



Energy Facts

Energy Tips- Selection and Comparison of Weatherstripping Materials

E-2795

Selection of Weatherstripping

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?

Weatherstripping Materials

Most weatherstripping is made of sponge, foam, felt, vinyl or metal, or a combination of materials. These materials vary in cost and durability.

Sponge or foam is inexpensive, but not very durable. It tends to deteriorate when exposed to weather and is not suitable for applications where there is friction or abrasion. Neoprene sponge or vinyl foam is more durable than sponge rubber or polyurethane foam.

Felt is also relatively inexpensive, but not very durable. Do not use felt where it is exposed to the weather or moisture. Felt tears easily and requires care in installation. It should not be used where there is friction or abrasion. All-wool felt is more durable, but is also more expensive.

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Vinyl is used in many types of weatherstripping. It is generally a durable product and resistant to moisture. It is usually more expensive than foam or felt.

Metals, such as bronze, copper, stainless steel and aluminum, are used in weatherstripping. Metal weatherstripping tends to be low cost and durable. Aluminum is frequently used for reinforcing other weatherstripping materials.

Types of Weatherstripping

Tape products

One of the most effective and economical methods of weather stripping doors 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.

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 a must. Any exterior door jamb is sure to have a film of dust that must be removed prior to application of the product. A cleansing rag dampened with fast drying lacquer thinner or denatured alcohol will take off this film.



Foam rubber tape, effective

Foam Rubber Tape

Many widths and thicknesses available. Will not stick to dirty surface. Clean and dry surfaces before installing.

- effective
- lasts 1-5 years
- easy installation; measure, cut, peel and stick
- used on window top and bottom
- used on door frame top and sides but not where surfaces slide against each other

- installation requires knife or shear, tape measure, stick foam to inside face of jamb
- invisible when installed
- more effective on doors than windows.

Pliable gaskets — foam, felt or vinyl, use on door and window stops, bottom or top of window sash

- easy installation
- low cost
- durability varies with material, generally low
- self-adhesive strips may not work on metal
- foam and felt should be considered as temporary

Install adhesive backed foam, on all types of windows, only where there is no friction. On double-hung windows, this is only on the bottom (as shown) and top rails. Other types of windows can use foam strips in many more places.

Apply a strip of closed-cell vinyl foam tape to the bottom or top edge of the appropriate sash.

Use transparent weather stripping tape to seal cracks around window sash. After cleaning all surfaces with a cloth dampened in lacquer thinner or denatured alcohol, cover all cracks with the weather stripping tape.

Use caulking cord or rope caulk. This product has many uses and is highly effective at topping unwanted air from entering the home. Rope caulk will remain flexible for years, never shrinks, works and removes easily.

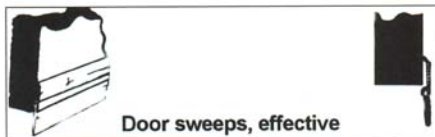
A bonus of both rope caulk and weatherstripping tape is that you can install them from inside the house.

Nail-on products

Spring metal products have long been used to weather-strip 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 weather-stripping. 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 door stop. Other products similar to the tubing have pre-formed body made of white pine and are applied in the same manner.

- used on window channels, sides, top and bottom
- used on door frame top and sides
- installation requires knife or shears, tape measure
- some types of rigid strip gaskets have slot holes for fasteners to allow for adjusting as weatherstripping wears.



Door sweeps, effective

Door Sweeps

- aluminum or stainless steel, with sponge, vinyl, felt or plastic brush.
- useful for flat thresholds, may drag on carpet or rug.
- most can adjust to uneven threshold
- relatively easy installation
- exposed to view
- may drag on carpet
- select a door sweep with slot holes to adjust height of sweep as it wears
- automatic sweep retracts as door is opened, is more expensive and difficult to install, but more durable as sweep does not drag on floor.
- automatic sweep may require brief pause after door is unlatched to allow time for retraction
- installation requires: tools-screwdriver, hack saw, tape measure — cut sweep to fit 1/16 inch in from the edges of the door. Some sweeps are installed on the inside and some outside. Check instructions for your particular type.
- install on bottom of interior side of in-swinging door or bottom of exterior side of out-swinging door

Door Shoes - aluminum with vinyl insert.

- useful with wooden threshold that is not worn very durable, difficult to install (must remove door).
- fits over door bottom and screws into face
- durable

- can be used with uneven opening
- drip cap on exterior to shed rain
- relatively expensive
- installation can be difficult
- may require planing of door bottom
- some door shoes have replaceable vinyl inserts for longer durability
- installation requires: tools- screwdriver, hack saw, plane, tape measure — remove door and trim required amount off bottom. Cut to door width. Install by sliding vinyl out and fasten with screws.



