Retrofit Weatherstripping With Silicone Bead

by Gary Katz

For decades, spring bronze was the standard for door jamb weatherstripping, until surface applied rigid weatherstripping became common. Now silicone bead weatherstripping is changing the standard again. Silicone keeps its shape better than other rubber and plastic weatherstripping materials, and it won't stiffen and crack easily in extreme temperature swings. Silicone beads are also smaller than the sometimes bulky surface types. Plus, new router-based specialty tools make it almost as easy to retrofit silicone bead as to install it in a new door frame.

Tools and Materials

I have used two systems professionally — one manufactured by Resource Conservation Technology (2633 North Calvert St., Baltimore, MD 21218; 410/366-1146), the other by Weatherbead Insulation Systems (47-46-46 Hepburn Dr., Indio, CA 92201; 800/966-0159). Both companies offer a kit that includes a Bosch 1608T motor with a special base and bits, along with a selection of silicone bead weatherstripping. Resource Conservation Technology (RCT) lists their kit for $195, with the silicone bead sold separately. Weatherbead Insulation Systems lists their kit for $319, including 100 feet of *Silibead*, the trademarked name for its bead.

Silicone beads are the best type of weatherstripping I've used, especially for economical retrofits. Both systems seal an opening better than rigid weatherstripping, even the type that uses a silicone bead. After the initial investment in the tool, silicone bead is cheaper, too (it costs about $50 per door with labor). The bead itself is more expensive than other materials, but you save on labor because you can install the beads faster than other types of weatherstripping. The overall look is more pleasing as well.

Silibead. Weatherbead's tool has an adjustable base and a vinyl-clad, V-shaped fence (see Figure 1, next page). The cutting bit is a unique arrowhead design that prevents the Silibead from pulling out of the kerf. Silibead comes in 1/4-inch, 5/16-inch, and 3/8-inch diameters, but in only one profile — a tubular bulb with a flange that in section matches the arrowhead shape of the cutting bit (Figure 2, next page). The Weatherbead tool is designed to retrofit existing jambs by cutting a kerf at an angle in the corner where the stop and jamb meet. But the cutting bit can also be used in a router to prepare new jamb material for Silibead.

I have found it troublesome to remove the sawdust from the dovetailed groove, even after discovering I could easily blow it out with an air compressor. You also need to take special care to hold the tool tightly against the jamb and at the proper angle while cutting the kerf. Otherwise, the groove will be misaligned and will not grip the Silibead properly. In retrofits, the special bit also leaves an oversized entry and exit hole.

The V-shaped base of RCT's tool positions the bit to cut a simple kerf in the corner between the stop and jamb. The hose attaches to any standard vacuum cleaner inlet to help remove sawdust.

Weatherseal. Also shown in Figure 1 is RCT's retrofitting tool. It doesn't have a nice wood handle and is not adjustable, but it does have two features I like. First, RCT's system uses a spiral router bit to cut a simple, straight-sided kerf. There are no oversized entry and exit holes, and the bit is inexpensive to replace if you break it on a buried screw or nail. The RCT tool also has a built-in vacuum hose with fittings for standard 1 1/4-inch and 2 1/2-inch vacuum cleaner inlets. This makes it easy to clean sawdust from the groove and comes in handy when retrofitting a jamb in a very clean home.

RCT's silicone products, called "weatherseals," come in several shapes (Figure 3). *Tubeseals* made for use with the retrofitting tool have a double fin, which grips the kerf walls well under normal conditions (though it can be ripped out of its groove under severe abuse). Five sizes are available in 1/16-inch increments from 1/8 inch to 3/8 inch in diameter. *Flipperseals* work best when the kerf can be cut at right angles to the door, as with unassembled jambs, and provide a good seal over a wider range of gaps than the Tubeseals. RCT sells special slot-cutting router bits with a top-mounted guide bearing that cuts perfectly sized and aligned kerfs in both new and existing jambs. But because of the tight clearances, retrofit work with these bits requires an offset router. RCT also makes several types of silicone sweeps for sealing thresholds.

