fix the problem, you need to know why your roof is warm. Possible culprits include:

- Air leakage through the ceiling. Spots where things like light fixtures, electrical wiring, plumbing, exhaust fans and chimneys extend through the ceiling can allow warm air to escape from the house into the attic area.
- Bathroom and kitchen exhaust systems may blow warm air onto the roof.
- Inadequate roof ventilation can trap warm air and melt the snow on the roof.
- Solar heat gain is possible, in especially sunny spots, causing fluctuating temperatures which can increase the effects of water and ice accumulation on the roof.

Preventing Ice Dams

Removing snow with a snow rake after each snowfall eliminates the main ingredient in ice dam formation. A better solution is to keep the roof cold so the snow will not melt. The best ways to accomplish this are to:

- Increase roof insulation and make sure it is distributed evenly and extends all the way to the perimeter.
- Seal any potential spots for air leakage through the ceiling.
- Add roof and soffit vents. Attic ventilation draws in cold outdoor air and flushes out warmer attic air, cooling the attic and the roof in the process.
- Keep your eaves troughs and downspouts clean so water can properly drain off the roof and away from the home.

When all else fails, you can install heat cables. Heat cables are high-resistance wires that you mount on the roof edge in a zigzag pattern and plug into an outdoor GFCI receptacle. They're ideal in spots where ice dams regularly occur and can't be stopped any other way. One problem: You have to route the melt water away or it will refreeze in the gutters and along the roof edge. You'll also need to run the heat cable inside a downspout so the downspout doesn't clog with ice.

Prevent Damage After Ice Dam Formation

If you already have an ice dam, the goal is to prevent any further backup of water.

- Your best option is to contact a professional roofing company to remove the snow and create channels in the ice so water drains away. They'll also assess the repairs or improvements needed to prevent an ice dam from forming again.
- To remove an ice dam yourself, first use a roof rake to remove the snow which prevents more water from accumulating. This should be done after every heavy snowfall. We recommend using a roof rake as it's a much safer option than climbing onto your roof with a shovel.
- Once the snow is removed, carefully make channels in the ice using an axe or chisel to allow water to flow off the roof. You need to be really careful how you make these channels as you can easily damage your shingles or roof.

These fixes are temporary and will need repeating throughout the winter season. The best long-term solution is to fix the causes of roof heating.

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