Door thresholds, very effective

Vinyl bulb threshold: vinyl bulb and aluminum

- useful where there is no door threshold or wooden one is worn out
- difficult to install
- vinyl will wear but replacements are available.
- combined threshold and door weatherstrip
- available in different heights
- vinyl bulb wears from foot traffic
- relatively expensive
- choose a threshold with replaceable vinyl bulb for increased durability
- installation requires: tools-screwdriver, hack saw, plane, tape measure — remove door and trim required amount off bottom. Bottom should have about 1/8" bevel to seal against vinyl. Be sure bevel is cut in right direction for opening.

Windows

Studies show that tightly fitting storm windows will cut conduction and infiltration losses by 50 percent. 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.



Hollow vinyl tube, effective

Hollow Vinyl Tube

Unightly in some places. Reinforced flange is very durable. Do not paint the tube gasket.

- effective
- lasts 2-7 years
- easy to install; measure, cut and nail or staple
- used on window frames
- used on door frame top and sides
- installation requires knife or shears, hammer and nails or staple gun, tape measure

Rigid Metal Strip Tube Gasket

Metal strips with slots rather than holes for fasteners can later be adjusted. Do not paint tube gasket.

- very effective
- lasts 5-10 years
- moderately easy to install; measure, cut, screw or nail in place
- used on window frames
- used on door frame top and sides
- installation requires hack saw, hammer and nails or screwdriver and screws, tape measure



Wood strip foam gasket, effective



Wood Strip Foam Gasket

Wood strip can be finished to match door frame. Not good for warped doors. Do not paint the foam.

- effective
- lasts 1-3 years
- visible when installed, not very durable

- moderately easy to install; measure, cut and nail in place
- used on door frame top and sides
- installation requires hand saw, hammer, nails, tape measure, nail strip snugly against the closed door. Space nails 8 to 12 inches apart.
- some types of rigid strip gaskets have slot holes for fasteners to allow for adjusting as weatherstripping wears



Felt strips, least effective

Felt Strips

Only good for narrow and even gaps. Comes apart where rubbing occurs. Do not paint. Not effective when wet.

- least effective
- lasts 1-2 years
- easy to install; measure, cut, nail or staple
- used on wood window top and bottom
- used on door frame top and sides
- installation requires knife or shears, hammer and nails or staple gun, tape measure
- some types of rigid strip gaskets have slot holes for fasteners to allow for adjusting as weatherstripping wears.



Vinyl/plastic/mylar 'V', very effective



Vinyl/Plastic/Mylar 'V'

This works like the spring metal. It's installed flat and then bent to a 'V' shape, the open end of the 'V' to the outside of the doors which open inward.

- very effective
- lasts 2-20 years
- easy to install; measure, cut, peel and stick



Metal, very effective

Metal

Seals by spring tension. Nearly invisible with proper installation. A good value. Spring, tension or folded strips — bronze, copper, aluminum, stainless steel, or vinyl.

- very effective
- lasts 10-20 years
- moderately easy to install; measure, cut and nail
- used on most wood window channels
- used on door frame top and sides
- cannot be seen when door or window is closed
- may make opening and closing of door difficult
- not suitable for uneven gaps
- somewhat difficult to install in double-hung windows
- some manufacturers include an extra piece for striker plate when weatherstripping a door
- self-adhesive vinyl available
- installation requires tin snips, hammer, nails, tape measure, cut to length and tack in place. Lift outer edge of strip with screwdriver after tacking, for better seal.



Rigid metal strip tube gasket, very effective

Interlocking metal channels

- installation requires tools-hack saw, hammer, nails, tape measure, cut and fit strips to head of door first: male strip on door, female on head; then hinge side of door: male strip on jamb, female on door; finally lock side on door, female on jamb

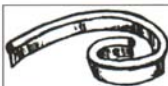
- difficult to install (alignment is critical)
- visible when installed
- durable but subject to damage, because they're exposed
- excellent seal

Fitted interlocking metal channels (J-strips)

- very difficult to install
- exceptionally good weather seal
- invisible when installed, not exposed to possible damage.
- installation — should be installed by a carpenter. Not appropriate for do-it-yourself installation unless done by an accomplished handyman.

Interlocking threshold:

- very difficult to install
- exceptionally good weather seal.
- installation — should be installed by a skilled carpenter. Install by moving sash to the open position and sliding strip in between the sash and the channel. Tack in place into the casing. Do not cover the pulleys in the upper channels.



Foam-filled vinyl tube, very effective

Foam-filled Vinyl Tube

Unightly in some places. Reinforced flange is very durable. Do not paint the tube gasket.

- very effective
- lasts 5-10 years
- easy to install; measure, cut and nail
- used on window frames
- used on door frame top and sides
- installation requires knife or shears, hammer and nails or staple gun, tape measure

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 window sill. 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 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 dwelling. 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.

Resources from:

Michigan Extension Bulletin Caulking and Weatherstripping E-1573

Missouri Extension GH4882, Home Energy Management: Weatherstripping Your Windows

Nebraska Extension HEG82-158-A Weatherizing Your Home—Weatherstripping.

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