

Caulking and Weatherstripping

Sammy Sadaka
Assistant Professor -
Extension Engineer

A considerable amount of air can leak around an exterior door or a window, leading to an increase in wasted heating and cooling energy. This in turn will increase your energy bill. In hot, humid climates, our biggest concern is hot air coming into our air-conditioned home. However, during winter, our heated homes leak warm air to the outdoors through cracks and crevices. You can make your home more comfortable and reduce your energy bill by applying caulk and installing weatherstripping. Caulking and weatherstripping are effective ways to rid your home of costly drafts.

Caulk

What is caulk?

Caulk is a material used to make different areas of a home weathertight by sealing seams, gaps, joints and holes. It can be made of several different materials, including acrylic, butyl, oil-base, silicone and urethane.

Why is caulk needed?

Caulk is needed to stop air leaks in homes. Usually, a home is sealed with caulk as a final step in the home-building process. Over time, caulk becomes brittle or otherwise wears out

and needs to be reapplied. Some areas of the home may never have been sealed and would benefit from caulk sealing.

When is caulk needed?

You need to check the reliability of the caulk in your home periodically. You need to do a complete inspection of the walls and ceilings of your home. Take note of unfilled cracks or worn-out caulk. For a more thorough inspection, use a draft detector. You can make a draft detector by taping a piece of tissue to a coat hanger (Figure 1), or you can buy one that uses smoke to detect cracks. When inside, hold the detector against corners or wall edges; if the tissue or smoke moves as in a breeze, the area needs to be sealed.

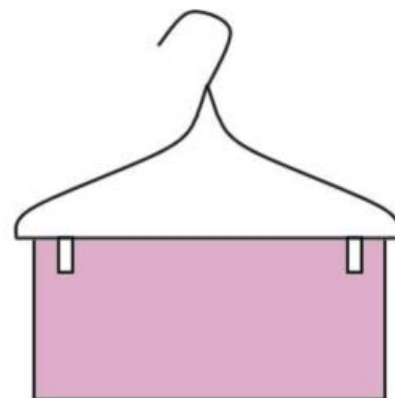


Figure 1. Homemade draft detector

*Arkansas Is
Our Campus*

Visit our web site at:
<https://www.uaex.uada.edu>

Where should you caulk and seal?

In addition to the window and door areas, you should caulk and seal air leaks where plumbing, ductwork, fans or electrical wiring penetrates through exterior walls, floors and ceilings. This is a lot easier to do in new construction. Also with new construction, reduce exterior wall leaks by caulking or taping the joints if exterior sheathing is used. With new or existing homes, install rubber gaskets behind outlet and switch plates on exterior walls.

How is caulk used?

The following equipment is needed to apply caulk:

- A caulking gun (Figure 2)
- A tube of caulk
- A knife or scissors able to cut through the plastic of the caulk tube
- A piece of wood, plastic or a glove to smooth the caulk bead after application



Figure 2. Caulking gun with caulk tube

To apply caulk, you first need to take the end off of the tube of caulk. Use the knife or scissors to cut the tip at a 45-degree angle, close enough to the tip so that the opening is only around $\frac{3}{8}$ " wide. Insert the tube into the caulking gun and position the plunger rod at the back of the tube of caulk, making sure that the ridges on the rod are facing towards the side where they will be engaging the gears of the gun. Test the thickness of the bead on a piece of paper or scrap wood to see if the opening needs to be cut open more. To fill in a gap using caulk, run the gun along the gap at a 45-degree angle while putting pressure

on the gun's trigger (Figure 3). After you have 2 to 3 feet of caulk in the gap, use your piece of wood, plastic or your finger in a glove to smooth out the caulk bead. This helps with adhesion.

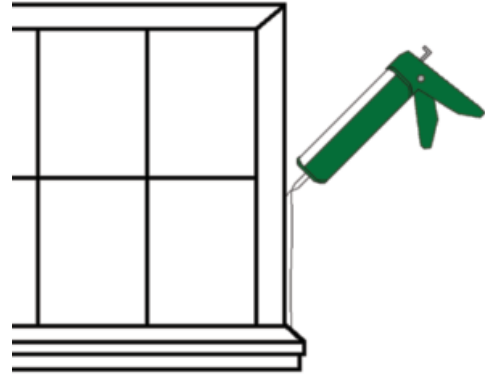


Figure 3. Caulking a gap by a window

How much caulk is needed and what is the cost?

A general rule of thumb for buying caulk is that half a tube is sufficient to cover one large window or door. A caulking gun is inexpensive at around \$5 to \$6 and should last many, many years. The caulk itself should only set you back \$3 to \$4 a tube, the price mainly depending on the type of caulk purchased.

How about air leaks around the door frame?

