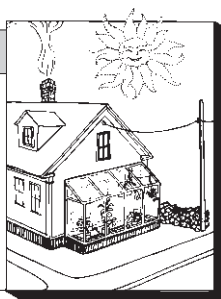


User-Friendly Foams

by Alex Wilson

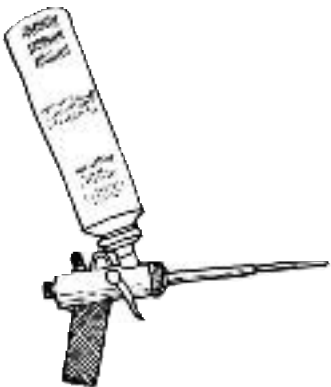


Foam sealants have revolutionized home insulation and weatherization. They now fulfill a long list of tasks: sealing window and door jambs, sealing wiring and pipe penetrations through the building shell, and most recently, sealing out radon from basements. Occasionally, the sealants have even been used to insulate the upper sections of foundation walls and the backs of spas and pools.

Unfortunately, foam sealants are aerosols and use chlorofluorocarbons (CFCs) as foaming agents. CFCs have been linked to ozone depletion, and restrictions on their production went into effect on January 1, 1989. The foam sealant industry is waiting for major chemical manufacturers to find alternative foaming agents, but one manufacturer has already introduced an "ozone-friendly" foam sealant. I've tested it and I'll give you my reactions later in the column.

How Foam Sealants Work

Unlike caulk, foam sealant expands as it is applied, enabling it to fill deep cracks and voids. In the can, the mixture of urethane and foaming agent is kept in liquid form under pressure. As it is forced out of the can and exposed to the atmosphere, the liquid CFC gas (or Freon) foaming agent immediately "boils." This creates tiny CFC gas bubbles in the urethane (the common CFC-12 used in foam sealants, boils at -22°F). The cured foam adheres extremely well to most surfaces.



Foam guns can help direct the foam to exactly where it's supposed to go. New guns on the market don't clog up, a problem with earlier models.

Choosing the Right Foam Sealant

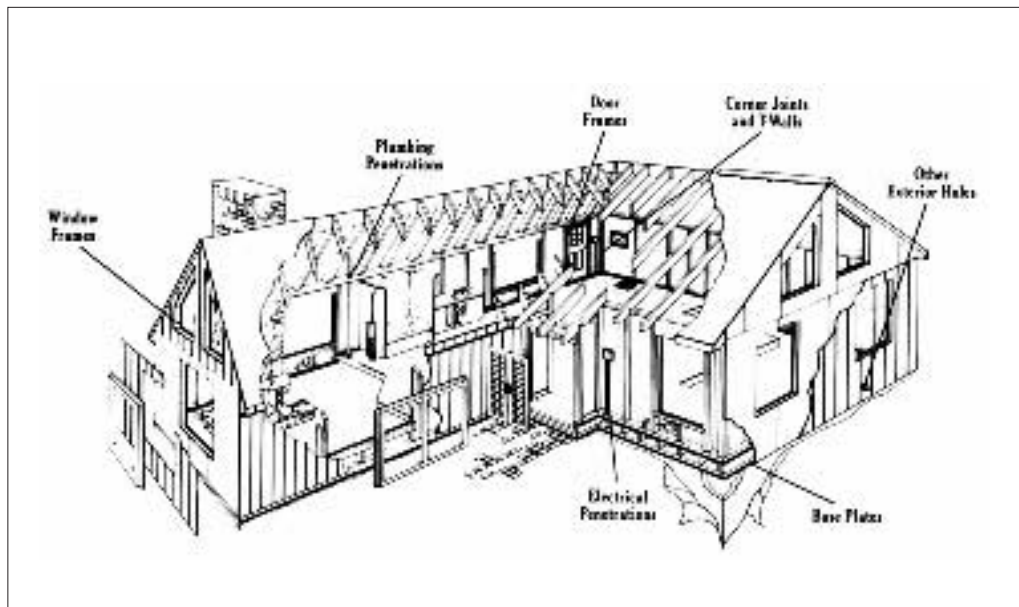
The first choice is whether to use a one-part or two-part foam sealant. One-part foam sealant should be used when you want a single bead. Commonly, this is for sealing wiring and plumbing penetrations, window and door jambs, and cracks that are too big for caulk (deep cracks). These foams are widely available in retail building supply and hardware stores. Because one-part foam sealant requires moisture for curing, the process takes up to six hours. A very thick bead may

