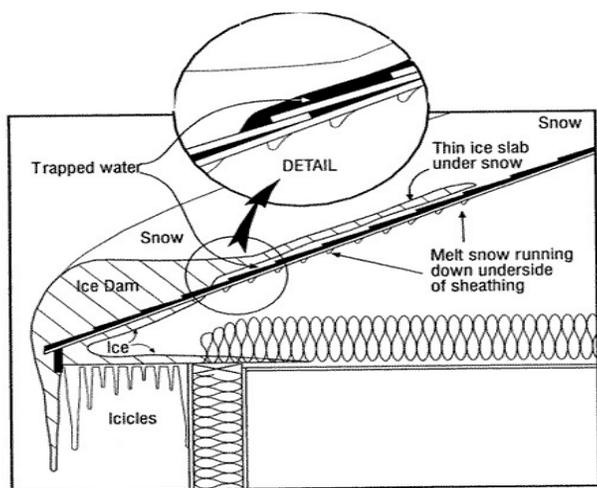


Are you having Ice Damming?

Ice dams are the large mass of ice that collects on the lower edge of the roof or in the gutters. As more melting snow (or rain) runs down the roof, it meets this mass of ice and backs up, sometimes under the shingles and into the attic or the house.

Ice damming usually occurs with a significant depth of snow on the roof. If the attic temperature is above freezing, it warms the roof sheathing which melts the snow lying on the shingles. This water runs down the roof until it meets the roof overhang, which is not warmed by the attic and will be at the temperature of the surrounding air. If the air and the overhang are below freezing, then the water will freeze on the roof surface and start the ice dam.



An attic with no insulation will generally not have a problem with ice dams. The heat coming through the attic will tend to melt snow off as it lands and prevent much accumulation. A well-sealed and insulated attic will generally not have ice dams. Like the example of a detached garage, this generally results in a cool roof and no great amount of melting. Ice dams are more frequent if the roof is complicated by many valleys and dormers or there is a large roof overhang.

Ice dams will first show up where there is inadequate insulation or major air leaks. One way to find these locations is to look at the roof with the first heavy frost in fall or light snow. Watch where the snow melts off first and find out what is under that spot on the roof. One common sight in such conditions is a horizontal melt line across the roof of a storey-and-a-half house, where the short kneewall meets the ceiling. Other places would be beneath a roof-ducted exhaust fan or over a leaky attic access hatch. The basic relief for ice damming is to seal all attic air leaks and insulate thoroughly, the same solution as for attic condensation.

Many attics, including those under low-sloped roofs, do not have enough space for adequate insulation at the edge of the attic floor. If soffit insulation requires a baffle to keep a ventilation opening against the sheathing, often there will be only 100 mm (4 inches) of space for insulation. This will tend to melt the snow off just above the overhang and promote ice damming. Try to put the best insulation possible at that edge to reduce heat loss. Blown foam is ideal as it air seals as well as insulates.

Cut pieces of extruded polystyrene will help as well. Mount a piece of extruded polystyrene 25 mm (1 inch) from the sheathing to maintain the ventilation air space and fill between this board and the attic floor with good insulation.

Ice dams caused by cathedral ceilings are more difficult. The same principles apply to preventing ice dams — stopping house air leaks, good insulation, perhaps ventilation — but cathedral ceilings are harder to get to. If you have ice dam problems with cathedral ceilings, you can fix the problem when re-roofing. Remove the sheathing, seal and fill the cavities with insulation, and replace the roofing material. A well-sealed roof will not need ventilation. If you are uncertain whether the sealing can be done effectively, leave a ventilation channel under the sheathing from the soffit to the peak. Sometimes insulation can be added to the ceiling inside, although this approach will not catch the air leakage.

An extensive and expensive ice dam solution is to make the roof impermeable by using a self-sealing membrane under the shingles. Building codes require such membranes on the lower part of the roof in new houses. Note that these membranes do not stop ice dams, they just prevent the water from leaking through the roof sheathing. Ice damming can still create the unsightly ice build-up and possible damage to shingles and gutters, but you may be spared the leakage into the house.

Do all these ice damming solutions sound like too much work? There are many quicker solutions that are popular, but in the end have drawbacks. You can attach electric cables which will melt channels in the ice, sometimes alleviating a problem. Cables use a significant amount of electrical energy as well as being an eyesore on most roofs.

Removing gutters will keep them from becoming ice traps, but gutters are valuable: they keep roof water away from your basement. Attacking ice dams every winter with an axe or ice pick is a good way to shorten shingle life — and a good opportunity to fall off a ladder. At least one person has had success with filling nylon stockings with salt and laying them in the gutter. Some corrosion and environmental damage may result.

For some older houses with complicated roofs, it may be impossible to completely eliminate ice dams without resorting to some of the methods above. However, for most houses, the preferred solution is to keep house heat out of the attic, by air sealing and insulating, and avoid weaker alternatives. Spend the time to fix it properly and you will not have to worry about it again while you live in that house.

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