



COLD CLIMATE HOUSING RESEARCH CENTER

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ENERGY FOCUS

Insulation:

Knowing What Insulation to Put Where in Your Home

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As a kid, I felt betrayed when I saw the Pink Panther cartoon character promoting Owens Corning's pink fiberglass-thermal insulation on TV. Owens Corning thought the Pink Panther's playful pantomime lent credibility to their product. But I lost faith, realizing that even the sly Panther was beholden to a boss. Never mind years later when the Pink Panther promoted Sweet 'N Low artificial sweetener. By then, as an adult, I accepted endorsements as retirement security for my childhood heroes and felt a sad admiration for the Pink Panther, who could survive so long.

But I can let go.... to focus on more practical issues, such as sorting out what types of insulation work best in the different parts of your house. Generally, the thicker the insulation, the higher R-value it provides. R-values represent the extent to which insulation resists heat flow; a higher number means more insulating value.

The key to effective insulating is matching the type and size of insulation to its application. For interior Alaska, approximate R-values for roofs should be R-38 to R-49; walls, R-25; and floors R-15 to R-19 depending on the circumstances. R-values are cumulative, meaning that you can add more insulation to achieve the desired value provided the extra insulation is installed correctly. Reflective facing can also help to retain heat.

Fiberglass. Fiberglass batting and rolls fit between the studs in your walls and joists in your floors and ceilings. They are available in different thicknesses, densities, and widths. Fiberglass offers R-values between 2.9 and 3.8 per inch of thickness. By itself, fiberglass is not as effective at insulating pipes or sealing gaps because air can pass through it. Fiberglass loses its value if it is compressed or becomes wet. On the plus side, fiberglass is less expensive than other types of insulation.

Rigid Foam. Most insulation in this category is made of polystyrene similar to those so-called disposable coffee cups you drink from. The foam can be of varying densities and comes in sheets that can be cut to size. R-values are about R-4 per inch of thickness for expanded polystyrene (EPS) and up to R-5 per inch for extruded polystyrene (XPS). Polyisocyanurate and polyurethane insulation can provide higher R-values, but are generally intended for dry applications.

In interior Alaska, rigid foam board is often installed in between your home's exterior siding and the exterior sheathing as an additional insulating barrier. It can also be used to insulate roofs and floors.

Overall, rigid foam is superior to fiberglass when it comes to stopping air flow, how much R-value it offers in a compact size, and its moisture resistance. The downside is its relative high price and lack of flexibility. All foams will degrade in sunlight.

Spray Foam. This is the gooey stuff that can be sprayed in place or injected. It hardens when drying and provides a wide range of R-values depending on its composition and the way it is applied. It can be sprayed by the truckload or purchased in a handheld can. Extremely versatile, this foam is excellent for sealing gaps and cracks because it expands and can block air. Sometimes, spray foam is injected into walls and expands to fill stud bays. It is often used to insulate pipes, but this can be problematic if a pipe needs repair or is subject to movement that cracks the insulation. Spray foam is not a cure-all for your insulation needs, however alluring those nifty spray cans are.

Loose Fill. Loose fill can be made of natural or synthetic material, like the stuff of pillows. It can be blown into your walls or provide excellent insulation in your attic. Both the weight and depth of fill determines its R-value, so be sure to know what you're buying. Fill settles over time, so sometimes extra is applied to account for settling later.

This article would be incomplete without a word of caution. Insulation can create or resolve moisture and mold problems depending on how and where it is installed. And it must stay clear of vents and heat sources, such as fixtures and chimney pipes. Insulation may require protective equipment to apply. So consult the experts when adding insulation, pink or not.

For questions or comments please contact CCHRC at (907) 457-3454.