



My Handyman

On time. Done right.®

EXETER: 773-5904 | **PORTSMOUTH:** 433-5905
BEDFORD: 472-2247 | **DERRY:** 432-5906



- [Home](#)
- [Our Services](#)
- [Our Work](#)
- [Our Team](#)
- [Our Process](#)
- [Our Pricing](#)
- [Our Partners](#)
- [Our Community](#)
- [Maintenance Programs](#)
- [Current Promotions](#)
- [Testimonials](#)
- [Handyman Library](#)
- [Career Opportunities](#)
- [Contact Us](#)

Handyman Articles - Sealing, Insulating and Don't Forget Ventilation

By Tina Gleisner, My Handyman of Southern NH

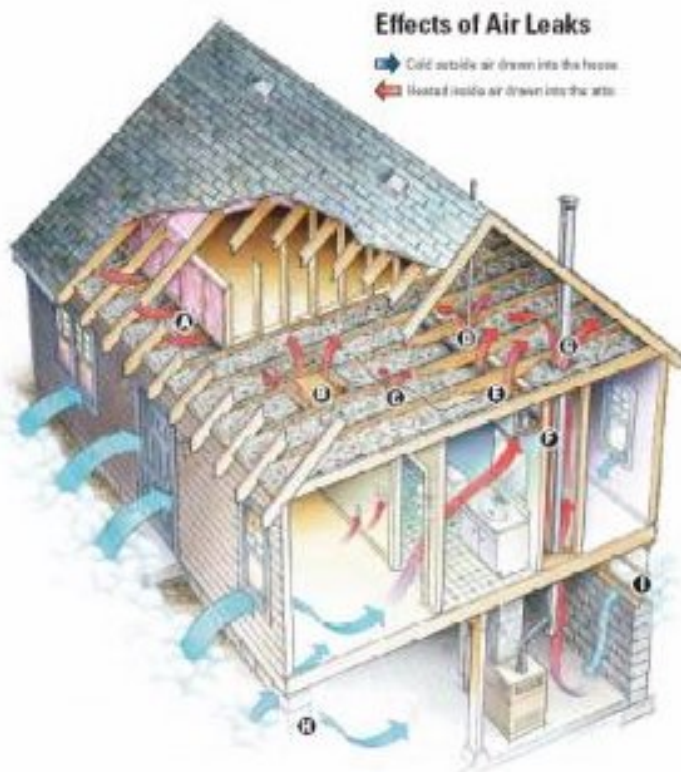
As winter approaches, home owners often consider adding insulation to their homes. They might have had problems with ice dams last year, know their basement is drafty or learned their neighbors are paying significantly less to heat a similar house. They know insulation slows heat transfer. What most home owners do not fully understand:

- ◆ Houses should be **SEALED** to minimize cold air being drawn into the house (blue arrows in diagram)
- ◆ **INSULATION** refers to a wide range of materials that are used to reduce heat transfer (red arrows in diagram)
- ◆ **VENTILATION** prevents problems related to warm air escaping into your attic, i.e. ice dams or the growth of mold and/or mildew due to excessive moisture.

When evaluating which projects to tackle, home owners should consider how quickly their investment will be paid back, i.e. with up to 20% of heat loss from a home going through the roof, effective attic insulation should pay for itself in just a few years.

There are thousands of pages of information on the web related to sealing, insulation and ventilation for your home. This article can only provide a brief overview. Some of the best information reviewed in preparing this article include:

- ◆ U.S. Department of Energy's [Insulation Fact Sheet](#)
- ◆ U.S. Department of Energy's [Tips on Saving Energy & Money at Home](#)
- ◆ [North American Insulation Manufacturers Association \(NAIMA\)](#) which offers home owners a wide range of booklets at no cost
- ◆ [Simply Insulate](#) is a great web site to help you learn about [Federal Tax Incentives](#) available for energy saving improvements to your home. **ACT NOW for savings in 2007!**



Article can be found at www.MyHandymanNH.com/Library/articles/Insulation.cfm

SEALING Your Home

The most significant air leaks in a home are frequently found in the attic and basement. You might think if there is insulation, everything is okay. Inspect the insulation and if it is dirty, that indicates air is moving through it and more protection is needed. As the cost of heating homes continues to rise, home building codes are changing to require more focus on sealing homes during construction.

There are added benefits to improving your home's envelope:

- ◆ Your home will be **more comfortable** during winter and summer as eliminating drafts will enable your heating and cooling systems to provide more consistent temperature control
- ◆ A tighter envelope will **reduce noise** entering your house from outdoors.
- ◆ Air quality inside your home will be improved when you prevent pollen, car exhaust and other chemicals from entering your home
- ◆ Reducing the amount of warm air that leaves your home will **decrease moisture** coming into contact with insulation and wood framing, to reduce opportunities for mold and mildew growth.

