

A Remodeler's Guide to two-part Spray-Foam Kits

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When the insulating task is small, a two-part spray-foam kit may be your best option

BY PATRICK MCCOMBE

Spray foam is a nearly perfect insulation. It has a high R-value, it stops air leaks, and it fills odd-shaped and wire- or pipe-filled cavities effortlessly and without gaps. Perhaps the only downside to spray foam is convenience. Ordinarily, it requires a crew and a truck full of special gear and chemicals, making it prohibitively expensive for small insulating and air-sealing jobs.

Realizing this, several companies now sell smaller, two-part insulating kits designed for contractors and DIYers. I've air-sealed acres with cans of spray foam, but until I tested the two-part kits for this article, I had never used one. These kits are targeted to folks who aren't professional insulators. Since manufacturers claim they're easy to use, I volunteered to try kits from five manufacturers and report my findings.

For testing, I chose an attic space with gable walls and multiple valleys. Admittedly, nobody would insulate an entire attic with these kits because it would be cheaper and easier to hire a pro, but this attic space, with its odd-shaped rafter bays and board sheathing, was an ideal test lab. It even was large enough to let me test all five kits on the same job.

Getting ready for foam

Each of these kits includes two tanks of chemicals (parts A and B), 15 ft. of hose, several replaceable nozzles, and a gun that mixes the chemicals and sprays the foam. They're all closed-cell-type foams. Kits are sold in sizes from about 12 board feet (bd. ft.) to 620 bd. ft.; 1 bd. ft. covers 1 sq. ft. at a thickness of 1 in. The manufacturers say you should assume about 25% waste.

It's recommended that the chemicals be between 60°F and 80°F; the higher end of the spectrum will produce the best yield. If the tanks are colder than 60°F, they should be



GUNS N' HOSES

All the two-part kits tested have 15-ft. hoses and spray guns that accept two styles of tip: fan tips for a thin, wide coat and cone tips for a narrow, more forceful stream.

Connect the hoses. Start by applying a small amount of petroleum jelly to the tank fittings and connecting the appropriate hoses, which are color-coded or identified with labels. Snug the fittings with the included wrench.



Prep the gun. Spray guns have a recess or an O-ring that receives the nozzles. Cover either area with a light coat of petroleum jelly to prevent the nozzle from becoming glued to the gun.



Test the spray. Without a nozzle, spray the foam into a waste container to ensure you have near-equal streams of both chemicals. If you don't, check the tank temperatures, and confirm that both valves are fully open.



Be prepared to change nozzles. Insert either a cone- or fan-tipped nozzle into the gun, and begin spraying. Replace nozzles whenever you stop spraying for 30 seconds or more and whenever you notice a change in performance.

Cone-tipped nozzle

Fan-tipped nozzle

warmed over several days in a hot room or immersed in hot tap water for an hour or more. Some manufacturers caution against putting them in direct sunlight or near space heaters, although I've talked to weatherization crews that routinely warm foam canisters both ways without problems.

The surface temperature of the materials you're insulating also should be above 60°F. (Cooler surfaces prevent the foam from expanding and adhering properly.) In cold weather, surface temperatures can be increased with space heaters or by waiting for warmer temperatures later in the day. I found that a noncontact infrared thermometer (about \$40) was a handy way to check tank and surface temperatures.

Thoroughly mixing the chemicals is also important. At the recommendation of one manufacturer, I mixed the chemicals by rolling the tanks on the floor, which worked fine and was less taxing than trying to shake the 60-lb. tanks.

Cover yourself and everything else

Polyurethane spray foam sticks tenaciously to everything it touches, so the manufacturers suggest wearing disposable coveralls. Unfortunately, the "large" coveralls I ordered from an online supplier were too small for my 5-ft. 10-in., 150-lb. body. I suggest upsizing one or more sizes for a proper fit.

You'll also need goggles and a respirator with combination organic-vapor/P100 particle filters. Snug-fitting disposable gloves and some kind of head covering also are a must. My coveralls had a built-in hood that worked pretty well.

Cover or remove anything you're not insulating because the foam overspray goes everywhere.

The chemical stink is pretty bad, too, so cross ventilation is a good idea. You'll also want the homeowners and their pets to stay out of the house until the smell dissipates, which I found on this project to be about a day.

Make the connections, and check the mix

Once the hoses are connected to the tanks and the two chemicals have been run through them, they can't be disconnected, so it makes sense to do all the preparations before you pull the trigger for the first time. Moving the smaller kits isn't a big deal, but it is a problem for the kits I was using, which come with two 60-lb. tanks. If you're planning to spray in more than one location, start where you'll be using the most foam, as the tanks get noticeably lighter as you spray.

All of the kits have similar gun-and-hose assemblies. Start by attaching the hoses to the proper tank—indicated by a color-coded stripe or label—with a little wrench included with each kit. Next, open the tank valves a little at a time while checking for leaks. Tighten any fittings that leak; it's important that the hoses are airtight.

