#3949

WSEO

Home Conservation

WASHINGTON STATE ENERGY OFFICE

Washington Energy Extension Service

Wise Use of Resources Through Education

Wall Insulation

Introduction

Before installing wall insulation in homes, most consumers want to know about materials, installation techniques, potential problems, and the benefits of making such an investment. This publication will provide information about problems associated with uninsulated walls, the benefits of adding wall insulation, installation techniques, material types, and how to select a professional contractor. In the overall picture of home comfort, wall insulation is a high priority. However, weatherization measures that are more cost effective should be done first. These include caulking, weatherstripping, and insulating the attic and floor. Increased comfort and savings over the life of the home will result.

Problems With Uninsulated Wall

Most older homes were built without insulation in the walls. Without insulation, the walls lose heat more quickly to the outdoors. This wall condition can cause:

- Condensation on the interior surfaces and ideal conditions for mold growth, mildew, and decay;
- Condensation within the wall cavity;
- Drafts across the floor;
- Discomfort from loss of body heat to cold wall surfaces; and
- Higher heating costs due to heat loss.

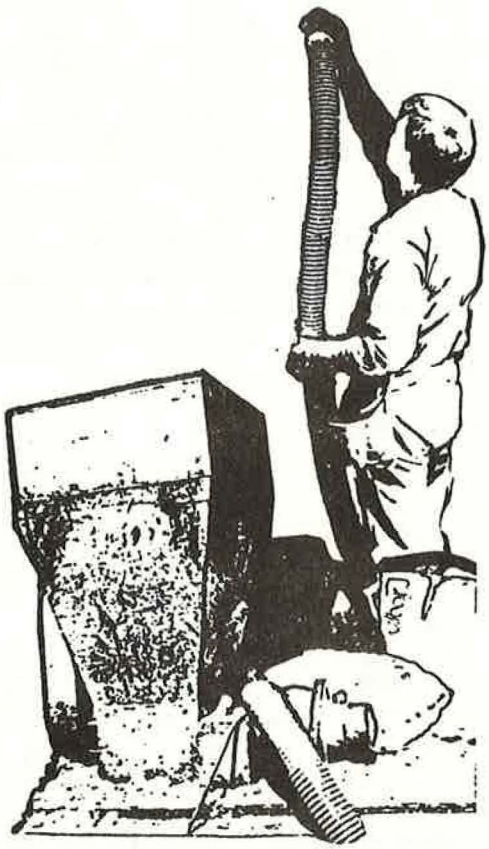
Benefits of Insulated Walls

Filling the air space with insulation material increases the effectiveness of the wall component. The insulation:

- Reduces drafts caused by air leakage through the wall cavity;
- Keeps the interior surface warmer so occupants can lower the thermostat, but still be comfortable; and
- Reduces movement of sound waves and dust so the house is quieter and cleaner.

The Materials

Cellulose is most commonly used for wall insulation. Made from shredded newsprint, cellulose is treated with fire retardants. Monitoring by industry and government assures the homeowner that the material has a standard R-value, is non-toxic and will not burn or cause corrosion of pipes or wires. Cellulose is particularly effective in wall installations because of its ability to fill and pack even tiny nooks



Insulation Blowing Equipment And Installer At Work

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and crannies within the cavity. Cellulose is also more effective in reducing air infiltration through wall cavities.

Mineral fibers such as fiberglass and rock wool are installed in some walls. Greater pressure is required to pack these materials into the cavity because they tend to catch on nails and hang up around tight places.

Gaps or voids in any insulation material account for significantly poorer thermal performance, so proper installation is important.

Getting Started

Wall insulation is more complicated to install than attic or underfloor insulation. It's best to contact a professional insulation contractor. A professional has the experience to work efficiently, effectively, and recognize unexpected problems.

Finding a contractor to do the work begins with a phone call to schedule an inspection of the house for an estimate or bid. *The Yellow Pages* directory lists most local contractors under "Insulation Contractors — Cold and Heat," and may provide additional information about the business (areas served, materials available, membership in associations). Referrals from friends, neighbors, or your utility company may be another good source of information. The inspection will give you a chance to determine whether you are comfortable in dealing with them. It's best to get three bids. Don't be afraid to ask for recent references and to contact them. A few minutes on the phone may provide the security of knowing that you are dealing with a reputable, responsible professional.

