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Cooperative Extension South Dakota State University

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Home Winterization: Caulking

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South Dakota State University
U.S. Department of Agriculture
Caulking

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Would you give up $50 to save 50% of your home’s winter heat loss?
Spend the $50 (or less if you have an average house) for caulk, and plug those leaky windows and doors, cracks, and other small holes. You’ll get that money back in the first year.

If the floors feel cold and the furnace works hard but leaves part of the house cold, caulking may help make your home more comfortable. Another benefit is less dust and dirt sifting into the house. Caulking will help prevent water seepage, which can cause rot, blistering paint, and wet insulation.

What is caulking?
Caulks and/or sealants are flexible sealing compounds that you place in joints or seams where building materials meet. Often these materials are different in composition and so will expand and contract at different rates to changes in temperature, moisture, or pressure.

Without caulk, somedays there may be big gaps in the joint area; in rainy weather there may hardly be a gap at all. Vibrations from cars, trucks, trains, even feet; the closing and opening of windows and doors; or the pressure of wind against the roof and walls can widen these openings. If you could combine all these unintentional vents in an average house into one opening, it would surely get your attention; you’d do something about it immediately.

The quality and presence of caulking is an indication of the overall quality of construction in a new building and the maintenance of an older home. Caulking should be present in all cracks on the outside of the home and should be tight and in good condition. If it is loose, falling apart, or cracked, replace it.

Can I caulk?
Sure. Anyone with a firm hand and steady eye can do a good caulking job. It can be messy until you get the feel of the job. But the satisfaction and increased living comfort are well worth a little mess.

You might need a ladder. Borrow one; don’t bother to buy for just this job. This is no long-term venture you’re embarking on. You’ll just need a ladder for a couple of hours. Caulking goes quickly.

Where do I caulk?
As a general rule of thumb, any place where two materials come together is a good candidate for caulking. Do not apply caulk between moving surfaces, such as between window sashes and frames. This is a place for weatherstripping (see FS 835).

Another cautionary note: if your house has vinyl or steel siding, you do not regard every crack or crevice as a place for caulking. Vinyl and steel are meant to flex a little, and if you do caulk, it’s very possible the siding will buckle. In fact, the factory-cut nail holes are not holes, but slots to accommodate normal expansion and contraction. Talk to a siding contractor if you have doubts.

There are plenty of other places for homeowners with vinyl or steel sided houses to check for caulking needs. Read on.

Take a tour of the house. Take this fact sheet and a pencil with you. Check off the places listed in Fig 1.

What caulk do I use?
The federal government has divided caulks into three performance groups, depending on their ingredients. In the basic group are sealants with an oil or resin base. The intermediate group (butyl and latex) sticks better than the basic sealants to most building materials and stretches enough to compensate for moderate shifts and changes in the crack size. Newly developed synthetic sealants (silicone and urethane) are included in the high performance group which includes the most durable and versatile caulks.

There are advantages and disadvantages to each type, and your selection also depends on the materials to be sealed. In addition to the following information, always read the labels before buying and installing.

The label should tell you:
(1) any need for a primer coat and the application procedure,
(2) recommended method of cleanup,
(3) drying time, and
(4) whether the caulk can be painted over.

Any type, if applied according to directions, will be air and water tight. The better, longer lasting caulks often are more expensive, but they might be worth it to eliminate a re-caulk job later on. Caulks withstand aging better if painted, with the exception of most silicones which cannot be painted.
### Checklist of places where your home may need caulking:

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1. Around doors where the frame and wall of the house meet.
2. Around windows where the frame and wall of the house meet.
4. Where steps or porches and the house meet.
5. Where the chimney meets the roof, around the flashing, and the gap in the seam between the flashing and shingles.
6. Along the corners of the house where siding meets.
7. Around vents, such as for the clothes dryer.
8. Between the window air conditioner and the window frame or wall.
9. Around plumbing pipes where they go through walls to enter the house.
10. Cracks in stucco or other siding materials.
11. Around fuel pipes where they enter the house.
12. At joints between different materials such as wood and brick.
13. Along skylights or vents where they enter the roof.
14. Around electrical supply lines where they enter the house.
15. Around glass panes to hold them in the frame.
16. If the attic is heated, where the wall meets the eave at the gable ends.
17. Inside the home, wherever pipes, wires, or vents enter a ceiling below an unheated attic.
18. Around outside water faucets.
19. Where basement windows are set into a block wall.
20. Where there are siding joints or cracks.
21. Where the chimney or masonry meets siding.
22. Around the plumbing vent where it moves from a heated to an unheated space.
23. Where the television cable or antenna wire moves from a heated to an unheated space.
24. Where the thin cable for telephone service snakes into the house. (This may be along the sill plate. It isn't very easy to find.)
25. Along the baseboard and around windows inside the house.
26. In any cracks or unputtyed nail holes or other openings in the exterior of the building.

