CHOOSING AND USING SEALANTS

With a major construction package, you need to understand the process and thoroughly understand the goals, to explore the situation and consider all the options, and then carefully choose products that not only fulfill the technical requirements of the job, but also meet all the expectations.

When examining the minor components, the reverse is true. You're focused on the project as a whole, and you don't want to waste time on minor details. You want to get on the job and working as quickly as possible.

A sealant can make or break the entire project. Choosing a sealant is a step-by-step process in which you 1) determine your project goals, 2) investigate the application and the jobsite conditions, 3) select the right products, then 4) make sure you understand how to use those products properly.

When considering sealants, the process doesn't change, the emphasis does however.

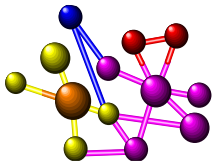
The dealer needs to make the right product recommendations, you need to be comfortable with the expertise of the dealer. The focus is on the last steps. Sealants are not a major investment; if it's not used correctly however, they could jeopardize the success of the entire project.

The key is still asking the right questions, but in a situation where customers may not be paying enough attention to the purchase, the cardinal rule of selling becomes even more critical: Don't sell features, sell benefits.

OBJECTIVES:

WHEN YOU HAVE COMPLETED THIS CHAPTER, you will be able to

- describe the basic process in selling sealants,
- recommend the right sealant for common applications, and
- explain how to apply sealants.

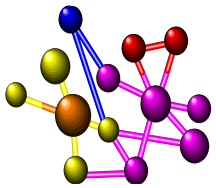


The key to determining which sealant to use is a matter of asking the right questions about your project.

1. DETERMINING PROJECT GOALS

Your first questions should always be aimed at finding out what end result you are looking to achieve. There's one catchall question that should always come first:

"Where do I plan to use this sealant?"



The first and most important question you should always ask is, "Where do I plan to use this sealant?"

The answer will narrow your choices considerably. For example, if the sealant will be used outside, you'll have to consider the following issues:

- **Application temperature**. If the outside temperature is below 40°F, you can rule out all but tripolymer and copolymer sealants.
- **Accessibility**. If the job is relatively inaccessible, you can further narrow your recommendations to a high-quality sealant with a long service life—a tripolymer, copolymer, polyurethane, or silicone, for example—so the job won't have to be done again soon.
- **Weathering**. For long-term performance under direct exposure to sunlight, limit your recommendations to tripolymer, copolymer, silicone, or polyurethane sealants.
- **Appearance**. If the joint will be visible, find out whether you need to match a specific color. If so, you can rule out sealants that can't be painted (such as butyl) unless a stock color happens to be a perfect match. Or, the need to match a color may steer you to a sealant specially formulated for that purpose (such as Stain Match™) or a tripolymer or copolymer that is paintable and stainable.

Likewise, if you will be using the sealant inside, that knowledge steers you toward a different set of issues:

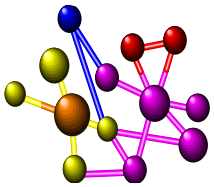
- **Safety**. If you will be applying the sealant in an enclosed area that cannot be adequately ventilated, you may want to limit your options to siliconized acrylics, acrylic latex, or latex sealants, which do not produce noxious fumes.
- **Mildew resistance**. If the area to be sealed is prone to excessive moisture, use a mildewproof sealant such as a tripolymer, or mildew resistant sealants such as copolymers or siliconized acrylics.

- **Cleanup**. If the application will be visible and the substrate materials may be damaged by solvents, limit your options to siliconized acrylic or acrylic latex, which can be cleaned up with soap and water.

2. INVESTIGATING THE JOB

The next step is to further narrow your choices, and your question is again an obvious one:

"What are the substrate materials?"



After determining your project goals, next investigate the job itself by asking about the substrate materials and the joint to be sealed.

