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Press Release January 18, 2011

Snow and ice causing roof leaks at home? It is not your roof that is leaking...

ICYCLES, ICE DAMMING, WET ROOF, CEILING LEAKS, energy efficiency, home energy solutions

If snow and ice causes your roof to leak, chances are it is not your roof that is leaking but instead warm air from inside your home, a common problem of energy inefficient homes which can lead to roof damage, according to the University of Minnesota's Housing Technology extension, and they get plenty of snow so they know.

Here is how it works – warm air is buoyant (just like a hot air balloon) so rises and finds its way through small holes, gaps and cracks from inside your heated home into the attic. This warm air keeps rising up to your roof, where it melts the snow outside. Snowmelt refreezes, forming a dam and causing liquid water to rise up under the shingle and onto your roof sheathing; from there it drips into your attic or runs down in your walls. This phenomenon is called ice damming and can lead to substantial home damages.



There are several solutions for ice damming.

One is to remove all your roof shingles and install a snow and ice shield, which is a plastic barrier to prevent ice dammed water from entering your home. You will still get ice dams but at least the water won't get into your home. Another solution is to keep your roof as cold as possible so melting doesn't occur by increasing attic ventilation. Unfortunately increased attic ventilation will accelerate the leakage of warm, conditioned air from your home into the attic and lead to even higher energy bills and dry rooms. It may even cause condensation and mold formation on the inside of roof sheathing since cold air holds less moisture than warm air. Then you have a mold spore and dry rot problem year-round.

Energy Star™ Home Sealing recommends air sealing your home to prevent warm, conditioned air from entering your attic. Leaky attic ductwork is another big energy waster as pressurized hot air escapes. After air and duct sealing has been performed, high performance attic insulation should be blown in to prevent heat conduction from warming attic air. The U.S. Department of Energy recommends R-49 to R-60 total attic insulation in our climate zone (see chart). Regarding selecting the best insulation, all bulk insulation works on the principle of trapping air, so fiberglass is a poor choice since it is the same material air filters are made of! In fact, looking for dirty 'filterglass' insulation is a great way to identify where air is leaking into your attic. However, blown in cellulose insulation or spray foam under roofs are effective insulators when installed correctly. Cellulose insulation can be blown over existing insulation, filling gaps and voids to improve existing insulation while also adding additional R-value. Spray foam insulation can be applied under the roof, but requires a larger surface area so is more expensive – particularly if damaged roof sheathing will one day need to be replaced.

In addition to preventing ice dam water leakage, air sealing and insulation improvements can keep your home warmer in winter and cooler in summer, improve indoor air quality and reduce your cooling and heating energy bills 20%-40%. And making your home more energy efficient is far less expensive than a new roof. And if your roof doesn't leak when it rains, why fix what isn't broken?

If you are interested in learning where your home is leaking energy and what you can do about it, the Connecticut Energy Efficiency Fund and your local energy utilities offer a low cost home energy assessment with limited air and duct sealing included. The service is called Home Energy Solutions, and is funded by a conservation charge on your utility bill. There are no income restrictions. The HES co-pay is currently \$75 but is subject to change based on available funding. Green Star is a participating HES provider that also offers insulation improvement services. You can learn more or book a HES appointment by calling 203 744-1144 X12 or visiting www.gogreenstar.com – Contact us

Reporters: To interview a Building Performance Institute certified Building Analyst and Shell Specialist for this article please call John Mazur on 203 775 6868. Please see attached U of Minnesota article to confirm accuracy of content. Thank you.

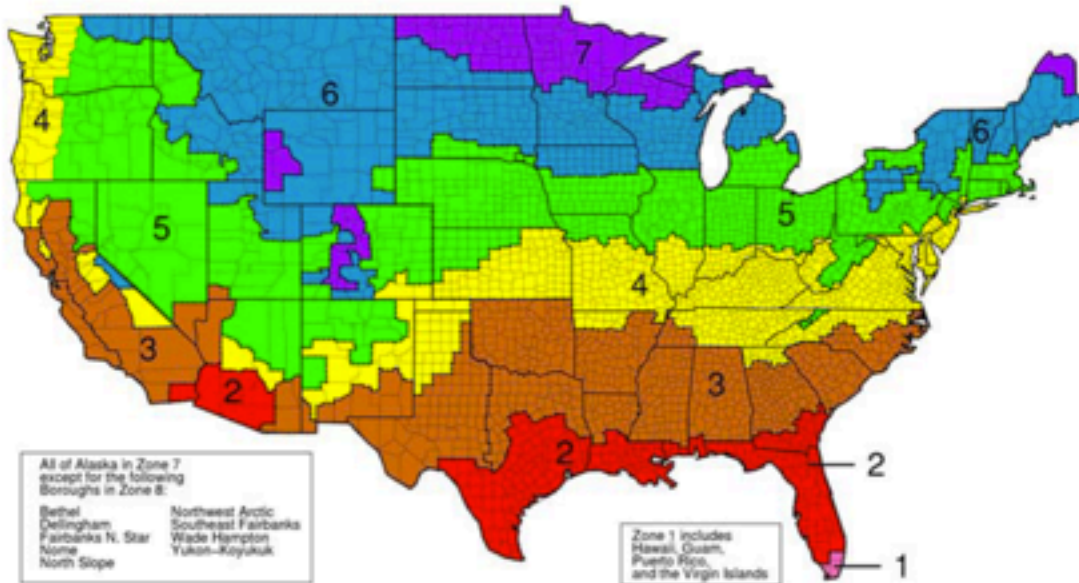
Source: Energystar.gov

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Recommended Levels of Insulation

Insulation level are specified by R-Value. R-Value is a measure of insulation's ability to resist heat traveling through it. The higher the R-Value the better the thermal performance of the insulation. The table below shows what levels of insulation are cost-effective for different climates and locations in the home.

Recommended insulation levels for retrofitting existing wood-framed buildings



Zone	Add Insulation to Attic		Floor
	Uninsulated Attic	Existing 3-4 Inches of Insulation	
1	R30 to R49	R25 to R30	R13
2	R30 to R60	R25 to R38	R13 to R19
3	R30 to R60	R25 to R38	R19 to R25
4	R38 to R60	R38	R25 to R30
5 to 8	R49 to R60	R38 to R49	R25 to R30

Wall Insulation: Whenever exterior siding is removed on an

Uninsulated wood-frame wall:

- Drill holes in the sheathing and blow insulation into the empty wall cavity before installing the new siding, and
- Zones 3-4: Add R5 insulative wall sheathing beneath the new siding
- Zones 5-8: Add R5 to R6 insulative wall sheathing beneath the new siding.

Insulated wood-frame wall:

- For Zones 4 to 8: Add R5 insulative sheathing before installing the new siding.