

DOE/CE-0180
2002

Department of Energy
Assistant Secretary
Energy Efficiency and
Renewable Energy

Insulation Fact Sheet



Contents:

Introduction

[How Does Insulation Work for You?](#)

[Building a New House? Some Things You Should Know](#)

[Does Your Home Need More Insulation?](#)

[Determining the R-Value You Need for an Existing House](#)

[Making Your Decision](#)

[Before You Insulate](#)

[You Must Prevent Moisture Accumulation](#)

[What Kind of Insulation Should You Buy?](#)

[Make Your Selection](#)

[Check the Label](#)

Introduction

Electricity bills, oil bills, gas bills--all homeowners pay for one or more of these utilities, and wish they paid less. Often many of us do not really know how to control or reduce our utility bills. We resign ourselves to high bills because we think that is the price we have to pay for a comfortable home. We encourage our children to turn off the lights and appliances, but may not recognize the benefits of insulating the attic.

Why Should You Insulate?

Heating and cooling ("space conditioning") account for 50 to 70% of the energy used in the average American home. About 20% goes for heating water. On the other hand, lighting and appliances and everything else account for only 10 to 30% of the energy used in most residences. It makes good sense to turn lights and appliances off when they are not needed, and you'll save even more on your energy costs if you reduce the amount of energy needed for heating and cooling.

Unless your home was constructed with special attention to energy efficiency, adding insulation will probably reduce your utility bills. Much of the existing housing stock in the United States is not insulated to the best level. Older homes are likely to use more energy than newer homes, leading to very high heating and air-conditioning bills. Even if you own a new home, adding insulation may save enough money in reduced utility bills to pay for itself within a few years, continue to save you money for as long as you own the home, and increase the resale value of your house.

The Crucial Role of Thermal Insulation

Inadequate insulation and air leakage are leading causes of energy waste in most homes. Insulation saves money and our nation's limited energy resources. It can also make your house more comfortable by helping to maintain a uniform temperature throughout the house. Walls, ceilings, and

[Before You Buy](#)[Can You Do It Yourself?](#)[If You Do It Yourself](#)[If You Have It Done Professionally](#)[Other Places in Your Home for Added Insulation](#)[Want to Know More?](#)[R-Value Recommendations](#)[About This Fact Sheet](#)

floors will be warmer in the winter and cooler in the summer. Insulation can also act as a sound absorber or barrier, keeping noise levels down.

It is possible to add insulation to almost any house. You may be able to do the job yourself if the structural framing is accessible--for instance, in unfinished attics or under the floor over an unheated space. Or, you may prefer to hire an insulation contractor. In either case, it is important to choose and install the insulation correctly.

The amount of energy you conserve will depend on several factors: your local climate; the size, shape, and construction of your house; the living habits of your family; the type and efficiency of the heating and cooling systems; and the fuel you use. Once the energy savings have paid for the installation cost, energy conserved is money saved--and the annual savings will increase if utility rates go up.

Insulation Priorities

It is most important to:

- *Insulate your attic* to the recommended level, including the attic door, or hatch cover.
- Provide the recommended level of insulation *under floors above unheated spaces, around walls in a heated basement or unventilated crawl space, and on the edges of slabs-on-grade.*
- Use the recommended levels of insulation for *exterior walls* for new house construction. When remodeling or re-siding your house, consider using the levels recommended for new construction in your existing walls.

[Next Section - How Does Insulation Work for You?](#)

[Building Envelope Research](#) [Oak Ridge National Laboratory](#)

For more information, contact the program manager for Building Envelope Research:

André O. Desjarlais
Oak Ridge National Laboratory
P. O. Box 2008, MS 6070
Oak Ridge, TN 37831-6070

E-mail [Andre Desjarlais](mailto:Andre.Desjarlais@ornl.gov)

This page updated on November 11, 2003 by Juanita Denton.