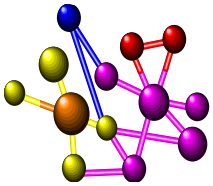
- **Substrate material(s)**. If the substrates are two porous materials, for example, a concrete sidewalk and brick siding, you'll probably want to avoid silicones (which must be primed). On traffic-bearing surfaces, the best choice may be a polyurethane. If the substrate is asphalt, your choices will be limited to a tripolymer, a siliconized acrylic, or a polyurethane sealant. If thorough surface preparation is difficult or impossible, you're down to a tripolymer immediately.
- **Surface preparation**. If surface prep is exceptionally difficult, the choice is narrowed down to a sealant that can be applied over dirty surfaces, such as a tripolymer or copolymer.
- **Joint movement**. If the substrate has a high coefficient of expansion (for example, vinyl siding or PVC pipe), tripolymer or copolymer will perform best. Silicones offer initial high elasticity, but only for a limited period of time.

Your next question should cover the joint itself :

Joint dimensions	Options
1/4" x 1/4" to 1/2" x 1/2"	Your options are tripolymer, copolymer, silicone, polyurethane, siliconized acrylic, or acrylic latex.
Between 1/2" and 1" wide, no deeper than 1/2"	A copolymer sealant.
Between 1/2" and 1-1/4" wide, no deeper than 3/8"	A polyurethane sealant.
Joints deeper than the maximum specified depth	Use a backer rod to fill the joint to the specified depth.
Shallow joints	Use bond breaker tape to prevent three-point contact.

"What are the dimensions of the joint?"

In many cases, this question may lead to a specific recommendation, for example -



You never want to know, "What will this product do?" You only want to know, "What will it do for me?"

3. RECOMMENDING SEALANTS

No matter how large or small the sale, you never want to know, "What will the product do?" You want to know, "What will it do *for me*?"

Often, you'll be faced with a situation in which you'll have options of a better—and more expensive—sealant than you originally intended to use. That makes it critical that you focus on the benefits rather than simply reciting the features.

The trick is to pick the right benefits.

The goal is to get the right product into your hands—and then make sure it's used properly, to wind up with a successful job.

Doing so means selecting not only the right sealant, but also the right accessories. You will need the following products:

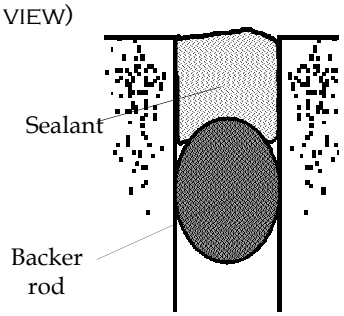
- **Caulking gun (gun-grade sealants)**. A good quality caulking gun is a

small investment, compared to the cost of stopping in the middle of the job to run out and replace a broken gun.

- **Chip brush, flexible putty knife, or trowel (brushable sealants)**. You may already have these things, but if they've been used before, they may not have been completely cleaned. Sometimes it's better to invest in new tools than spend the time cleaning the old ones—and it's always better than getting contaminants in the sealant when you apply it.

BACKER ROD (END VIEW)

Foam backer rod is used in deep joints, to ensure that the joint is the proper size and configuration for the sealant.

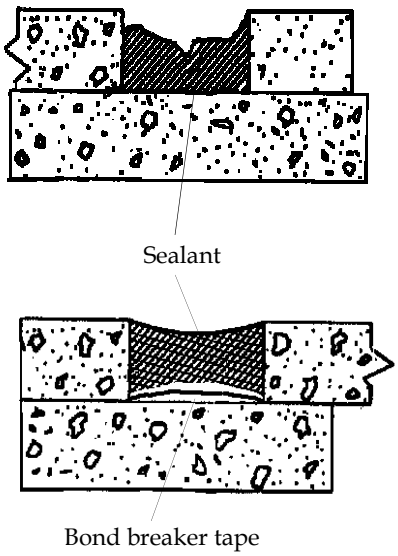


- **Backer rod** (joints 1/2" or deeper). Backer rod is a foam "rope" used to partially fill joints that would otherwise be too deep for the sealant. It is available in a variety of sizes. Both open- and closed-cell polyurethane and polyethylene foams are used to make backer rod. Most contractors prefer closed-cell foam because the outgassing that occurs in open-cell foams can create bubbles in the sealant.

BOND BREAKER (END VIEW)

Three-point contact (both sides and the bottom of the joint) keeps the sealant from stretching and contracting, causing it to tear.

Bond breaker prevents three-point contact, allowing the sealant to perform properly.



