

Ice Dam Formation

You can better understand how the specialized ice dam products work if you understand how and why ice dams form. Ice dams can develop under the following conditions: **#1** Periods of heavy freezing rain; **#2** Moderate or heavy snow conditions with an air temperature significantly below freezing.

You must first realize that most roofing products depend upon gravity to keep water from entering your house. A large majority of roofs are not level. Gravity pulls rain water or snow meltwater down the roof. Most roofing products are separate pieces that overlap. This overlap effect enables them to shed water. This is true of shingles, slate, tile, cement tiles, etc. You can easily create leaks in these systems if you aim a garden or fire hose underneath these products. This simple system works fine as long as the water keeps moving down the roof. Ice dams, however, cause water to go up the roof.

Ice dams form in the following fashion. If either the sun, or loss of heat from your home, causes the snow on your roof to melt, water begins to flow under the snow on its way down the roof. If the air temperature is significantly below freezing, the temperature of the roof deck, gutters, valley flashing and downspouts very possibly will be below freezing. This is especially true of roof decks, gutters and downspouts that may be shaded. When the meltwater hits these cold surfaces it begins to rapidly freeze. Eventually, the gutters and downspouts are choked with ice. The ice buildup continues at the gutter level and the ice becomes very thick. Meanwhile, the water is still coming down the roof. Depending upon the rate of melting vs. the rate of freezing, you may or may not have a problem. If the water is melting at a faster rate than it can freeze, it begins to back up underneath the roofing materials. This water then finds its way to the roof deck and eventually finds its way into your home. The results can be catastrophic.

Although ice dams can form anywhere on a roof, they form most readily at the bottom edge of roofs, valleys and areas where the slope might change on a roof.

Stopping the Leaks

It is virtually impossible to stop ice dams from forming. Some methods attempt to use heated electrical wire which is applied to the lower edge of your roof or which sits in your gutter. Often these methods have little effect. In some instances, they can be dangerous.

The newer technology has leaned in the direction of not trying to stop the ice dam from forming, but to simply stop the water from entering your home. As such, roofing manufacturers have developed products which combat just this. They are modified asphalt products.

These products help prevent leaks caused by ice dams as well as wind driven rain. Some of these products are rubberized, while others include styrene. Some are reinforced with fiberglass mats, while others are not. They work by creating a solid barrier to water

wherever they are applied. It is similar to shrink wrapping that portion of your roof. When applied according to manufacturer's specifications all of them can be highly effective in preventing leakage from ice damming.

These products generally have one side which is very sticky. They are designed to be installed directly on the wood decking of your roof starting at the gutter line. Often these materials are installed at other potential trouble areas. Some of these areas are as follows: low slope roofs, valleys, slope changes, hips, rake edges, dormers, skylights, flashing areas. In certain instances, it can be used as an entire roof underlayment system. These products are designed to have other roofing materials applied over them. Sunlight will harm these products, so they must be covered.

Since these materials are very pliable and manufactured with different compounds, any nails which penetrate the products seal themselves. They are wonderful products. In ice dam situations, most leaking occurs within 3 feet of the gutter line. Because of this, you generally do not have to cover the entire roof with these products. However, low slope roofs, shaded roofs, and roofs that have a northern exposure are candidates for complete coverage. Consult with the manufacturer or a professional roofer for your particular situation.

Summary: Ice dams may not be avoidable, but you can prevent a leak from ruining your home. Understand how an ice dam can form to know how to minimize potential roof leak problems. Consider membrane roofing to help keep water leaks outside your home

These dams prevent liquid water from flowing off your roof. This water then begins to go backwards up beneath your shingles, tile, slate, shakes etc.

The net result is a miniature reenactment of Niagara Falls inside your house! However, there are products available that, when properly applied, will minimize or eliminate the leaking caused by ice dams. There are also design features that you can incorporate into your structure to minimize or eliminate the water from entering your living space.