Utility Programs

Your local utility may have weatherization programs to help you finance the cost of insulating your home. Low-interest loans and grants are offered to qualifying customers. If you qualify, the utility can provide a list of contractors whose work is routinely inspected by utility staff.

One advantage of participating in local utility companies' weatherization programs, (aside from financial incentives) is the inspector verification that the work was done properly. Depending on the particular utility, some houses qualify only for a free energy audit. This is a good opportunity for homeowners to receive sound energy advice about the condition of the house with no strings attached.

Comparing Bids

There are several aspects of contractors' bids to compare. Bids include:

- **Intangible qualities.** Personality and reputation leave a strong first impression. Select a contractor who respects your wishes and property and has strong references.
- **Price.** A recent survey of insulation contractors in Washington produced an average price of $.50-$.55 per square foot of wall area with easy access. As the job difficulty increases, expect to pay a higher rate.

For example, brick and stucco exteriors can be difficult to penetrate. Drilling access holes through interior walls reduces the expense of access difficulties caused by masonry or asbestos shingles, high ladder, or scaffold work. Rates for interior installation vary depending on the amount of time it takes to cover and clean up interior and whether sheetrock or plaster and lath covers the wall. Average prices range from $.65-$.80 per square foot.

Most kinds of exterior horizontal siding can be removed and replaced carefully after the insulation is blown in. The procedure will preserve the integrity and original appearance of the siding. Rates for this procedure range from $1.00 to $1.25 per square foot.

- **Clean up.** Ask your contractor how they handle clean up. If the project takes two days, do they clean up each day? Do they seal pulley holes around windows? Install gaskets around switch plates and outlets to prevent insulation from blowing into the house? Do they foresee messy problems when insulating around the bath tub, stairwells, pocket doors, or built-in cabinets? All these areas may allow insulation to be blown into the house.
- **Warranty.** Most contractors install products that carry a warranty for one year. Many will also warranty the labor for one year. Get both warranties in writing.
- **Other Services.** If your house needs other weatherization measures (attic and floor insulation or air leakage controls), can the contractors give you separate bids for each? And an estimated time of completion?
- **Discrepancies.** Compare bids for the areas that will be insulated. The unit rates may be similar, but if the areas vary, the total costs of the two will be considerably different.
- **Vapor barriers and vents.** Almost all the moisture that creeps into the wall cavity arrives through holes and small cracks on the interior wall. Very little vapor passes through the interior wall material. So a vapor barrier such as rated paints or visqueen is not necessary. Similarly, a vent plug on the exterior is not recommended.

The Process

An experienced crew with good equipment can insulate the walls of an average house from start to finish in less than one day.

One crew member drills the wall cavities and probes for blocking. Another follows with the nozzle and hose from the blowing machine and fills the cavity with insulation. An ordinary wall section that is 8 feet in height requires two holes, one about 12" below the top of the wall and the other one up about 3 feet from the bottom of the wall. A wall 10 feet in height may need three holes to achieve adequate compaction of the insulation throughout the cavity, depending on the equipment.

After the installation, the holes are plugged with a wood or plastic plug. The plug is painted if the homeowner supplies the paint. Another option includes a plug with spackle over it. Most insulation contractors stress that this is not a finished job and matching colors and textures is not their specialty. Plugs installed without adhesive may work out over time because of changing moisture content and temperature. Patching compounds can be textured to blend with existing surfaces.

After the work is completed, the installer is required by law to leave a certificate that specifies how much material was installed, how many square feet it covered, type of material used, date of installation, and the installer's name. To prevent settling of material (that could result in voids or gaps), contractors install more insulation in each cavity than what it holds at settled density. For example, cellulose will settle to a density of 2.3 pounds per cubic foot, but your contractor should press more than 3.0 pounds into every cubic foot. The possibility of settling is then greatly reduced.

Savings On Wall Insulation

Investing in wall insulation pays for itself with savings on the heating bill. Average payback is less than 7-10 years. Your actual period of payback will depend on factors such as lifestyle, home construction, and the cost of heating fuel.

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