- **Bond breaker tape** (shallow joints). In shallow joints, a sealant may split if it adheres to the back of the joint, because that three-point contact keeps it from stretching and compressing as the substrate moves. Bond breaker strips provides a slick surface that prevents the sealant from adhering to the back of the joint. Some types of backer rod are made of non-adhering materials that allow them to also function as bond breakers.

- **Tooling lubricant**. This may seem like an insignificant item, but it's better to think ahead to forget it only after the first bead of sealant is applied.

If a solvent is recommended as a tooling lubricant, you may also need a throwaway container to keep it in.

- **Cleanup solvents**. Once again, it's better to be reminded about them unnecessarily than to remember them after the sealant has been applied.
- **Safety equipment**. Latex gloves and safety glasses are a good idea when working with most sealants; in some situations, you may even need respiratory protection. Check the manufacturer's recommendations, then follow them.

4. WORKING WITH SEALANTS

The specific techniques and procedures you'll follow in each step depend on the type of sealant you're working with. In any case, keep in mind that the recommendations that follow are guidelines only. ALWAYS FOLLOW THE MANUFACTURER'S INSTRUCTIONS.

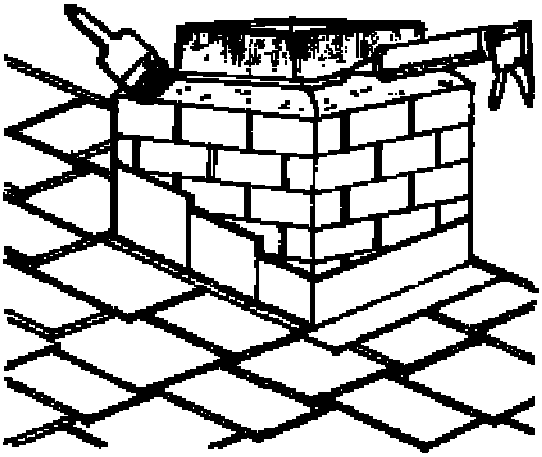
WORKING WITH GUN-GRADE SEALANTS

Adjust the joint to the recommended size and configuration. The width

Sealant	Joint sizes (W x D)
Tripolymer	1/4" x 1/4" to 1/2" x 1/2"
Copolymer	1/4" x 1/4" to 1" x 1/2" (a 2:1 width-to-depth ratio is preferred)
Silicone	1/8" x 1/8" to 3/8" x 3/8"
Polyurethane	1/4" x 1/4" to 1-1/4" x 5/8" (depth not to exceed width)
Siliconized acrylic	1/4" x 1/4" to 1/2" x 1/2"
Acylic latex	1/4" x 1/4" to 1/2" x 1/2"
Latex	1/ 8" x 1/8" to 1/2" x 1/2"
Butyl	1/8" x 1/4" to 1/2" x 1/2"

of the joint should never exceed the cyclic movement of the sealant. While it isn't practical to calculate residential projects precisely, you can adjust the size of the joint so it is within the recommended bead size for the sealant you're using. Those sizes are as follows:

SURFACE PREPARATION



Before applying any sealant, use a whisk broom or an old paint brush to remove dirt, dust, and loose material from the substrate.

Prepare the substrate. Even if the sealant will adhere to dirty surfaces, you should remove all loose material, then wipe the joint clean with a rag to get rid of as much dust as possible.

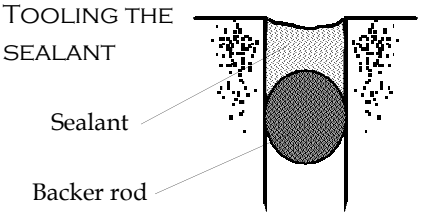
If a primer is required, apply it next—or clean the joint thoroughly with the recommended solvent. Allow the solvent to dry completely before applying sealant.

If the joint is deeper than 1/2-inch, insert a backer rod before applying the sealant. Compress it to about 3/8-inch below the surface, to ensure that the sealant will make full contact with the sides of the joint.

In shallow joints, apply bond breaker tape to the back of the joint to prevent three-point contact. Trim the tape, if necessary, to make sure it doesn't ride up along the side of the joint.