For existing homes, the following list identifies the most common areas to seal ... the small, and not so small gaps and cracks letting cold air into your home:

- ◆ Sealing **leaks in your attic:**
 - ◇ **Kneewalls** - built when finishing an attic, should be considered exterior walls and insulated (behind and under them) accordingly
 - ◇ **Dropped ceilings** - where kitchen/bathroom soffits exist or slanted ceilings over stairs may leave openings that allow warm air to flow directly to the attic
 - ◇ **Attic doors** - often installed after a home is built, need weatherstripping and insulation to stop warm air from escaping
 - ◇ **Furnace flues and chimneys** - passing through the attic will have small gaps which can be sealed to prevent warm air from escaping
 - ◇ **Plumbing vents and wiring holes** - are openings from the heated areas of the house that should be sealed to prevent air leaks
 - ◇ **Heating and cooling ducts** - in the attic should be insulated
- ◆ Sealing **leaks in your basement:**
 - ◇ **Ceilings** - while many basements remain unfinished, the ceilings where there is heated space above, should be insulated
 - ◇ **Walls** - basement walls should also be insulated to minimize the amount of cold air being pulled into the house as warm air rises
 - ◇ **Wood framing** (the sill where the house frame sits on the foundation, where the floor joists meet the perimeter joists that wrap the house and the rim joist cavities) - should be sealed to block air from entering as this part of the house is above ground level
 - ◇ **Furnace flues and chimneys** - have small gaps where they travel through the heated floor(s) above them on their way to the attic
 - ◇ **Electric, gas or water lines** - the openings where these enter the house should be sealed, along with vents to the outside
- ◆ Sealing **lair leaks in other parts of your home:**
 - ◇ **Windows and doors** - the gaps where windows and doors sit inside the rough opening, may not have adequate insulation to prevent air flow
 - ◇ **Fireplaces** - on an exterior wall may have small gaps where air can enter the house
 - ◇ **Microwaves, stoves and other appliances** - that vent directly to the outside can have small gaps or cracks. When a microwave isn't insulated, you can feel the draft when you walk past in the kitchen, and often people then avoid working in this area.

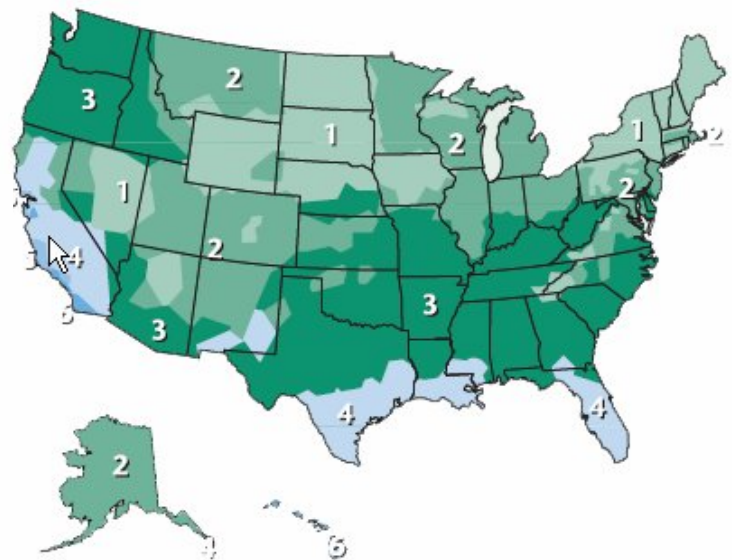
INSULATING Your Home

Insulation will keep your home warm in the winter and cool in the summer by minimizing the flow of heat. You've already read how insulation is one of the tools you can use to seal your home, along with caulking plus metal flashing where fire safety is important (see below).

The next question most people ask is "How do I know how much insulation I need for my house?" The answer to that question depends on where you live. The map and table provided here (from the North American Insulation Manufacturers Association or NAIMA) provides a nice summary of the most common insulation projects. Most can be completed for existing homes although some are best done during the construction process, i.e. cathedral ceilings and basement exteriors.

If you want to get more detailed recommendations for your home, the Department of Energy web site offers a zip code assessment that takes into account your location, type of heat, home construction materials.

