AIR VENT INC.

VENTILATION VIEWS

ISSUE FOCUS: ICE DAMS

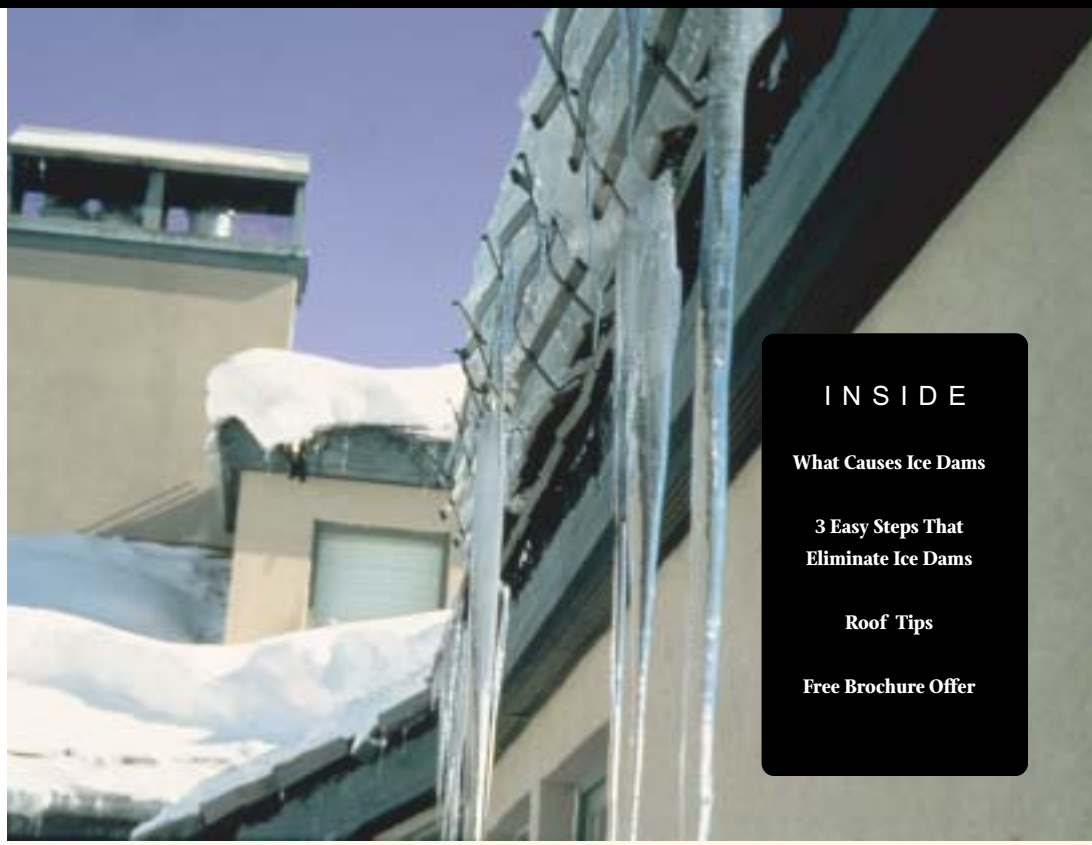
News, opinions, ideas and technical advice from the ventilation specialists at Air Vent

Ice Dams

In past winters, homeowners from Baltimore to Boston to Billings have learned about the damage caused by ice dams. In some cases, that knowledge came in the form of a costly repair bill. In addition to gutter damage, water infiltration from ice dams can also damage roof decks, insulation, exterior walls and paint, interior walls and ceilings.

First signs are wood rot, peeling paint and mold. But some of the damage from ice dams takes longer to become apparent. Structural lumber soaked by infiltrating water, for example, becomes prime feeding and nesting sites for insects such as carpenter ants. That means several summers from now, homeowners may be facing carpentry repairs that are a direct result of a previous winter's ice dam problems.

Roofing contractors have the opportunity to help homeowners avoid the short- and long-term problems that can occur as a result of ice dams. That's why we've dedicated this report to the topic of ice dams and how to eliminate them. We hope you find it informative and helpful.



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If water was coming from a leaky upstairs faucet, the homeowner would call a plumber immediately. But most homeowners don't know how to deal with ice dam problems. In fact, more often than not, they do the wrong things.

- They install heat tape along the eave area of the roof. It seems like a logical solution — after all, isn't that where the problem is? But heat tape doesn't accomplish much; often all it does is push the location of an ice dam further up the roof. Using heat tape creates a condition just the opposite of what's needed to eliminate ice dams. As we've seen, ice dams form because there's already too much heat on the roof. So adding more heat doesn't solve the problem. The goal is not to melt more snow, but to keep snow from melting in the first place.
- They scrape snow from the lower roof. In their eagerness to eliminate an ice dam, homeowners ignore the fact that scraping snow from a roof is an easy way to damage shingles. It also can be extremely dangerous. And it isn't an effective approach to begin with. Because snow above the eave doesn't cause ice dams. The culprit is snow melting at the upper areas of a roof.

