

1982

HEG82-157 Weatherizing Your Home--Caulking

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Weatherizing Your Home--Caulking

This NebGuide discusses caulking the home to reduce air infiltration and increase energy efficiency. Where to caulk, types of caulking materials, and techniques for caulking are presented.

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Is your home an energy waster? Even in a well-insulated home, energy can be wasted through air infiltration. One-third to one-half of a typical fuel bill is the result of air infiltration.

Air leaks around doors and windows, foundations, chimneys, exterior plumbing, or other parts of the structure. 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.

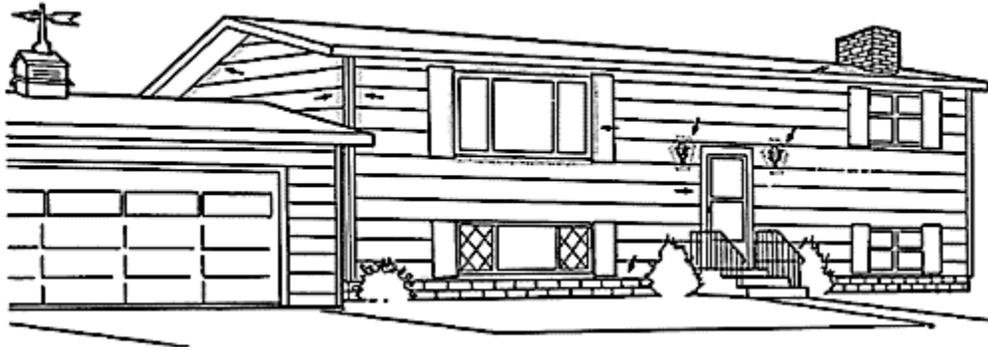
Weatherizing your home by caulking and weatherstripping can effectively reduce energy waste. In fact, the cost of caulking and weatherstripping can usually be paid back in energy savings in only one or two years. This makes weatherizing one of your best investments in energy conservation. Weatherizing to limit air infiltration also reduces drafts as well as noise and dust, making your home more comfortable. Even better, it is something that you, the homeowner, can easily do!

Caulking seals cracks and joints in your house. **Weatherstripping** reduces air infiltration around moving parts of the house, such as doors and windows. This NebGuide discusses caulking. Ask at the Cooperative Extension office in your area for a copy of *Weatherizing Your Home -- Weatherstripping* (HEG 82-158) to learn about weatherstripping.

Where to Caulk

Caulking compounds are used wherever two different materials or parts of the house meet. Current construction practices recommend that the cracks and joints in a home's interior be carefully caulked to limit air infiltration. Exterior cracks and joints are also caulked to further weatherize and protect the

structure.



Common places to caulk are:

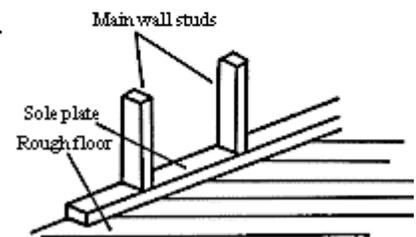
Interior:

- Around window and door frames.
- Between the sill plate and foundation.
- Along the sole plate of exterior walls.
- Around faucets, pipes, wiring, outlets, or vents in exterior walls.
- Around ceiling fixtures.
- Around water pipes, drains, bathtubs and other plumbing fixtures.
- Joints between wallboard or paneling and the floor or ceiling, on exterior walls.
- Around the frame of an attic door or entry.



Exterior:

- Around window and door frames.
- Between two different siding materials.
- The joint between foundation and siding.
- Corners and angles where siding materials meet.
- Around skylights, vents and chimney flashing in the roof.
- Around faucets, pipes, wiring, outlets, or vents in exterior walls.

