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**Attic Insulation**

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**Attic and Ceiling Insulation**

Because warm air naturally rises, the attic or roof area of your home is your first priority for insulating. Insulation reduces the upward flow of heat, keeping it inside your home longer. That means you'll stay warmer, and your heating system will not come on as often – reducing your utility costs! In Tennessee, insulating existing attics to an R-value of at least 49 is recommended. R-value is the measure of an insulation material's ability to resist heat flow. It's measured per inch of material. For example, glass fiber batt or blanket insulation has an R-value of around 3.2 per inch, and the R-value of loose-fill cellulose is about 3.7 per inch.

Both of these insulation types are commonly used to insulate attics. Twelve inches of the glass fiber batt insulation achieves R-38, and about 10½ inches of cellulose will achieve the same R-value. How much insulation is in your attic?

**Attic/Roof Types**

How your attic should be insulated depends on how your roof is built. Common attic/roof types are:

**Unfinished Attic.**

In these homes, the attic is not part of the living space. You can often get into the attic by ladder through a hatch usually located in a hallway or closet ceiling. Unfinished attics are generally the easiest type to insulate; the insulation goes between the framing members (joists) of the attic floor, which is also your living area's ceiling. Capable do-it-yourselfers can tackle this job with advice from a professional. Rolls of glass fiber or loosefill cellulose have been the insulation of choice for most do-it-yourself jobs. This fact sheet primarily deals with steps you can take to add insulation to your unfinished attic.

**Finished Attic.**

A portion of these attics are living spaces. As a result, insulation should be placed in the exterior walls (called kneewalls), the entire ceiling and the outer floor areas – those not part of the living space. An experienced professional should be called upon for this job since it often requires the use of several insulation products and use of special insulation blowing equipment.



**Flat, Vaulted or Cathedral Ceilings.**

These types of ceilings don't have attics above them, and due to little or no space to add insulation, it may be impossible to add insulation to this roof type. If there is space, the insulation must be blown or placed between the interior ceiling and the exterior roof. It's very important that these construction types be well-ventilated and sealed to prevent moisture problems. They, too, usually require the expertise of a insulation contractor.

## Adding Insulation to Your Unfinished Attic

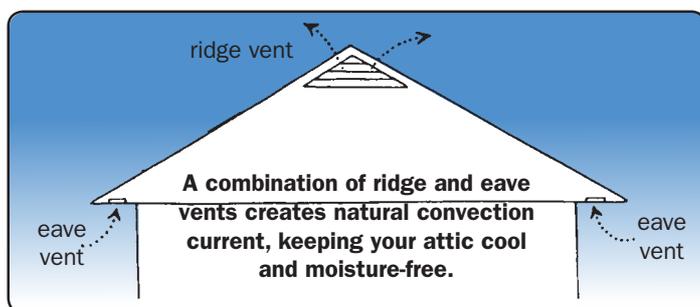
Here are the steps either you or an insulation contractor should take to insulate or add insulation to your unfinished attic:

- 1. Be an Attic Detective.** Go up into your attic with a flashlight and a dust mask to investigate. **CAUTION! If you find vermiculite insulation in your attic, DO NOT PROCEED.** Since Vermiculite may contain asbestos, always have it tested by a professional testing service or contractor before continuing ([www.epa.gov/asbestos/pubs/verm\\_questions.html](http://www.epa.gov/asbestos/pubs/verm_questions.html)). Construct a makeshift walkway by laying boards on top of the joists, because the ceiling below won't support your weight. Measure the amount of insulation present and determine its type – it's most likely mineral or rock wool, glass fiber or cellulose fiber. If it is not vermiculite, you can take a sample to your Extension office or building materials supplier if you are unsure. If there is already insulation up there and it's dry and evenly spread out, you can leave it alone and add more insulation on top if needed.

You can put glass or cotton fiber batt insulation over existing loose-fill or vice versa. As a rule of thumb, when adding more insulation, stay with the same type and/or weight of insulation. Heavier insulation will pack down your existing insulation and ultimately reduce the R-value of what was already in place. Just make sure that the new insulation doesn't have a vapor barrier, which would trap moisture inside the old insulation. (More on that later.) If the existing insulation is or has been wet, find and correct the moisture problem. It could be a leaky roof, or it may be caused by too much air leaking up from your living space. When warm air from your house rises into the attic, it carries with it large amounts of moisture, too. When the moisture hits the cold surfaces of your attic, it can condense and cause a number of problems:

- wet insulation does not insulate well,
- mold growth and damage to sheetrock and other building materials.

To control moisture, also make sure bathroom and kitchen vents are not vented directly into the attic. They should be vented through the roof.



- 2. Electrical.** Check all wiring and electrical junction boxes to assure wiring is not exposed and boxes are covered. Many old homes have a two wire system referred to as “knob and tube wiring.” This type of wiring should not be covered with insulation. When in doubt, have a licensed electrician, inspect and upgrade your wiring.
- 3. Seal Air Leaks.** Insulating won't save you much money or keep you much warmer unless you first seal all the air (and moisture) passageways between your living space and your attic. Common air leakage spots include the tops of interior and exterior walls, around pipes and heating ducts, light fixtures and wires. Conventional caulking methods work fine, though special care should be taken around plumbing stacks, and high temperature flues chimneys. You should also weatherstrip the attic hatch door, treating it as you would a door to the outside (See photo on the right).



- 4. Install a Vapor Barrier.** Moisture can also cause problems by traveling right up through the ceiling and into the insulation. If your attic is being insulated for the first time, to head off a potential moisture problem, you can lay down a vapor barrier (often a sheet of polyethylene plastic)



on the attic floor before pouring or blowing in loose-fill insulation. Or you can purchase batt insulation with a kraft paper or foil vapor barrier attached. Be sure to install this type of vapor barrier closest to your living space.

If there is already insulation in your attic with no vapor barrier under it, you can paint your ceilings with vapor barrier paint – especially in high-moisture rooms such as kitchens, bathrooms, and utility rooms. If some insulation already exists, it is important that new insulation not have a vapor barrier. Preferably, the new insulation should be unfaced – manufactured without a barrier attached. If unfaced insulation is not available, use the vapor-barrier type but remove the barrier or slash it with a knife.



