

## ***Installing Insulation***

### **Why Insulate?**

**Your heating and cooling system is the largest energy user in your home. By properly insulating your home, you will save valuable energy dollars.** Home building materials such as wood, brick and concrete do not effectively insulate to prevent heat transfer. Bundle your home in insulation to retain the warm air during winter and the cool air during summer.

### **Types of Insulation**

**Fiberglass Batts**—This insulation (R-3.7 per inch) comes in rolls and is available at hardware and building supply stores.

**Loose Fill**—This insulation consists of fiberglass (R-2.2 per inch), rock wool (R-2.2 per inch) or cellulose (R-3.7 per inch) and is blown into finished walls or hand-poured between attic joists or hard-to-reach cavities. A typical bag covers a 13-square-foot area with three inches of fill.

**Rigid Board**—Generally used as exterior sheathing under shingles and siding, these pre-cut slabs of plastic foam come in various thicknesses and sizes, with or without backings. It may be used in interior applications when covered with a fire-resistant panel like gypsum board (R-4 per inch).

### **What is the R-Factor?**

The R-Factor is an insulating material's resistance to heat transfer. The thicker the insulation, the higher the R-Factor, the more energy efficient the application.

The R-Factor value you need depends on where you live, your utility rates and your existing insulation. In general, use R-30 for attics; R-13 for walls and R-19 over ventilated floor spaces and crawl spaces. Most labels list the R-Factor on the bag or batt along with the number of bags or batts required per 1,000 square feet of attic floor area, the number of square feet covered per bag and the thickness you should have upon job completion.

### **Where to Insulate**

Your attic, walls, basement and switch plates on exterior walls are four key areas to insulate. Areas not heated or cooled should also be insulated.

**Attics**—The average home loses 33 percent of its heat through the attic. Save up to 15 percent on your heating and cooling costs by insulating to R-30 or better.

**Walls**—Walls account for up to 27 percent of the heat loss in the average home. Insulate to R-13 or better and save up to 14 percent on your energy bills.

**Basements**—Install better insulation between your floor joists or place R-19 over unheated/uncooled areas and save up to 13 percent on your heating and cooling costs.

**Outlets and switch plates**—Insulate electrical outlets and switch plates on your exterior walls and save energy dollars. Foam gasket insulators available at your local hardware store are inexpensive and easy to install.

## How to Install Insulation

1. **Gather necessary tools**—You will need gloves and a mask, measuring tape, hammer, nails, staple gun, duct tape, a rake for loose fill insulation and a single-edged razor blade.
2. **Install a vapor barrier**—When using fiberglass, to prevent moisture from passing through, place a vapor barrier, typically a plastic material, on the heated side of the area you are insulating. When you are adding insulation to an already insulated area, the new insulation should not have a vapor barrier.
3. **Allow for adequate ventilation**—Good air flow reduces summer heat buildup in attics and prevents winter moisture condensation which rots wood and rusts nails. Allow one square foot of louver for each 150 square feet of attic floor space. The net vent area for unheated crawl spaces should be one square foot to 1,500 square feet. In attics, provide at least one square foot of attic floor space above insulation. Locate half of this vent area high and the other half low.
4. **Insulate your walls, ceilings and floors**—Lay insulation between rafters, existing wall studs or floor joists. Avoid covering vents or recessed lighting. When using loose fill in the attic, pour it between floor joists and rake evenly for maximum efficiency.
5. **Insulate your basement**—Basements often consist of cinder block, stone or cement walls. Construct studs to frame-out walls, creating a wall-within-a-wall. Cut insulation to fit and place between the studs. Cover new wall with plaster board or another appropriate building material.
6. **Avoid "packing down" insulation**—Compression decreases insulation effectiveness by eliminating air pockets that resist heat transfer.
7. **Secure insulation**—It may be necessary to hold insulation in place with duct tape, nails or staples.
8. **Replace finishes**—Replace any floor, ceiling or wall coverings you may have removed.

## Safety

**Use certified materials**—Be sure the insulation you are using is resistant to all types of corrosion and infestation.

**Be fire conscious**—Don't pull or twist electrical wires when installing insulation. Hand pack insulation around electrical cables. Allow at least three inches between insulation and any recessed lighting fixture or heat-producing equipment unless the fixture is designed to be covered with insulation.

## **Additional Energy-Saving Measures**

**Weather-stripping**—Seal cracks around windows or doors with felt, foam rubber products, rope putty, caulking compound or other available weather-stripping products to reduce fuel costs significantly. The sealant or weather-stripping you choose is as important as your choice of insulation.

**Energy efficiency pays.** It produces long-term savings on your energy bill, improves productivity and saves valuable resources.