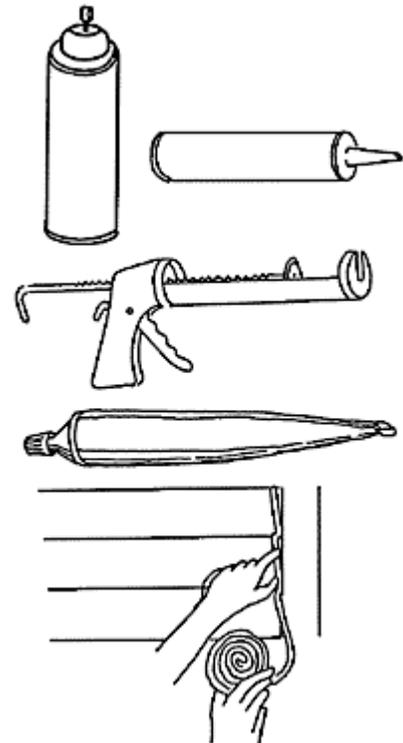


The purpose of caulking is to seal any crack in the shell of your home. This is also true of divisions between heated (or cooled) and unheated spaces, such as an attic.

Types of Caulking Compounds

Caulking compounds come in several forms. Disposable cartridges that fit in half-barrel caulking guns are the most common. Pressurized caulking cartridges are available that do not require caulking guns. Some types of caulking compounds are available in aerosol cans.

Squeeze tubes and rope caulking are also available for small jobs or special applications.



Caulking compounds vary in their ability to adhere to different materials and in their resilience, durability, cost and ease of clean-up. Some caulking compounds have special properties, such as mildew resistance.

Caulking compounds are either water-based or solvent-based. Water-based caulking compounds can be cleaned with water before curing. Solvent-based compounds must be cleaned up with solvents.

1. *Oil or resin based*, sometimes called regular or contractor's caulk -- exterior use only.

This is an inexpensive, low durability caulk. It has largely been replaced by the better quality caulking compounds.

Advantages:

- low cost;
- good adhesion to many surfaces;
- shrinkage is moderate.

Disadvantages:

- low durability, 1 to 4 years;
- poor adhesion to porous surfaces, like masonry;
- tends to crack when dry;
- must be cleaned up with mineral spirits;
- should be painted;
- some are toxic, check label;
- limited temperature range.

2. *Latex* -- exterior or interior use.

Advantages:

- low to moderate cost;
- good adhesion to most surfaces;
- shrinkage is low;
- will not crack or crumble;
- cleans up with water;
- can be painted;
- non-toxic.

Disadvantages:

- varied durability, 2 to 10 years
- will not adhere to metal
- little flexibility when cured
- needs to be painted when used on exteriors.

Acrylic latex caulking compounds are common. These compounds tend to be more durable but more expensive than other latex caulking compounds. Some latex caulking compounds also contain silicone for increased durability, better adhesion to building materials and increased flexibility.

3. *Butyl rubber* -- exterior use only

Advantages:

- excellent adhesion to most materials;
- good durability, 10 or more years;
- will not become brittle, and has good resiliency;
- can be painted after it has cured, usually one week.

Disadvantages:

- moderate to high cost;
- variable shrinkage; may require two applications;
- does not adhere well to painted surfaces;
- toxic; follow label precautions.

4. *Silicones* -- available for interior or exterior use, check label.

Advantages:

- excellent adhesion to most materials;
- very little shrinkage;
- high flexibility and resiliency after curing;
- can be cleaned with dry cloth if done immediately, otherwise use mineral spirits;
- available in clear formula.

Disadvantages:

- high cost;
- may not adhere well to painted surfaces;
- many silicones cannot be painted;
- can be toxic, follow label precautions;
- may be flammable.

5. *Urethanes* -- interior or exterior use.

Advantages:

- expands when curing;
- good for larger cracks;
- available in easy-to-use aerosol cans;
- excellent adhesion to most materials;
- flexible;
- can be applied at variable temperatures, check label.

Disadvantages:

- high cost;
- must be painted to protect from ultraviolet radiation.

Choosing Caulking Compounds

Always choose the appropriate type of caulking compounds for the job. You may need several different types for your house.

It is generally best to choose quality caulking compounds. Expensive caulking that is durable may be more economical than cheap caulking. It is especially important to use durable caulking for areas that are exposed to severe weathering or that are difficult to reach.