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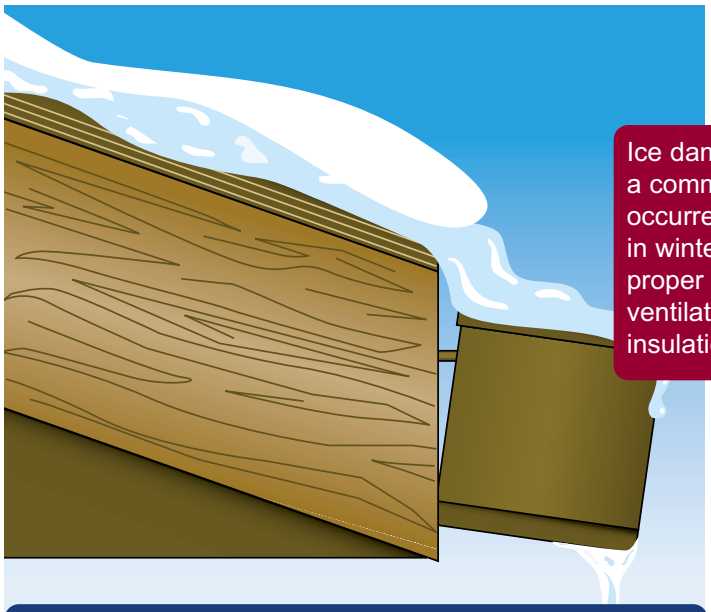
What Causes Ice Dams



Ice dams are a common occurrence in winter without proper attic ventilation and insulation.

Considering the problems ice dams cause, it's surprising homeowners know so little about what causes them. In fact, it doesn't take much. Only three conditions must be present:

1. A heavy snowfall — enough to leave several inches of snow on a roof. The more snow left on a roof after a storm, the greater the chances an ice dam may form.

2. Continuously cold temperatures. A heavy snow followed by several days of 40˚ temperatures probably won't result in an ice dam. The air temperature must remain cold enough for water to freeze. When temperatures fall below 20˚, conditions are especially favorable.

3. An under ventilated and poorly insulated attic, factors that create what amounts to a "hot and cold roof." When those conditions are in place, here's what happens:

   - Heat escapes from the living quarters into the attic. The heat builds at the upper levels of the attic, eventually warming the roof deck. Once the deck is warm, snow on the roof begins to melt. Obviously, if the sun breaks out following a snow storm, melting at the upper roof is accelerated.
   - Water runs down the roof until it reaches the area over the eaves. Since this area of the roof remains cold, the runoff from the melting snow begins to freeze and the ice dam forms (along with a more easily seen symptom of the problem, icicles hanging from gutters).
   - As the dam builds, it begins to trap more snow melt, extending the height of the dam. The real problems begin when water begins to pool, backing up under the shingles. Once that happens, the damage can be extensive. In past winters, it's been reported that a homeowner had to drill holes in a kitchen ceiling to release water infiltrating from an ice dam. It was just one of countless similar incidents.

SOLUTIONS THAT IGNORE THE PROBLEM

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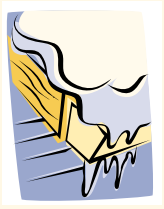
- They try to clean ice out of their gutters. For obvious reasons, it's a dangerous and ineffective approach. Icicles and ice-jammed gutters don't cause ice dams. In fact, they're just another effect of a problem that starts with a hot-and-cold roof.

The only effective solution to ice dam problems is a combination of high efficiency attic ventilation and adequate insulation.

ICE DAMS: TALES FROM THE ATTIC



Too Improved

A contractor in Michigan did a great job improving one customer's home. New windows, siding and a new roof with ShingleVent II ridge vent and plenty of soffit venting. Never before had the homeowner had ice dams, but that first winter after all the improvements, there they were.

The problem: New, more energy efficient products made the home tighter than ever before. Heat was escaping from the home into the attic, instead of out the windows like in the past.

The solution: Insulation! Added insulation in the attic stopped the heat loss from the living area, saved on energy bills and solved the ice dam problem.

How To Eliminate Ice Dams In Three Easy Steps

❶ Install adequate attic ventilation.

Because ice dams form when a roof has warm upper surfaces and cold lower surfaces, the solution is to equalize temperatures over the entire roof. Heating an entire roof is impractical (and extremely costly), so the most effective solution is to create a cold roof.

To do that, you need a well designed attic ventilation system: it must supply air flow along the entire underside of the roof deck and it must have air intake vents evenly spaced along the eaves.

The most efficient system uses ridge vents and an evenly distributed layout of soffit vents. Cold outside air is drawn into the soffit vents, then washed over the underside of the roof decking — for the full length of the ridge. That's critical, because this evenly distributed air flow minimizes variation in roof temperatures from peak to eave. As a result, snow melt is reduced, greatly reducing the possibility that ice dams can form.