Specialty tools make silicone bead the ideal material for sealing existing doors

Figure 1. *Both the RCT tool (left) and the Weatherbead tool (right) use a Bosch 1608T laminate trimmer motor mounted at a 45-degree angle to a V-shaped base. The base acts as its own fence in right angle corners, and the angle of the motor lets you rout into jamb corners.*

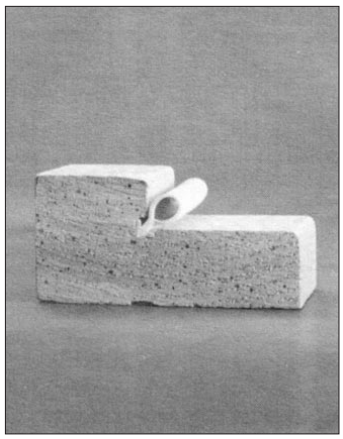

Figure 2. *The flange on bulb-shaped Silibead is shaped like an arrowhead to match the "dovetail" cut made by the carbide-tipped router bit.*

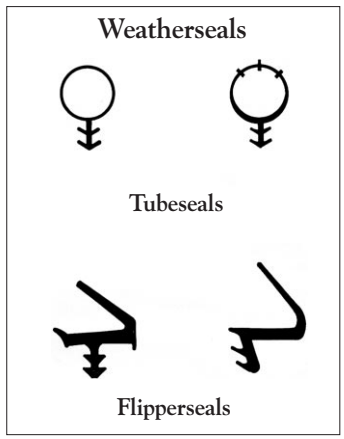

Figure 3. *RCT's weatherseals use a barbed flange that fits snugly into a straight kerf. Flipperseals require less force to compress than tubeseals and can seal large gaps effectively.*

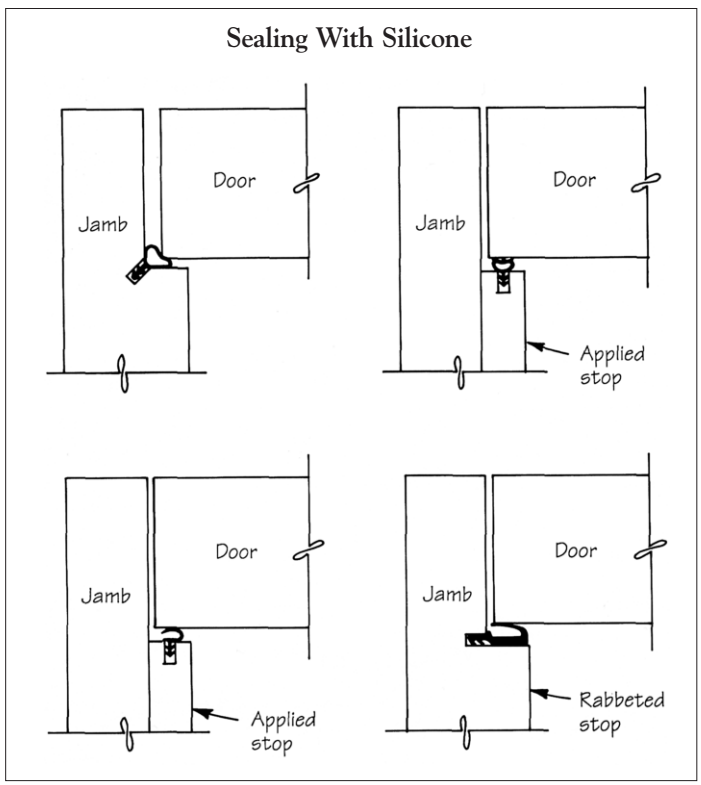

Figure 4. *Tubeseals work with angled kerfs in existing jambs (top left), or with right-angle kerfs in applied or rabbeted stops (top right). In new work, flipperseals can be set in applied stops (bottom left) or rabbeted stops (bottom right).*

Working With Silicone

Silicone beads are easy to work with, although some care must be taken in sizing and handling it.

