Energy Facts

Energy Tips - Weatherstripping

E-2794

Insulation is not the whole story for energy conservation! Even if your home is well insulated, energy may be wasted through air infiltration. Air can leak around doors and windows, foundations, chimneys, and exterior plumbing. In the winter, air heated by your furnace is lost to the outside; in summer, hot outdoor air puts an extra load on your air conditioner. If your home is typical, one-half to three-quarters of your fuel bill is the result of air infiltration.

Weatherizing your home by caulking and weatherstripping can effectively reduce energy waste. In fact, the cost of caulking and weatherstripping can usually be paid back in energy savings in less than one year. This makes weatherizing one of your best investments in energy conservation. Even better, it is something that you, the homeowner, can do.

Caulking seals cracks and joints in the house. Weatherstripping reduces air infiltration around moving parts of the house such as doors and windows and it has the added benefit of helping to stop dust, dirt, and insects from entering the house.

There are many types of weatherstripping on the market, each designed for a different type of application. Some factors to consider are:

- Resistance to wear by abrasion or friction. For example, the bottom of a door will receive more wear than the bottom of a window sash.
- Exposure to weather. Some types of weatherstripping will deteriorate when exposed to moisture and are best for interior use.
- Material to be weatherstripped. Will a self-adhesive weatherstripping work, or must it be nailed in place?
- The size of the gap. Some types of weatherstripping are not suitable for large gaps.
- Evenness of the gap. Will you need a type of weatherstripping that will adapt to uneven gaps?
- Appearance. Some types of weatherstripping are hidden after installation; other types may look "added on."
- Durability. A more expensive type of weatherstripping that will last can be the most economical choice.
- Ease of installation. Are special tools required?

Buying and Installing Weatherstripping

Weatherstripping is sold by the linear foot. Measure around the door or window to be weatherstripped to determine the total length needed. It is also advisable to measure the width and depth of the gap. Some types of weatherstripping come in different widths and thickness. If the weatherstripping is too thick, it may interfere with the latch or locking mechanism on the door or window. If it is too narrow, it will not be effective.

Most weatherstripping is easy to install. Self-adhesive weatherstripping requires a clean, dry surface. Other types are held in place by tacks, nails, or screws. These fasteners are sometimes included with the pack-

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age of weatherstripping. The weatherstripping may also have pre-punched holes for easier application.

Some types of weatherstripping are attached to the frame, while others are attached to the door or window sash. Follow the manufacturer's directions for the correct location.

Factory-applied weatherstripping on doors is only a recent innovation. As a result, the exterior doors in thousands of homes throughout the nation have little or no weatherstripping. Most doors are installed with a space between the bottom of the door and the floor or threshold. Sometimes this space can be 1/4 inch or more. If weatherstripping is not used, this crack allows large amounts of air to flow in and out of the house. This is known as infiltration.

On a typical 36-inch entry door, this small crack equals a 9-square-inch hole through a wall of your home. To put things in perspective, this is approximately equal in size to a standard duplex receptacle or the familiar switch plate.

Door bottom weatherstripping

Several types of door bottom weatherstripping are available. While easy to apply, these products can interfere with door swing and require a reasonably level threshold beneath the door. Simple hand tools are all that are required to install these door bottoms. After cutting to size with a hacksaw or tin snips, the door bottom is surface mounted to the inside of the door using wood screws normally provided by the manufacturer.

A fairly new innovation in weatherstripping is the mechanically operated, "automatic" door bottom. In this model, a vinyl seal is automatically lowered against the floor when the door is shut. The seal retracts when the door is opened.

Thresholds

Thresholds are a more attractive method of windproofing the bottom of a door. While most are very effective at cutting down infiltration, the average homeowner may find them difficult to install.

A popular threshold is an aluminum model with the flexible vinyl "bubble." When new, this threshold is effective, but under constant use the bubble soon collapses leaving a sizable crack beneath the door. In most cases the vinyl is replaceable provided a dealer selling that particular model can be located.

Though difficult to install, the combination vinyl door bottom and aluminum threshold is longwearing and provides effective weatherproofing. Since the vinyl is mounted in an aluminum extrusion fastened to the door, the aluminum threshold receives most of the wear. The only disadvantage in that interior frost may accumulate on the threshold during extremely cold weather.

Windows

The biggest energy-wasters in any home are the windows and doors (46% of annual heat loss is through and around glazed areas in windows and doors).

The first step to weatherproofing your home is to check the windows. If you have double-hung wooden casement windows, begin by looking at the sash lock. Make sure each lock is fastened securely to the sash (wooden frame around the glass) and is in working order. Adjust locks so that the upper and lower sash draw together as you tighten the lock.

When weatherproofing a steel casement window, again, begin with the lock. Make sure it is tight (if adjustable) and in working order. The easiest and best method of weatherstripping steel casement windows is closed-cell pressure sensitive foam tape. Clean the flanges around the edge of the sash and press on a thin strip of the tape.