Check caulking where house meets doors and windows . . .

. . . and at foundation . . .

. . . at inside corners . . .
Caulk comes in several forms—cartridges to be used in a caulking gun, in bulk, tube, and rope, even in aerosol cans. Probably the most popular is the cartridge. Bulk caulk can be economical, but only for big users, as the shelf life is about a year.

**Oil or resin base**

Usually lowest in cost, will last about 1 to 3 years. Easy to apply. May discolor and shrink as the oil dries. Does not seal porous surfaces such as brick and concrete very well. Cleans up with paint thinner. Check label for information on toxicity and flammability.

Works better on wood or masonry if the surface is primed first with shellac or varnish. Its life can be lengthened by painting. Apply in a minimum temperature of 60°F. Dries in 2 to 24 hours.

**Latex**

Moderate cost. Will usually last 3 to 10 years. Applies easily. Some shrinkage. Will not stain or bleed. Sticks well. Easy to paint. Non-toxic. Non-flammable. Cleans up with water. Acrylic latex is more expensive, weathered better, and lasts longer than vinyl latex. For cracks up to ½ inch wide and ½ inch deep.

For best results on metal or porous surfaces, prime with preservative first. Will dry in 15 to 30 minutes. Apply in a minimum temperature of 40°F. Vinyl latex is good for indoor use since there is little odor.

**Butyl rubber**

Moderate cost. A bit more durable than latex. More difficult to apply. Less shrinkage. Sticks very well. Good to use below ground level. Wait 7 days before painting. Cleans up with paint thinner. Flammable, toxic. Especially good to use for cracks between metal and masonry. For cracks up to ¼ inch wide and ¾ inch deep. Sometimes available in a variety of colors. Will dry in 30 to 90 minutes. Apply when temperature is above 40°F. Has moisture resistance.

**Polyurethane**

Very durable, usually lasts up to 20 years. Easy to apply. A bit more expensive. May be painted. Sticks well to most surfaces. Waterproof. Check label for toxicity and flammability. Urethanes can be used on cracks up to one inch wide and ½ inch deep. Dries in an hour and cures within 5 days. Read manufacturer's directions for application procedures and acceptability to paint. Clean up with special solvents, according to package label.

**Silicone**

More expensive. Will usually last up to 20 years. Easy to apply. Flexible at a wide range of temperatures. Once cured, it will stretch up to seven times its cured width. Resists shrinkage very well. Sticks well to most surfaces. Waterproof. Clean up with special solvents. Check label for information on toxicity and flammability.

Silicones are good for cracks up to one inch wide and ½ inch deep. Dries in an hour and cures in 2 to 5 days. Use a primer, such as paint, on porous surfaces. Sometimes available in colors but most silicones cannot be painted. High moisture resistance. Non toxic. Silicone has a strong odor while drying.

**Fillers**

Includes oakum, caulking, sponge rubber, and fiberglass. These are used to fill extra wide cracks or as a backup before applying other caulks.

**Hypalon**

Not readily found on store shelves. It will last up to 20 years, out-performing most other compounds. Can be applied by the do-it-yourselfer. Requires priming on porous materials.

**Other compounds**

Acoustical sealants and subfloor adhesives are considered caulking materials, but are more often used for sealing vapor barriers. They are not readily available to the homeowner.
CAUTION: Lead based caulk is not recommended because it is toxic. Although it is no longer manufactured, there may still be some around. Read the label.

How do I caulk?

You don’t need a big box of tools. In fact, most caulking jobs are done with a caulking gun, a scraper or putty knife, a rag, and the caulk.

Be careful with that ladder. Make a sling to carry the caulking gun or other materials when climbing.

Instructions for applying caulk usually indicate warm weather; unfortunately, that’s like fixing the leak in the roof when the sun’s shining. In cold weather wrap the caulk in a heating pad and secure the ends with rubber bands to keep it workable. In very hot weather, pre-cool the caulk in the refrigerator to keep it from running too fast.

