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Caulks, Sealants and Adhesives

Caulks and sealants can be thought of as nearly the same thing. They both fill gaps and some offer better adhesive properties as well.

Caulk has a reputation for being just being a fix, not a solution and a temporary fix at that. However, as the quality of caulks commonly available has increased some caulks can be considered long term solutions, perhaps not forever, but at least for a few years. Caulks have to perform rather difficult tasks. Those used outside have to perform over wide changes in temperature, survive both extreme heat and intense sun, and remain flexible year after year. Not many materials can simultaneously meet all these criteria. This is why caulks are formulated for particular applications depending on their primary purpose and the environment where they will be used.



Partially filled gap

(click image for larger version)

For exterior applications where sealing and caulking are required, probably the best caulks are those formulated with urethane as the primary base chemical. Most urethane caulks are not rated highly for exposure to sunlight however they perform well enough and can be reapplied as necessary. Urethane caulks have the following good qualities for many outside applications:

- They are paintable.
- They are flexible enough to operate over a wide temperature range.
- They stick (adhere) well to most cleaned surfaces.
- They are easy to use.
- They are reasonably priced.

White urethanes, unless specially formulated, do yellow when exposed to sunlight. This can result in the caulk creating an offensive color mismatch.

Using Sealants:



A long gouge next to a window to be Partially sealed gouge sealed with urethane caulk

(click image for larger version)



(click image for larger version)



Sealed, but not a pretty job

(click image for larger version)



Final product looks good

(click image for larger version)

An obvious key in how well sealants perform has to do with proper installation. The surface must be clean enough so that sealant actually can stick to the building not just a layer of dirt, dust, or oil. For urethane sealants the surfaces need to be dry. Enough sealant needs to be applied to deal with the changes in dimensions it is expected to deal with. Sealant of a given thickness or width can only expand and contract so much without cracking or detaching itself. For most house applications the bead of sealant needs to be about 3/16" in diameter in order to perform well.

If you are applying sealant to a smooth surface like aluminum, glass, or

vinyl, use a rag to clean a surface that is obviously dirty. Oil must be removed. Make sure the surface is dry. If you are filling a hole or crack then you might apply a small bead of sealant that is pushed into the crack with a finger. This usually does little more than fill the hole without really adhering to the sides of the hole or crack. Then, assuming aesthetics allow, apply a 3/16" diameter bead of sealant on top. If one is filling a right angle joint or crack of materials that expand and contract in response to temperature differently (e.g. aluminum or vinyl to wood or masonry) apply a little bead of sealant to the joint and work it into both surfaces to assure that it `wets'/adheres to both surfaces. Then apply another larger bead that is at least 3/16-inch in diameter. For maxim effectiveness, the bead should **NOT** be pushed to be concave because that thins it out so much that there might not be enough caulk to absorb dimensional changes caused by temperature.

Whenever you use caulks or sealants go back the next day to check the thoroughness of your work. You will likely be surprised at the little places you missed.

Because sealants don't last forever and because it is hard to have a perfect installation one should check all seams before hurricane season. Temperature changes between winter and summer and between dry and humid conditions can cause dimensional changes that cause cracks in sealants.

- When you examine where sealants have been used are there little voids or hollows? Are there places with little or no sealant?
- Is the sealant so thin that there is not really a bead at all, but just a smearing of sealant?
- Is the sealant brittle, easily chipped out?
- Can the caulk be peeled out? This is a common problem with silicone caulks.
- Is sealant really every place it needs to be? See the checklist for cracks, gaps and holes.

Important properties to consider in selecting a sealant:

- ultra violet degradation
- color retention/fading
- expansion
- adhesion/wetting
- temperature range
- water proofness

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