For air leaks that occur around the door frame, they can be sealed by caulking around the door frame molding. However, the air that gets to the molding may find other ways into your house, so it is best to address the leak at its source. Ideally, you should remove the molding around the door and seal all gaps with non-expanding foam, gap filler rod and caulk. Filling these gaps will prevent air from traveling through the wall and leaking in elsewhere. Also, this air carries moisture that ends up inside the walls, potentially leading to moisture damage. After sealing the gaps around the door frame, replace the molding and seal along its edges with flexible, paintable caulk. Do this both inside and outside your home. Be sure to use exterior caulk for the outside so that it will stand up to the elements.

Weatherstripping

What is weatherstripping?

Weatherstripping is a material to cover the joint of a door and the sill, casing or threshold so as to eliminate cold air, rain and snow. Weatherstripping is available in rubber, foam, plastic and metal. Self-adhesive, staple and nail-on are the most common installation types. It is also available in a large variety of shapes and sizes. Choose the shape and size based upon the manufacturer's recommendations for your particular installation.

Why do I need weatherstripping?

Imagine you have a pair of 6' 8" exterior doors in your home that don't have weatherstripping; you can easily have an opening of 1/4" all along the edge where the doors meet. This 1/4" gap adds up to a 20-square-inch opening to the outside. Certainly, you don't like to see a hole this big in your wall.

Do I need new weatherstripping for my door?

Old weatherstripping should be periodically replaced. A simple way to determine if your exterior door needs weatherstripping is to check for daylight coming in around the door. You can also check your weatherstripping around exterior doors with a flashlight. Outside the closed door, move the flashlight slowly around the door edge. If a helper inside the house can see light shining in, weatherstripping is needed. Also, if you press on existing rubber or foam weatherstripping and it doesn't bounce back or you can see dents or tears in the material, it should be replaced.

Where do I install weatherstripping?

Weatherstripping should be installed along the sides and top of the door, and a door sweep or similar device should be installed on the bottom of the door.

Can I seal a gap under my door without replacing the door?

Yes. Door sweeps, thresholds and door shoes are good ways to seal gaps under exterior doors. A door sweep, a strip of metal (often with a flexible rubber or plastic edge), can be used on a door with no threshold. The sweep is connected to the door bottom, either inside or outside, depending on how the door moves. A gasket threshold replaces an existing threshold and can be attached to the floor directly under the door. (This type of gasket wears quickly in high traffic areas.) Door shoes have rubber or plastic gaskets set into a metal bracket. This shoe is affixed to the door bottom and can be used with any threshold not worn in the middle.

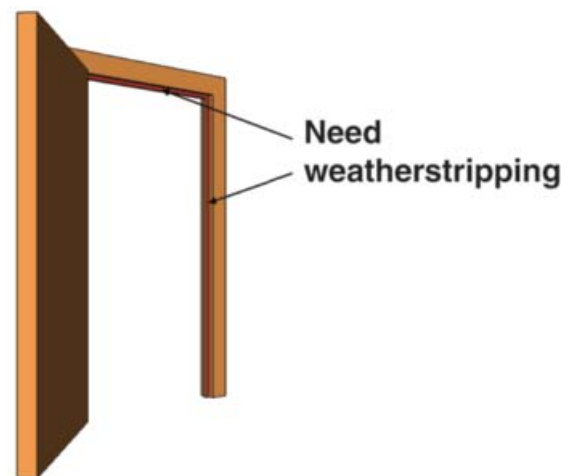


Figure 4. Locations needing weatherstripping

For more information, visit these web sites:

- **Department of Energy**
Caulking
<https://energy.gov/energysaver/caulking>
- **University of Missouri Extension**
Caulking and Filling Cracks Around Windows and Doors
<http://extension.missouri.edu/p/GH5936>

- **Florida Energy Extension Service**
Caulking and Weatherstripping
<http://www.p2pays.org/ref%5C08/07319.pdf>
- **Thespruce.com**
How to Select the Right Caulk for the Job
<https://www.thespruce.com/select-the-right-caulk-for-the-job-1824846>
- **Department of Energy**
Weatherize Your Home – Caulk and Weatherstrip
<http://www.nrel.gov/docs/fy01osti/28039.pdf>
- **Doityourself.com**
How to Apply Caulk Properly
<http://www.doityourself.com/stry/applysealantproperly>

DR. SAMMY SADAKA, P.E., P.Eng., is an assistant professor - Extension engineer with the University of Arkansas System Division of Agriculture in Little Rock.

Pursuant to 7 CFR § 15.3, the University of Arkansas System Division of Agriculture offers all its Extension and Research programs and services (including employment) without regard to race, color, sex, national origin, religion, age, disability, marital or veteran status, genetic information, sexual preference, pregnancy or any other legally protected status, and is an equal opportunity institution.