With the hoses connected and the tank valves fully open, apply a small amount of petroleum jelly (included with the kit) to the part of the gun that receives the nozzle. Then, without a nozzle attached, spray the foam into a waste container—the tank's cardboard shipping box works great—

making sure you see streams of equal velocity for both chemicals. If everything is OK, install a nozzle and get spraying. If you don't have equal streams, check the troubleshooting section of the instructions.

Get spraying

With all the guns, pulling the trigger tighter dispenses increasing amounts of foam. I found that full throttle created more overspray and sometimes displaced foam already in place. This was mostly a problem when insulating overhead, but it also occurred to a lesser extent when spraying stud bays.

When you're spraying framing cavities, it's important to go around the perimeter of the cavity to ensure that there are no gaps. This technique is called "picture framing." Once the perimeter is filled, you can go back and cover the rest of the area with a light coat.

If the chemicals and the surface are at the right temperature, spraying the proper amount of foam will cause it to froth up about an inch within a minute. Don't apply more than 2 in. of expanded foam in a single pass because a thick layer won't froth as high, it will tend to pull away from overhead surfaces, and you will risk hot spots that could melt the foam.

Let the foam cure for a minute or two, and apply additional 1-in. to 2-in. layers until you've reached the R-value you want. These products claim between R-6 and R-7.7 per in., although closed-cell polyurethane R-values decrease slightly with time. Dow is the only company I could find that lists both the initial and aged values (R-6 and R-5.3 per in., respectively).

Change tips often

Whenever you stop spraying for more than 30 seconds, you need to swap nozzles. I also found that I got better yield and less spattering with a fresh tip, so it's a good idea to swap them whenever you notice a change in performance. The makers provide several tips in two types: fan and cone. Cone nozzles seem the most useful; their directed stream reaches farther and concentrates the foam. Fan tips are designed for larger areas and can put down a nice even coat on flat surfaces. Unfortunately, you sometimes need to hold the gun in awkward positions to take advantage of the additional coverage, and fan tips also create more overspray.

One idea I picked up from an insulating pro is to apply petroleum jelly to several tips before starting. One guy even goes so far as to tape the lubed nozzles to his coveralls, which seems like a great idea when you're working in tight spaces.

Lessons learned

While these products aren't quite as anxiety-inducing as, say, working with concrete, they can lead to a little stress. Once you get started, you need to keep working until you're done. Manufacturers

APPLICATION BASICS

Spray foam into cavities by first going around the perimeter to fill all the inside corners. Then cover the rest of the field in 1-in. to 2-in. layers until you've reached the desired R-value (about R-6 per in.). Half-throttle reduces overspray and is less likely to dislodge foam already in place.



Know your foam. Improperly mixed (off-ratio) foam won't perform, so correct the problem as soon as it's noticed. A-rich foam will have a crunchy, glassy-looking surface. B-rich foam will be whiter and have a softer, spongy surface.

Thin coats are best. Avoid the temptation to spray too much foam at once. Heavy layers can sag under their own weight or overheat, melting the foam.



claim you can shut the valves and start the tanks again up to seven days later. You can extend that time frame even further by running foam through the hoses at least once a week. I'm not disputing the claim, but with all the preparations required, I suggest getting the work all done at once. With near-constant spraying, I found it took about an hour to empty each of the 600-bd.-ft. kits I used.

One surprise was how hot and uncomfortable small spaces can get with a lot of foam curing, so even in a 60°F attic, I found myself roasting when spraying kneewalls and other cramped spaces. Insulating attics in summer could become quite dangerous, I suspect.

Another thing to keep in mind is that these kits are expensive. Rigid extruded-polystyrene insulation sells for about 50¢ per bd. ft.; these spray-foam kits sell for about double that price, not including shipping. I've successfully used insulation board with a perimeter of canned spray foam to insulate band joists and to seal off thermal bypasses. The added advantage is that you don't need all the protective gear and can work at a more comfortable pace. Then again, cutting and fitting foam around pipes, ducts, and wires isn't fun; sometimes it's near impossible.

Although I expected the foam to come out with the same intensity as that of a professional spray rig, that simply wasn't the case. It takes a comparatively long time to do an entire stud or rafter bay. But insulating large areas is not what these types of kits are designed for. They're really made for hard-to-insulate areas—and at this task, they excel. □

Patrick McCombe is a senior editor. Photos by Justin Fink, except where noted.

DISPOSAL IS DIFFICULT

Finding out how to dispose of the spent tanks proved difficult because the rules vary throughout the country as well. The Department of Environmental Protection here in Connecticut couldn't say without testing whether the material was hazardous waste.

One company representative told me that liquid leftovers are the biggest potential problem, so she suggested dispensing any remaining liquids into a waste container and letting them dry. Once the liquid chemical is gone, you should invert the tank and release the propellant. Then the tanks can be recycled.

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