Sizing. As a general rule, you should choose the largest size seal you can, but the shape of the silicone strip makes a difference. Bulb-shaped beads, like Weatherbead's Silibead and RCT's Tubeseals, are round in section. To make a good seal, they need to be flattened, but not too much or the bead will roll and cause binding at the hinges or make it hard to latch the door. RCT's catalog, which provides guidelines for sizing, says that Tubeseals work best when compressed to between 65% and 85% of their uncompressed height.

Flipperseals, which use a flap or "flipper" to make the seal, work over a wider range of gaps than Tubeseals. They also require less pressure to compress than Tubeseals of a similar size.

Cleaning. Silicone acts like a magnet for dirt and dust, so many silicone beads are packaged with a coating of talc to keep them clean. It doesn't interfere with the seal if you leave the talc on, but you can remove it by pulling the weatherstripping through a damp cloth.

Cutting. You can cut small seals with a scissors, but use a razor knife for larger sizes. Tubeseals should be cut square and butted to each other at corners — using one continuous piece to go all the way around the door usually results in leakage at the corners. Flipperseals look better if they're mitered, but this is tricky because the mitered edges should meet when the seal is compressed. It's better to sacrifice looks for a good seal and butt the square cut corners.

Installation Tips

Silicone has a good "memory," which means it tends to return to its original shape. If you stretch it while pushing it into the kerf, it may leave a gap in the seal when it pulls back. To avoid this, cut the length you need and push the ends in first. Then press at the middle, the quarter-points, and so on, until the bead grips the kerf every 12 inches or so. The last step is to fully seat the seal in the kerf. I usually rub a finger along the entire length of the seal, but you can also use a roller made for this purpose. If the seal won't stay in because the kerf is slightly miscut, you can lay a small bead of silicone caulk in the kerf to help anchor the bead.

Although beads and bits are available for new jambs, most of my installations are in existing jambs. Depending on the type of bead used and where you place the kerf, you can solve most weatherstripping problems with silicone beads (Figure 4). However, there are a few places where you need to take extra care.

Strike plates. One difficulty I have experienced with silicone bead systems is on the strike side of the jamb, where too much pressure can foul the smooth operation of a lockset or deadbolt. After installing Weatherbead's smallest bead, which is 1/4 inch in diameter, I have had to file or move the latch strikes before the locks would function properly. Weatherbead plans to provide a smaller, 1/8-inch bead soon, which should solve the porblem.

RCT already makes a 1/8-inch-diameter bead, but even their larger diameter beads are constructed with extremely thin walls so they compress easily. I have had no difficulty with strike plates using RCT beads.

Cross-legged jambs. Another problem I run into is "cross-legged" jambs — jambs that are not in plane with each other — and warped doors. In both cases, the gap between the door and the stop tapers, with differences up to 3/8 inch over the height of the door. I solve this problem by using increasing sizes of silicone bead, tucking each neatly into the preceding tube to make a tapered bead.

Astragals. Sealing a wooden astragal is a little tricky, too. I have tried using *Siliconseal S-88* ($17.85 from Pemko, 5535 Distribution Dr., Memphis, TN 38181; 800/824-3018), which is applied to the surface with a self-adhesive strip. But silicone has a high friction rating, so that when you use it on the strike side of a jamb, it causes the door to drag. Siliconseal also has poor compression-set characteristics: In as little as three or four months, the bubble loses its shape and resilience.

I used Weatherbead's tool and material on one job with mixed results. There was no drag on the door because the bead is installed in the corner of the rabbeted jamb or astragal. But I had to push too hard to compress the Silibead and latch the door. Until Weatherbead comes up with a small-diameter bead, you can use their offset astragal, which they make for this application.

However, RCT's thin-walled bead worked well in the same circumstance. The bead was large enough to seal the gaps, but flexible enough to allow the lock to function smoothly. ■

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