

Caulking/Sealing Basics

The main purpose of exterior caulking is to shed water to help maintain a proactive drainage plane. Interior caulking is more focused on minimizing interior-to-exterior air leakage or eliminating drafts. All caulks are formulated with a base polymer, sometimes called a “backbone polymer,” where fillers, plasticizers, solvents, adhesion promoters, UV absorbers, pigments etc. are added to sealants depending on need. Silicones, Polyurethanes, and Latex (Acrylics) are the three main types of polymers for residential use.

Caulk/Sealant Comparison						
Type	Indoor Use	Outdoor Use	Paintable	UV Resistant	Cost*	Popular Usage
Silicones	✓	✓		✓	\$\$	Bathrooms and kitchens
Polyurethanes		✓	✓	✓	\$\$\$	Concrete, metal roof/flashing
Latex (Acrylics)	✓	✓	✓		\$	Interior and windows, doors, and trim
Polyurethane closed cell foam	✓		✓		\$\$\$	Larger gaps in places with minimum movement
Water-based open cell foam	✓		✓		\$\$\$	Small gaps around doors and windows
Butyl Rubber		✓	✓		\$\$	Windows, flashings, rain gutters, and pavement cracks
Oil or Resin based		✓	✓		\$	Outdoor seams and joints

*\$ = low in cost \$\$ = moderate in cost \$\$\$ = high in cost

Other Characteristics

Silicones

- Highly versatile and flexible
- **Acid cure** silicones may corrode metal and etch plastics, while **neutral cure** varieties typically do not
- Messier to work with, requires paint thinner for cleanup and “dry-tooling” (no water) during application
- Very good weather resistance
- Low shrinkage rate
- May lose their adhesion to concrete and masonry over time

TIP: If replacing an area of silicone caulk with a non-silicone caulk, the original surface may reject the non-silicone caulk. Clean surfaces with a petroleum based solvent to remove silicone residue.

Polyurethanes

- Will stick to most masonry products without primer and do not have staining properties associated with silicones
- Very good adhesion rates (almost everything) and are ideal choice for joints with dissimilar materials (wood, masonry, metal etc)
- Will not corrode metals

Latex (Acrylics)

- Widely used for their low odor and easy workability and cleanup
- Require more time to cure than silicones and polyurethanes
- Have improved flexibility (elongation and compression) with plasticizers but are not as flexible as silicones and polyurethanes
- May shrink up to 30% when cured; more caulk may be necessary
- May become brittle over time; works best in areas not subject to movement
- Exterior use requires periodic painting and/or re-caulking especially south and west facing with more UV light exposure

Expandable Foams (polyurethane & water based)

- Polyurethane foam (considered less permeable to water vapor)
 - Will stick to almost anything
 - Health issues have been raised about off-gassing even after cured
 - Works best in areas not subject to movement
- Water based foam (considered more permeable to water vapor)
 - Does not expand as much as polyurethane foam
 - Works best in areas not subject to movement

Butyl Rubber

- Also known as man-made rubber
- Bonds well to dissimilar materials, however it does not bond well to painted surfaces
- Can be difficult to apply
- Avoid using if you are concerned with a finished look
- Can shrink up to 30%

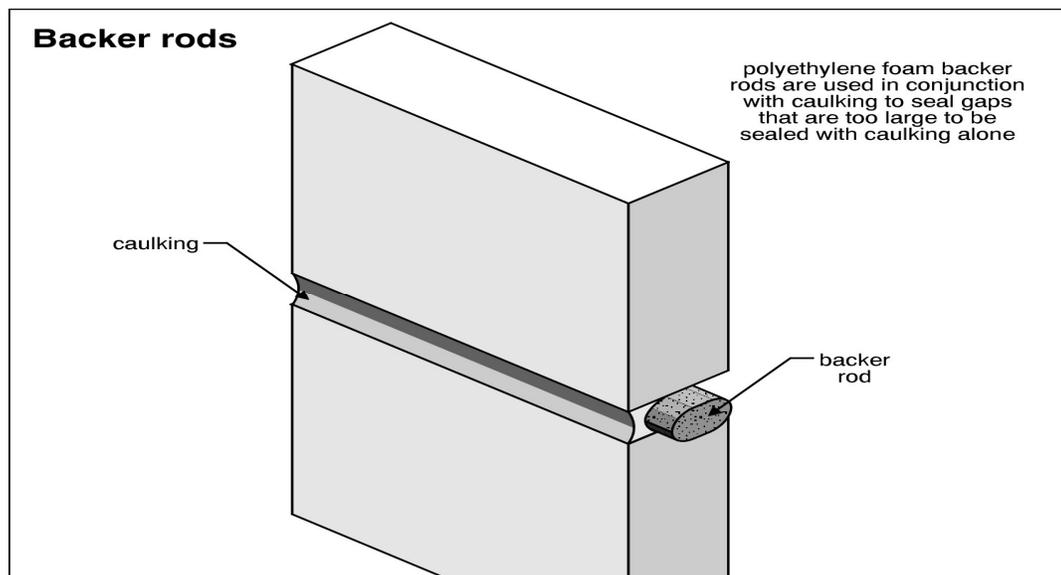
Oil or Resin Based

- Does not adhere well to masonry products
- Requires periodic maintenance

Application Tips

(These are general guidelines only. Refer to label and/or manufacturer recommendations.)

- Consider a “Dripless Caulking Gun” with a higher gear ratio or “thrust” (around 14:1 is good) for slower, more controlled delivery of caulk per handle squeeze.
- Cut nozzle tip to a 45 degree angle. Avoid applying when temperature is below 50 degrees Fahrenheit.
- Use bond breaker tape or backer rod to avoid 3-sided adhesion. If caulk adheres to three sides (side to side and up and down, for example) it may pull the caulk loose on one or more sides leading to caulk failure.
- Ensure all surfaces are clean and dry prior to application. Some sealants require a primer.
- Concrete absorbs moisture. If using a polyurethane type sealant, consider mild wetting prior to application.
- For aesthetics, prior to application, tape off sides along the joints to prevent staining unintended areas.
- Immediately after caulk is applied gently press the caulk using a tool (or your finger) against the sides of the joint. This will provide a neater appearance and get rid of voids and bubbles. Wetting the tool will help with the smoothing process. Have a bucket with water and wet paper towels handy to assist removing excessive caulk. Be careful with the wetting, however, because excessive wetting may negatively affect the actual setup of the sealant/caulk.
- Use backer rods when caulking large gaps (see picture below):



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