Apply the sealant. Fit the sealant cartridge into the caulking gun, push the plunger snugly against the bottom of the cartridge, and twist the plunger handle to engage the notched side with the trigger of the gun.

TOOLING THE SEALANT



Tooling ensures good adhesion. Tool the joint flat when using evaporative-cure sealants, or concave when using chemical-cure sealants.

Cut the nozzle tip of the sealant cartridge at a 45° angle, positioning the cut so the bead of sealant will be the proper size. Use a nail or piece of wire to break the seal at the base of the nozzle. Poke the seal several times.

The easiest way to apply sealant is to pull the gun along the joint with the tip of the sealant tube following behind. Whenever possible, however (sometimes the substrate is too rough to do it this way), do it the other way around: *Push* the gun so the tip of the tube is leading the way. This technique forces sealant into the joint and ensures a better seal on the sides.

Tool the sealant. After filling the joint with sealant, tool the bead immediately to ensure good adhesion to the sides of the joint. Tool the bead flat when working with evaporative-cure sealants, or concave when using sealants that cure chemically. Never allow lubricant to get behind the sealant and into the joint, or it will prevent adhesion.

Finish the joint. If the sealant will be painted or stained, always wait until the manufacturer's recommendations say it can be finished. Most manufacturers call this the "tack-free" time; it doesn't necessarily mean that the sealant is fully cured, but only that it is ready to be finished. Typical tack-free times are shown in the chart.

Sealant	Tack-free time
Latex, acrylics, and siliconized acrylics	30 minutes - 2 hours
Tripolymers, copolymers	1 - 4 hours
Silicones, polyurethanes, butyls	2 - 16 hours

WORKING WITH BRUSHABLE SEALANTS

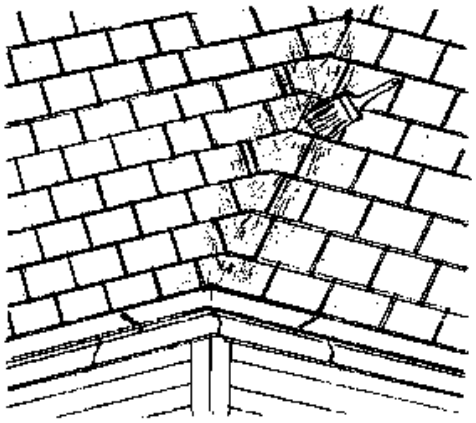
Prepare the substrate. Even if the sealant will adhere to dirty surfaces, you should remove all loose material, then wipe the joint clean with a rag to get rid of as much dust as possible.

If a primer is required, apply it next—or clean the joint thoroughly with the recommended solvent. Allow the solvent to dry completely before applying sealant.

Apply the sealant. Brushable sealants may be applied with a chip brush, trowel, or putty knife. In each case, the procedure is the same: Apply the sealant, then work it into any seams and cracks to ensure a complete coat

Do not apply any single coat thicker than 1/16-

APPLYING BRUSHABLE SEALANTS

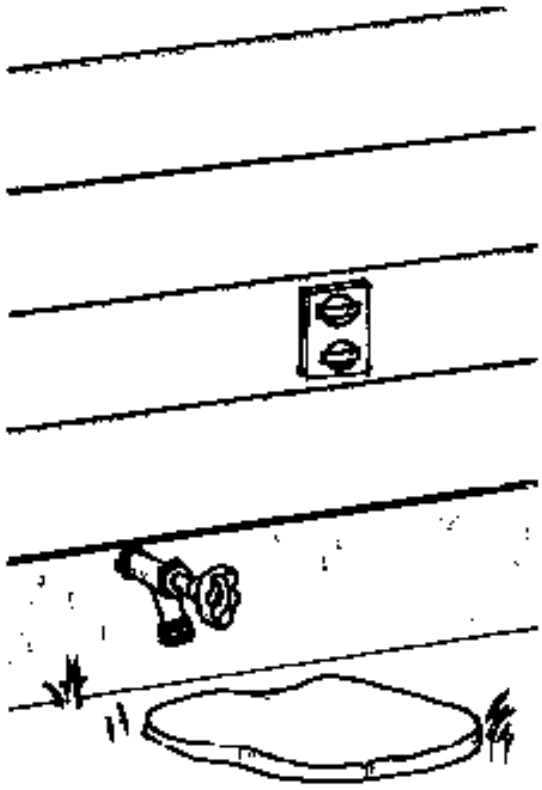


Apply brushable sealants in coats no more than 1/16" thick. If you need a thicker overall coating, apply multiple coats, allowing 24 hours between each.

inch. If you need a thicker overall coating, apply several light coats and allow 24 hours drying time between each. Remove any spilled sealant as soon as possible; it is very difficult to remove after it has cured.