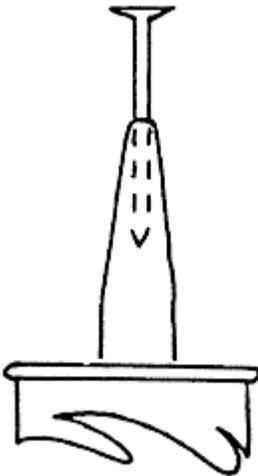
The caulking compound must adhere to the materials to be caulked, if it is to work properly. In particular, porous materials like masonry or cement and metal require special types of caulking. Some caulking compounds require a primer when used on certain materials. Check the manufacturer's instructions carefully.

When caulking two different materials, such as wood and metal, choose a compound that will remain flexible. Different materials expand and contract at different rates, and the caulking compound must withstand this stress.

Some caulking compounds are available in colors that match the materials being caulked. However, if you are caulking siding or other painted materials, be sure to choose a compound that can be painted.

How Much Caulking is Needed

To determine the amount of caulking you need, measure around the door and window frames, siding joints, cracks, and other places to be caulked. This will give you an estimate of the linear footage to be caulked. Each cartridge of caulking compound should be labeled with the approximate linear footage it will cover. These estimates are usually for a bead of caulking about one-fourth inch in diameter. Remember that deep or wide cracks will take more caulking.



For convenience, purchase enough caulking compound to complete the job. Ask about the store's policy for returning unused cartridges. To save a partially used cartridge, put a nail in the tip. Wrap the cartridge with an airtight material, such as plastic or tape, and store in a cool, dry place.

Caulking compounds have limited storage life. Check the manufacturer's label.

Preparing to Caulk

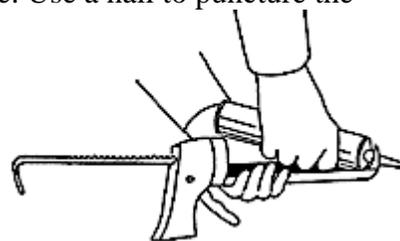
Caulking compounds are best applied when outdoor temperatures are between 50° and 70°F. This is when most building materials are at the midpoint of contraction and expansion. It is also when the differences between indoor and outdoor temperatures are minimized.

Before caulking, surfaces must be clean, dry and grease-free. A solvent may be needed to clean the surface. A steel brush, screwdriver, or putty knife can be used to remove old caulking. It is important to completely remove old caulking and have a clean surface. Otherwise, caulking may not adhere properly, and the job will have to be repeated.

Large or deep cracks may need a filling material. Oakum (a hemp fiber), fiberglass insulation, sponge rubber or caulking cotton are suitable filling materials.

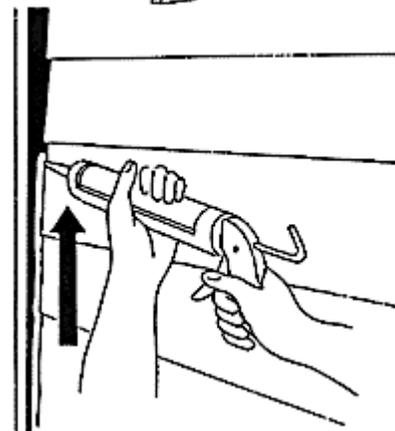
How to Caulk

It is easy to load a half-barrel caulking gun. Invert the plunger rod handle, teeth up, and pull out. Slip cartridge compound into the half barrel. Turn the plunger rod handle, teeth down, and push in. Pull the trigger until it clicks. Cut off the tip of the cartridge nozzle at a 45° angle. Use a nail to puncture the inside seal in the nozzle. Note: the size of the opening in the cartridge nozzle will determine the size of the caulking bead.



Hold the caulking gun at a 45° angle to the crack. Squeeze the trigger with a steady pressure. **Push** the caulking compound into the crack rather than just laying it on the surface. This is to make sure you fill the crack completely and do not trap any air bubbles. To break the caulking bead, twist the caulking gun and pull back on the plunger rod.

Practice with the caulking gun before using it. The best results are obtained with steady pressure and continuous movement.



File HEG157 under: CONSUMER EDUCATION
B-10, Energy Conservation
Revised May 1987; 5,000 printed.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

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