(70°F or higher). During cold winter-time applications, you can keep the cans or canisters in warm place or wrap them in an electric blanket to keep them warm before application. Be not sure to exceed the maximum temperature listed on the can.

If you do a lot of foaming, but not enough to justify large canisters, consider one of a number of specialized foaming guns on the market. These greatly simplify foam installation. It is necessary for the can to be upside down and foaming guns provide an easy trigger grip. Foaming

window jambs, too much foam will swell the jamb, making window or door operation difficult. *In general, the primary function of foam sealant is to seal, not insulate*, so it is not necessary to fill a cavity or crack to its full depth. Along window and door jambs, insert the foam nozzle about half way into the jamb. Inject a bead so that the foam fully "welds" the jamb to the stud, but don't fill up the full depth of the air space.

Applying foam sealant takes some getting used to. To reduce the possibility of mistakes or extra work, apply



Foam sealants can be used to stop air infiltration at potential trouble spots, such as window and door frames, mechanical penetrations, and joints.

not cure evenly because the outer surface skins over, keeping moisture away from the center.

With the one-part foam sealants, there is another choice to make, whether to use a low-expanding or high-expanding foam. All foam sealants expand a greater deal as they are applied, but the high-expanding types continue to expand for some time after application. The low-expanding foam sealants do not. For most sealing applications, use a low-expanding foam. It will be less likely to swell and damage window jambs, or require trimming after it cures.

Two-part foam sealants (really foam "sprays") mix two separate components during application allowing a much more rapid cure time (several minutes vs. several hours). These foams are generally applied in a spray rather than a bead. Application is much like spray painting. These are used when you need to insulate a larger area, such as the back of a spa or the upper few feet of an existing foundation wall.

Also think about what container size makes the most sense for you. In general, the larger the container, the lower the cost (per board-foot of foam). Open cans or canisters of foam may not keep well. If you have a limited amount of foaming to do, stick to cans. Both one- and two-part foam sealants are available in various size cans.

Preparing for Installation

To prepare for foam sealant installation, make sure you have the right type of foam and check the expiration date carefully. All foam sealants have a limited shelf life — usually 9 to 12 months. Foam sealants work best if they are relatively warm when applied

guns are specific to the brand of foam being used.

For overhead applications, you may need to use flexible tubing secured to the nozzle of the can. I have found 1/4-inch (inner diameter) tubing works well with the Fomo brand 36-ounce spout cans. Carefully check the nozzle side on the can. If using larger canisters, there will be a flexible delivery hose, so overhead applications are no problem.

Cans and canisters of foam sealants and foaming guns are generally provided with several nozzles for different bead widths and applications. Todol Products even offers a syringe adapter for its foam gun to allow foam application into cracks as narrow as 1/2-inch. Two-part foaming systems may come with several nozzles for different spray angles and/or foam thickness.

Clean the surfaces, cracks and joints before applying foam. Because urethane foams adhere so well, the surfaces do not have to be totally clean, but loose dust and dirt should be removed. A wire brush and shop vac should be adequate to prepare most surfaces for foaming.

Foam Application

Foam sealant application is straightforward and easy. Always wear gloves, old clothes, and protective eye gear when applying foam. If any foam gets on your skin or clothes, you can remove it before it has cured with a nail polish remover or special solvents available from most sealant manufacturers. If you don't get it off before it cures, you won't.

The major mistake in applying one-part foam sealant is to apply too much — particularly if it is high-expanding foam. When foaming along door and

some practice beads of sealant. With two-part spray-on sealant practice on an area where unevenness won't matter. Observe how thick the foam will get with one pass, and with additional passes.