Zone	Gas	Heat Pump	Fuel Oil	Ceiling					Basement		
				Attic	Cathedral	Wall (A)	Floor	Crawl Space (B)	Slab Edge	Interior	Exterior
1	✓	✓	✓	R-49	R-38	R-18	R-25	R-19	R-8	R-11	R-10
2	✓	✓	✓	R-49	R-38	R-18	R-25	R-19	R-8	R-11	R-10
3	✓	✓	✓	R-49	R-38	R-18	R-25	R-19	R-8	R-11	R-10
4	✓	✓	✓	R-38	R-38	R-13	R-13	R-19	R-4	R-11	R-4
5	✓			R-38	R-30	R-13	R-11	R-13	R-4	R-11	R-4
5		✓	✓	R-38	R-38	R-13	R-13	R-19	R-4	R-11	R-4
6	✓			R-22	R-22	R-11	R-11	R-11	(C)	R-11	R-4
6		✓	✓	R-38	R-30	R-13	R-11	R-13	R-4	R-11	R-4



So what does **R-Value** in the table above mean? Fiberglass insulation is labeled for its R-value where "R" stands for resistance to heat flow and the higher the R-value, the more insulating value provided. Using laboratory measurements to find an r-factor, this is multiplied by the thickness of the material in inches, giving you the r-value of the insulation.

Laboratory measurements don't always accurately reflect conditions in the real world. Most insulation materials lose their effectiveness when crammed into a tight space between walls. Temperature can also make a big difference where some insulations work better in colder temperatures, while others work best in warmer environments. If a material is stretched too thin or installed improperly, the r-value can also be reduced.

Double (most common) or triple glazing of windows operates someone like insulation. The air or gas (higher density) acts as a barrier and slows the loss of heat through the window glass. This is important as a window will allow up to eight times more heat to escape compared to the same area of insulated wall.

VENTILATION for Your Home

Adequate ventilation is needed to prevent a number of problems:

- ◆ **Ice dams** - are caused by warm air remaining in the attic, causing snow on the roof to melt and refreeze. When water freezes, it can penetrate the roof resulting in leaks and interior damage, in addition to roof damage which is difficult to repair in the middle of winter.
- ◆ **Moisture** - levels will increase as the humidity from warm air is released as the air cools. Condensation may collect on windows and other surfaces leading to the growth of mold or mildew, and wood rot in concealed places difficult to see.
 - ◊ Bathroom, kitchen and dryer vents that exhaust moist air into the attic instead of outdoors are a common problem seen by My Handyman
- ◆ **Air Pollution** - can occur in super, energy efficient homes. It is best to provide fresh air ventilation so that stale air and indoor air pollutants (given off by building materials, furniture, clothing, etc.) can be removed. There are special air exchange units with heat-saving features that help do this and the [Home Ventilating Institute](#) offers more information on these units.

Homes today are built with the following types of ventilation:

- ◆ **Ridge vents (C)** - are found at the top of the roof to facilitate warm air rising and leaving the home
- ◆ **Soffit vents (B)** - are critical to allow cold air to enter the attic and replace the warm air exiting through the ridge vents
- ◆ **Rafter vents (A)** - are necessary to make sure that the insulation doesn't prevent air flowing through the soffit vents, a common problem found by My Handyman when installing insulation.
- ◆ **Gable vents** (not shown) - preceeded the introduction of ridge vents to enable warm air to escape. They are found near the peak of the roof and should be installed on all gable ends. In older homes that do not have ridge vents, My Handyman often finds restricted air flow in some sections creating less than ideal ventilation.

Attic Air Flow

The outside air flows through the soffit, along the rafter vent and out through the gable or ridge vent.

- A RAFTER VENT
- B SOFFIT VENT
- C RIDGE VENT

NOTE: Gable vent not shown in this diagram.



Installation Choices - What, Where & Who

Some sealing, insulating and ventilation projects can be done by home owners willing to do the proper research so that they achieve the desired results without endangering (safety glasses, mask, etc.) themselves. There are several projects where a professional such as My Handyman, is a more appropriate solution:

- ◆ **Recessed ceiling lights** - require care when insulating around them. Alternatively, you can replace them with Insulated Ceiling Air-Tight (ICAT) rated lights which insulation can touch and are sealed to reduce air leaks
- ◆ **Furnaces and chimneys** - must adhere to building codes that focus on fire safety. Unless a home owner is familiar with building codes and skilled at cutting aluminum flashing, they should leave this to a professional.
- ◆ **Knob and tube wiring** (pre-1930) - should either be replaced or handled with care as it can be a fire hazard when it comes in contact with insulation.
- ◆ **Moldy or rotted attic rafters or floor joists** - should be dealt with by a professional to insure that no structural requirements are compromised.