A relative of the steel casement window is the metal basement window. Most newer homes with basements have several of these units (of either steel or aluminum) that are cast in place when the basement wall is poured. Though small in size, infiltration and heat loss through windows of this type can be extreme. Closed-cell pressure-sensitive foam tape or transparent weatherstripping tape works well as a method of weatherproofing these windows.

Studies show that tightly fitting storm windows will cut conduction and infiltration losses by 50%. Self-storing, double-or triple-track aluminum storm windows have traditionally been used, but you can use inexpensive plastic window and door kits with comparable results. These kits, usually made of thin plastic sheeting, are practical for temporary use.

To increase the stability of a plastic sheet storm window, substitute strips of thin plywood, paneling, or even yardsticks for the cardboard strips usually supplied with the kit.

Cut the plastic a little larger than the actual window size. Wrap the top edge of the plastic once or twice around the nailing strip (the plywood, paneling, etc.) and fasten the strip to the top exterior of the window casing. Next, wrap the plastic around a second nailing strip, stretch tightly, and nail to the windowsill. Follow the same procedure for attaching the sheet to each side of the window.

Polyethylene sheeting is difficult to see through. When clarity is required, you may want to use a clear acetate or vinyl material that is also on the market.

Sometimes it is difficult to install the sheeting on the outside of the window. In this case, the easiest method is to secure the plastic to an interior window casing using transparent weatherstripping tape. Before installing the sheeting, seal the window joints with tape or rope caulk.

One of the newer items on the market is a plastic storm window unit designed for installation on the inside of the house. It is cut to size, made of clear sheet vinyl, and consists of a system of interlocking plastic side strips (not unlike the plastic freezer bag).

This storm window installs in minutes and is easily removed from the inside for cleaning or ventilation. This window works particularly well when used over casement, basement, or jalousie windows.

Storm doors

For aesthetic reasons, many new homes are built with exposed single- or double-entry doors. While attractive, this practice must be questioned because of the heat loss or gain. By covering an exterior door with a storm door, conduction loss and infiltration through that door can easily be reduced by 50%.

Many people dislike the appearance of the traditional aluminum storm door. Manufacturers now offer a full-length glass storm door particularly designed for homes with exposed-entry doors. To be sure, these doors are potentially hazardous. However, some states now require tempered safety glazing in such doors, and attractive decals and appliqués can be attached at eye level to make sure the glass door is noticed.

Garage doors

Another large source of infiltration can be found around almost any overhead garage door. A 1/8-inch crack around the average single garage door yields almost 50 square inches of area - enough to be concerned about, especially if the garage is attached to the house.

To begin winterizing a garage door, first purchase a "garage door bottom." Usually available in rubber or vinyl, the bottom is simply cut to measure and nailed to the bottom edge of the door with rust-resistant nails.

The final step should be the installation of an overhead garage door weatherstrip kit. One brand uses a vinyl leaf that fastens into an aluminum frame. Installation requires only a hammer and hacksaw and is accomplished by nailing the aluminum strip to the face of the doorstop, allowing the vinyl leaf to "float" against the face of the garage door.

Tape products

One of the most effective and economical methods of weatherstripping is pressure-sensitive vinyl foam tape. When purchasing, look for a closed-cell vinyl; it is a better insulator than its rival, the open cell, because the tape's pores are adjacent rather than connected to each other. Neoprene sponge or vinyl foam is more durable than sponge rubber or polyurethane foam.

Pressure-sensitive sponge rubber is also available. However, due to its rather low compressibility, this material is not recommended for use as door weatherstripping. The vinyl foam tape has better insulating, compressibility, and adhesive characteristics.

When using any form of pressure-sensitive or stick-on weatherstripping, clean surfaces are necessary. Any exterior doorjamb is sure to have a film of dust that must be removed prior to application of the product. A cleaning rag dampened with fast drying lacquer thinner or denatured alcohol will take off this film.

Nail-on products

Spring metal products have long been used to weatherstrip doors and windows. However, these materials are harder to install and often not as effective as the closed-cell vinyl tape.

Three types of coiled tubing are most often used for weatherstripping. Installation is simple, requiring only a hammer, nails, and a pair of shears or tin snips. For doors, the tubing is pressed against the closed door and nailed to the face of the doorstop. Other products similar to the tubing have a pre-formed body made of white pine and they are applied in the same manner.

Resources from:

GH4881, Weatherstripping Doors, University of Missouri Extension

GH4882 - Reprint Home Energy Management: Weatherstripping Your Windows, University of Missouri Extension

HEG82-158-A Weatherizing Your Home-Weatherstripping, University of Nebraska Extension

Energy Team Acknowledgments

The MSUE Energy Team, led by Eaton County Extension Director Mona Ellard, conceived, researched, wrote and published Energy Fact Sheets for the benefit of the citizens of Michigan. Support came from Sally Stuby, Regional Director, Southwest Region, and Karen Shirer, State Leader, Family and Consumer Sciences. The team members are: Randy Heatley, Patricia Miller, Cindy Straus, and Doug Woodard.