Clean-Up and Finishing Foam Sealant

Follow the instructions on the can or canister of foam sealant for clean-up. With cans, you may need to hold the can upright and spray for a few seconds to clean out the nozzle. With two-part systems and foam guns, you may need to clean the nozzle with a solvent supplied by the manufacturer, or you may simply have to close off the nozzle valve. Todol Products recommends against cleaning the gun, claiming that that is when problems generally occur. They specify that a can should always be left attached to the gun, even if it is empty. The valve at the end of the nozzle effectively seals the system between uses.

If you injected too much foam and it expanded out of the crack or gap, wait until it has fully hardened (usually about two hours with one-part foams) and cut it off with a sharp chisel, knife or paint scraper. If you injected too much foam around a window or door, making operation difficult, you can make a saw kerf through the foam, using a standard hacksaw, to relieve pressure.

What's New With Foam Sealants?

Now, foam sealants can be used with easy-to-dispense reusable foam guns that the cans fit into. The challenge has been to produce a gun that will hold up well in field conditions and not get clogged with cured foam. Manufacturers have made a lot of progress in gun design in recent years.

The actual foam sealant has changed very little to date, but that is likely to change. Beginning this January, annual production of CFCs is being limited to 1986 levels, which amounts to 20 percent cutback from 1988 levels. Further reductions will take effect in 1993 and 1998. These reductions will increase costs, which has led to a scramble in the industry to find substitute foaming agents or substitute chemicals altogether.

Most foam sealant manufacturers seem to be waiting for DuPont and other CFC producers to come up with alternatives. With a new replacement for CFC-12 not expected for three or four years, most of the industry doesn't expect to see any changes soon. Thus I was greatly surprised when I called Todol Products and learned that they were just about to introduce an "ozone-friendly" foam sealant. Imported from its parent company in Europe, the foam uses a combination of HCFC chemicals as blowing agents that are far less destructive of ozone.

Todol sent me a sample can (one of the first two in this country!). I tested it out and found it to be quite satisfactory. During installation, it seems almost identical to their standard Multifoam 1-G product, though the cured foam has a somewhat less uniform cell structure when I cut into it. This shouldn't make any difference for sealing applications, however. Despite the higher cost for the ozone-friendly foam (an extra \$1.50 or so for a 35-ounce can), I would choose it over standard products, and I believe many environmentally-conscious builders would as well. ■

Alex Wilson is a technical writer based in Brattleboro, Vermont who specializes in energy and building issues.

Foam Sealant Sources

- Convenience Products, Inc.
4205 Forest Park Blvd.
St. Louis, MO 63108
315/535-6226
Products: Touch 'n Seal Instant Sealant - one-part foam sealant in cans and canisters.

W.R. Grace & Co.
62 Whittemore Ave.
Cambridge, MA 02140
617/876-1400
Products: Polycel one-part expanding foam sealant in cans and cylinders, foaming gun for cans, 10 pounds and 16 pounds.

Fomo Products, Inc.
P.O. Box 1078
Norton, OH 44203
800/321-5585; (216/753-4585 in Ohio)
Products: Handi-Foam one- and two-part foam sealants in various size cans and canisters. Handi-Gun for cans.

Insta-Foam Products, Inc.
1500 Cedarwood Drive
Joliet, IL 60435
800/435-9359
Products: Insta-Seal one-and two-part foam sealants in cans and canisters, foaming gun for canisters.

Tool Products, Inc.
P.O. Box 398
Natick, MA 01760
508/879-7741
Products: Multifoam 1G- and two-part foam sealants in cans, "ozone-friendly" one-part foam sealant, foaming gun for one-part sealant.

RHH Foam Systems
P.O. Box 752
Cudahy, WI 53110-0752
414/744-6066
Products: Versi-Foam two-part foam sealant in cans or canisters.

Uretech, Inc.
154 Potomac Ave.
Tallmadge, OH 44278
216/633-3586
Products: Portable, disposable polyurethane foam system, one- and two-part foam sealants in canisters.