Use Xylol to clean your tools. If you plan to paint the sealant afterward, test a small area first to make sure it is compatible with the sealant.

USING EXPANDING FOAM SEALANTS



Use expanding foam sealant to seal gaps over 1/2" wide, such as pipe or electrical penetrations in a wall, or around door and window frames.

WORKING WITH EXPANDING FOAM SEALANTS

Prepare the substrate. Before you apply the foam, wipe all surfaces clean with a dry rag to remove dirt and dust. If the cavity is deep and dry, moisten it with a sponge before applying the foam—but be careful not to get the cavity too wet or it will interfere with the application.

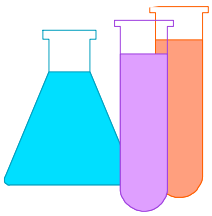
Apply the foam. Expanding foam sealants must be applied in a well ventilated area—or, if that isn't possible, you should always wear respiratory protection. Always wear gloves and safety glasses, as well, to avoid any contact with your eyes or skin.

Fill the lower part of the cavity first. If you're using a standard foam, fill the cavity only about 35%; the foam will expand to approximately three times its dispensed size, and will fill in the remainder of the space. If you're using a minimal expanding foam, fill the cavity to about 50% full.

Do not disturb freshly dispensed foam because it

will collapse. Clean any uncured foam with paint thinner or acetone. Foam sealants cure to a firm resiliency in 8 hours.

SUMMARY



- Selecting sealants is a step-by-step process in which you 1) determine your project goals, 2) investigate the application and the jobsite conditions, 3) select the right products, then 4) make sure you understand how to use those products properly.
- To determine your project goals, the most important question you should ask is, "Where do I plan to use this sealant?" The answer will help you quickly narrow down your potential product choices.
- When investigating the application and jobsite conditions, first identify the substrate materials, then the condition and configuration of the joint.
- The specific procedures for applying sealants vary according to the product you're using, but the general steps are 1) Adjust the joint to the proper size and configuration; 2) Prepare the substrate; 3) Apply the sealant; 4) Tool the sealant; and 5) Finish the joint.

- When applying sealants always follow the manufacturer's instructions.

EXERCISES

1. You are sealing around the windows and doors of a home with wood lap siding that has been stained with Olympic® Cape Cod Grey solid stain. To match the stain color, which sealant would you select?
   a. Olympic® Silicone Seal®
   b. Geocel Surethane®
   c. Geocel Water Shield®
   d. Geocel Stain Match™

2. The temperature is 25°F. You want to seal some openings that have recently become noticeable in some old, asphalt impregnated, granular siding. There are joints around windows and doors and around hose spigots. The gaps are all about 1/2".
   a. Geocel Pro Flex®
   b. Geocel Water Shield®
   c. Geocel Professional 920™
   d. Geocel Surethane®

3. You are sealing a 1-1/4" wide gap between a concrete foundation and brick veneer.
   a. Geocel Expanding Foam Sealant®
   b. Geocel Brushable General Purpose Water Shield®
   c. Geocel Surethane®
   d. Geocel Professional 920™

4. You are installing a new vanity and sink in the bathroom. You are looking for a sealant that will keep water from seeping into the vanity around the top rim of the sink.
   a. Geocel Professional 920™
   b. Geocel Surethane®
   c. Geocel Pro Flex®
   d. Geocel DuraSeal™

5. You are repairing a leak in a roof that appears to be around the chimney flashing. It's 20°F outside.
   a. Geocel Pro Flex®
   b. Geocel Gutter and Lap Seal®
   c. Geocel Water Shield™
   d. Any brand of silicone