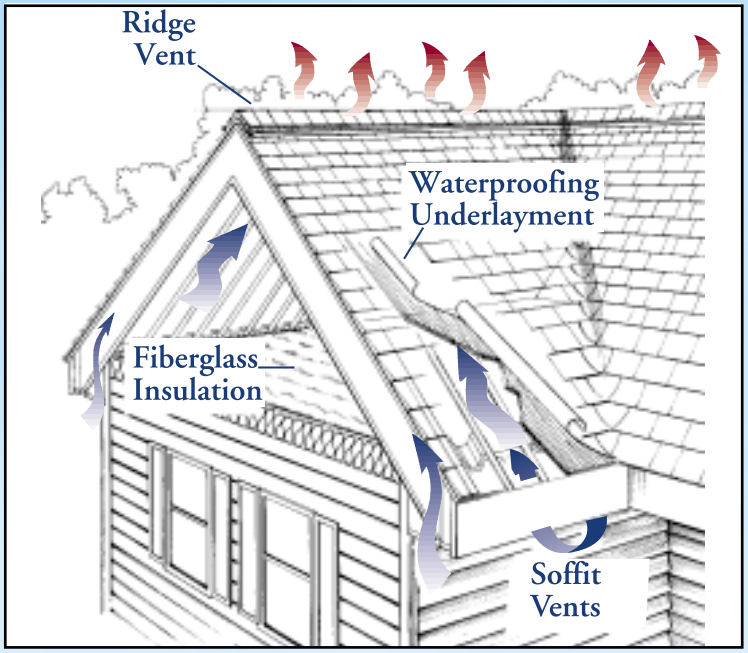
❷ Install adequate attic insulation.

Attic insulation serves two purposes:

- First, and most important, it minimizes heat loss from a home's living quarters. Since that heat loss is a key factor contributing to the creation of ice dams, stopping it at its source is critical.
- Second, adequate attic insulation diminishes the energy impact of having cold air flowing through the attic.

Check with your local utility company for up-to-date R-value requirements for insulation in your area.

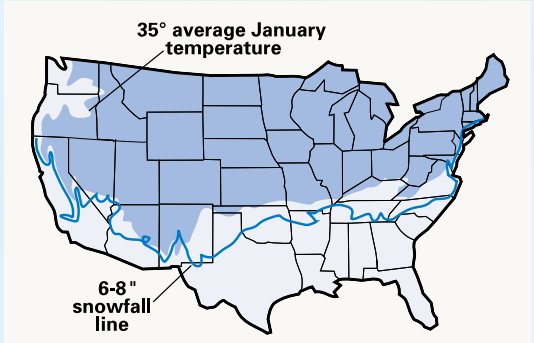
Be sure adequate amounts are installed around electrical fixtures and wiring and plumbing chases. These areas often contribute to significant heat loss. With existing insulation, also check for water damage and for areas that have been compressed by foot traffic or stored objects.



❸ If possible, install waterproofing shingle underlayment (WSU).

Even the most efficient attic ventilation system may not be enough to eliminate all ice dams. WSU barrier can minimize — and possibly eliminate — water infiltration into the building structure.

Install WSU according to the manufacturer's instructions. In general, install WSU along the eaves and up the roof at least two feet beyond the interior wall line. Many contractors say more is better. Closed valleys should be lined with a three-foot wide piece of WSU.



The shaded areas show those sections of the country that have the potential for ice dams.

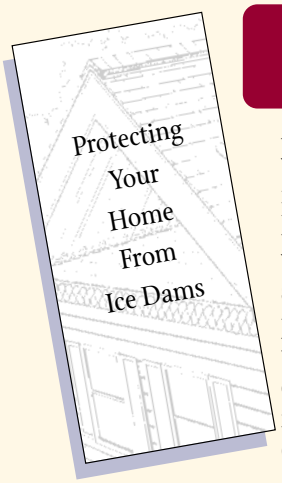
Roof Tips

Roof Tips

When installing attic ventilation, you want to provide both maximum efficiency and outstanding appearance.

To do that, keep these points in mind:

- Use ridge vents. Because they are installed along the entire ridegline, the flow of air is *continuous* across the full ridge length. Roof louvers and wind turbines cannot provide such air flow.
- Install ridge vents from end to end, along the entire ridge. Technically, that may provide more air flow than minimally needed for adequate attic ventilation (but more air flow is always better than less). The gain in finished appearance is well worth the few dollars more spent for the additional ridge vents.
- Install soffit or eave vents so air flows between every rafter to assure cold temperatures along the entire roof surface.
- If you're installing ridge vents on a roof with existing attic vents, be sure to remove or block off those units. They would reduce the efficiency of the new ridge vents.



FREE BROCHURE TO HELP SELL YOUR SERVICES.

All those homeowners who had to deal with damaging ice dams last winter are now potential customers for an effective long-term solution. To help you sell your ventilation services, we're offering a free sales brochure you can use in your sales presentations to homeowners. It explains the causes of ice dams and how to eliminate them. For free copies of this informative brochure, call 1-800-AIR VENT (247-8368).

AIR VENT INC.

4117 Pinnacle Point Drive, Suite 400
Dallas, TX 75211
1-800-AIR VENT
FAX: 1 800 635-7006
www.airvent.com