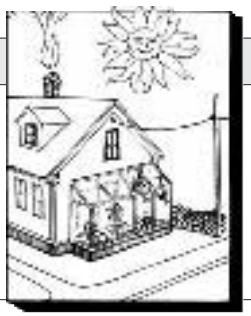

Cold-Weather Caulking

by Bruce Sullivan

It's 30°F and windy. You're struggling to get a house closed to the weather, but the weather is not cooperating. Your fingers feel cold and fat as you slice the tip from a new tube of caulk and slip it into the gun. You squeeze hard on the trigger, and a stiff, white bead crawls out of the tip. You press the tip against a corner board, but the bead topples away from the wall and falls like a stone to the ground. In desperation, you read the fine print on the tube label: "Apply to clean, dry surfaces. Application temperature: 40°F to 80°F."

The problem with these instructions, of course, is that construction sites are never clean and seldom dry, and that work doesn't stop when the temperature drops below 40°F. Energy-related caulking — including caulking wall plates to subfloors and sealing around wall penetrations — must be done in all types of weather. Even interior caulking — at the base of the drywall, for example, and around electrical boxes — may be done in an unheated house.

When the temperature drops below 40°F, it's difficult to get caulk to bond mechanically and chemically. Use a specially formulated cold-weather caulk, and keep the tubes warm until you're ready to use them. Also make sure the surface to be caulked is clean and dry.

Cold-Weather Strategies

There are a few things you should know about getting caulk to stick in cold weather:

- To get good mechanical adhesion, the caulk should be tooled into the joint. Cold caulk is usually too stiff to be properly tooled — it may even refuse to come out of the cartridge.
- Caulk also adheres by chemical reaction with the wood. Experts say the caulk needs to "wet down" the surface for this to work, something that cold caulk doesn't do very well.
- A thin film of ice — sometimes too thin to see — may cover the surface of the joint, preventing the caulk from making any type of bond.

Luckily, all of these problems can be solved.

Use cold-weather caulk. First, use a caulk that's designed for cold weather. As the listing on page 94 shows, most cold-weather caulks have a rubber or silicone base.

Keep the caulk warm. Another good idea is to keep the caulk warm. If possible, store tubes of caulk in a heated space, and carry them to the job site in an insulated "cooler." In very cold weather, put a jug of hot water in the cooler to keep the caulk warm longer. Return partially used tubes to the cooler, so that they'll still be warm the next time you need them.

No matter how well prepared you are, however, you'll probably need to heat up a tube of caulk at some point. For speed, you can't beat a good soaking in a bucket of hot water (hot tap water is hot enough). If there's no hot water on site, you can place tubes near a space heater or warm them in your truck.

Clean and warm the surface. Good surface preparation is always wise, but in cold weather it's essential. For instance, the type and temperature of the caulk won't solve the problem of surface ice. Even if surface ice melts as you apply warm caulk, water could be trapped between the caulk bead and the substrate, creating a barrier to adhesion. The solution is to get the substrate clean and dry. You can do this in three ways:

- Heat the surface with a hair dryer or a heat gun. But be careful not to strip the paint or start a fire.
- Wipe the surface with a strong solvent, like acetone or methyl ethyl ketone. These solvents evaporate the water and dissolve greasy substances that can retard adhesion. They're available from almost any hardware store.
- Brush the surface with a stiff bristle brush or a wire brush.

Dealing With Joint Movement

Many caulks take several days to cure fully. Cold weather lengthens curing time considerably, making it more likely that the caulk will be disturbed before it cures.

The biggest problem is expansion and contraction of the substrate. When the substrate is cold, it contracts, opening the joint and stretching the caulk. As the temperature rises, the substrate expands, closing the joint and compressing the caulk. Caulks have a limited ability to stretch and compress, so the best time to apply them is when the joint is in the middle of its range of movement. (Applying caulk during extreme hot or cold temperatures puts it under great stress at the other extreme.)

Don't apply caulk early on a winter morning. Instead, wait until the sun hits the wall and the substrate has had time to expand. The joint will be closer to the center of its range of movement. Wood doesn't expand much, but metal and plastic do. So be especially careful when sealing around aluminum- or vinyl-clad windows.

You might also choose a caulk with a high joint movement capability — a measurement of how much a bead of caulk can expand and contract. Joint movement is expressed as a percentage of the bead's thickness at application. It appears on the product literature as total movement or as a plus or minus figure. Caulks fall into one of two categories: ± 12.5% (25% total movement) and ± 25% (50% total movement). Polyurethanes and silicones tend to fall into the latter category.

Remember, too, that joint size affects movement. A large joint will be able to expand and contract a greater distance than a small one, so you may want to make the bead just a bit larger than average — up to 3/4 inch wide in the case of many silicones. ■

Bruce Sullivan, a writer in Eugene, Ore., specializing in energy topics for builders, is a principal of Iris Communications and the editor of Energy Source Builder.

Cold-Weather Sealants

AC Products Inc.
172 E. La Jolla St.
Placentia, CA 92670
800/238-4204
Flexible Seal (Copolymer, –20°F)

Adco Products Inc.
4401 Page Ave.
Michigan Center, MI 49254
800/248-4010
B-100 (Butyl Rubber, 0°F)

GE Silicones
260 Hudson River Rd.
Waterford, NY 12188
800/255-8886
Silpruf (Silicone, –35°F)

Miles, Inc.
Mobay Rd.
Pittsburgh, PA 15205
412/777-2154
Baysilone 40 (Silicone, 0°F)

W.J. Ruscoe Co.
P.O. Box 3858
Akron, OH 44314
216/253-8148
Permanent Sealer (Nitrile Rubber, 20°F)

Tremco
3735 Green Rd.
Beachwood, OH 44122
800/321-7906
Spectrem 1 (Silicone, –35°F)

Note: Do not apply these products below listed temperatures.