Many caulking directions require primed or treated surfaces.

Before doing any caulking, scrape or peel away any built-up paint, old caulk, or dirt. Clean the area with a solvent or detergent water. Caulk will not seal to a dirty or wet surface.

Caulking gun method

The caulking gun uses a trigger operated plunger to force caulk out of the nozzle and into the cracks. Caulking manufacturers package their products in standard cartridges that fit such a gun.

To load, turn the L-shaped plunger rod so that the teeth face up, and pull it back as far as it can go. Insert the cartridge, back end first, and press the nozzle firmly into the slot at the front end of the gun. Turn the plunger rod so that the teeth face down and engage the trigger.

Now use a razor or scissors to snip off the sealed tip of the nozzle at a 45° angle. Insert a nail through the tip to puncture the inner seal at the base of the nozzle (Fig 2). When you’re done caulking, use the nail to plug the nozzle.

Applying caulk is commonly called laying a bead. By cutting near the tapered end of the nozzle, you will have a thin bead; cutting closer to the cartridge will produce a thicker bead. Since you can’t add back what you snipped off, start thin and gradually snip off more end as you progress to the larger cracks.

After the seal has been broken, squeeze the trigger a couple of times to move the caulk into the nozzle. Before it begins to ooze out, place the nozzle in position on the crack, squeeze again, and begin laying a bead. The bead should be large enough to overlap both surfaces.

Drawing a good bead takes practice, and your first attempts may be messy. Fill cracks from the top down, holding the gun at about a 45° angle with the base slanted in the direction of movement (Fig 3). Use a slow, steady motion. Once a bead run is started, it’s best to keep going without a break because it is hard to start again smoothly.

A perfect bead of caulking completely fills the crack to a depth equal to the width of the crack. For a large crack, use filler first, then apply caulk.

If bead mounds up at the top of the nozzle, then move faster. If the crack is only partially filled, slow down. If caulking shrinks when it dries, apply more.

If the bead is too large, go over it with a moistened finger, smoothing and removing the excess. The label directions will help in describing how beads may be smoothed or tooled, as this depends on the type of caulk used.

If the compound runs too fast, twist the plunger teeth upward to disengage and stop the flow. When it is time to quit, twist plunger upward and pull back to relieve pressure. Put a nail in the nozzle to prevent drying.

Cartridge caulk should not be carried over to the next season. Use it in the same year in which it is purchased.

Rope caulking

This comes in a roll of ropelike strands that can be pushed into place (Fig 4). Rope caulk can be unrolled in single or multiple strands, depending on the size of the crack. It is especially useful for temporary seals. Use it around storm windows or between window air conditioners and window frames.

It does not form a permanent seal or bond, but will last a year or two. It does not shrink or dry out, but it cannot be painted. It may run or sag in really hot weather. It peels off when you want to remove it.

Tubes

Small amounts of caulking for special uses are often available in hand-held squeeze tubes. Snip the nozzle at an angle and draw across the crack. Bathtub sealing compounds are often sold in squeeze tubes.
Fig 3. Once started, it’s better to keep on laying the bead than stop and start over. You can smooth out and remove excess later, if necessary. Start at the top, hold the gun at an angle, and work slowly and steadily. If bead mounds up at top of nozzle, move faster.

**Filler for large cracks**

If the crack is an inch or more wide, you’d be pumping cartridges in forever. So try a filler first.

Oakum is a treated hemp rope often found in plumbing supply stores. It is durable but somewhat oily. Sponge rubber or vinyl can also be used.

Extra wide cracks, like those between the bottom strip of siding and the foundation wall, can be filled with leftover pieces of insulation strips. If fiberglass is used, cover with a wood molding or other product before caulking.

**How far will the caulk stretch?**

That all depends on the length, thickness, and number of cracks you have to fill. An 11-ounce cartridge can draw a ¼-inch bead about 25 or 30 feet. A rough estimate is:

- *½ cartridge per window or door
- *4 cartridges for foundation sill
- *2 cartridges for a two-story chimney
- *1 cartridge for each corner of the house

Caulk and related supplies for a 1,000-sq-ft house with 177 sq ft of windows and a fireplace should cost about $30. This will vary with the type of caulk and local availability. Your investment will pay back in energy savings within the first year.

Fig 4. Rope caulk looks like modeling clay in a string. It can’t be used where parts move against each other, but it is good for temporary seals.