Why silicones are better than polyurethane?

1. Silicones are UV light stable. Organic (urethane or polyurethane) products are not and break down in sunlight. This is because UV does not have enough energy to cleave the SI-O, silicone bond. However, C-C bonds used in organic materials are very unstable. UV weathering is the main cause of sealant degradation.

2. Silicones do not get hard when they cold, organics products to. This causes adhesive failures in organic products even when adhesion looks good after a pull test. Note that the most important time for a sealant to work in the winter (as building substrates shrink and joints therefore get wider), which is exactly when organics have hardened.

3. Silicones maintain flexibility over time, organic products lose flexibility with aging.

4. Silicones can be applied at -20℉ (-29℃) without heating and will cure compared to organic sealants which need to be heated and will not cure unless they are above freezing.

5. DOWSIL silicones do not slump on hot days in the summer, polyurethanes tend to slump when hot.

6. Silicones skin over on average in 30 minutes versus 1-14 days for organic sealants, allowing the organic materials to pick-up more job site dirt. This dirt is embedded in the sealant permanently. Any dirt deposited on a silicone surface is easily cleaned away, even after years of build-up. Again, this is because silicone is basically a flexible Si-O (glass).

7. As organic sealants break down they crack, craze, split and chalk. Dirt can get embedded in the cracks easily. Silicone surfaces do not degrade.

8. Silicones last for 50+ years. This is because a silicone is basically glass. Just like you would not expect a pane of glass to melt after 20 or 30 years, neither will a silicone. Organic sealants begin to break down in 3-7 years. Where they are exposed to the most sunlight, like the south side of a building, they will break down faster. Urethanes can be thought of like paint in regard to weathering.

9. The DOWSIL CWS and 795 are low odor during cure and no odor after cure. As such they are approved for use inside healthy homes.

10. Many colors stocked and available in all products. 50 colors CWS in stock. We also offer custom colors with minimum quantities and 1-2 weeks lead times.

11. All our silicones (795, 792, 756, CWS, CCS) are independently tested and validated by SWRI (Sealant Weatherproofing and Restoration Institute). Please visit their web site at www.swrionline.org and note that all manufactures are part of SWRI but not all products are validated.

12. DOWSIL CWS is a single component sealant so no mixing is required on site versus a multi-component polyurethane. This gives much better quality control as you do not have to worry about the contractor properly mixing the sealant. Rarely do two-part products get mixed properly in the field.

13. DOWSIL silicones are non-staining on granite marble and limestone, specifically DOWSIL CCS, DOWSIL 790 and DOWSIL 756 SMS. Staining of sealants is an overblown issue as no sealants will stain brick or concrete or metals as these materials do not have the pour structure capillary action that pulls fluids out of sealants. On sensitive substrates DOWSIL employ proprietary cure systems that other manufacturer in the world.

14. All DOWSIL construction silicones are low VOC (less than 50g/L) and are LEED compliant.

15. Only silicones qualify for the LEED sustainability credit for building sealants.

16. The above information relates to DOWSIL silicones. Not all silicones are alike. Hybrid silicone/organic products exhibit the same degradation and failure rate as organics. ''Siliconized'' products are not silicones (they are leaning on the silicone quality reputation, but the free-fluid silicone used has little performance merit).

17. DOWSIL silicones are commonly used in re-caulking applications where urethanes were used previously.

18. Pull test for sealant performance and substrate preparation are important. However, silicones can often take 28 days at 68℉ (20℃) and 80% RH to develop full adhesion. Just because a silicone is a cured solid DOES NOT mean that full adhesion set has occurred. Urethanes often have quick green strength (initial adhesion) but don't be confused into thinking they have better overall adhesion in a dynamic joint. This is because a urethane MUST have better adhesion due to their poor performance in cold weather and the high bondline stresses they create. This is the reason that silicones have lower adhesive failure rates.

19. Urethanes and polyurethanes have drastically altered formulas since 2009 when they because to change their chemicals to meet new VOC guidelines. Also, many chemicals used in sealant production have changed (due to stricter environmental regulations) or discontinued production (US recession and Japanese tsunami). Dow has virtually full vertical integration with many products. Common silicone sealant formulas, due to their inherently low VOC, have not changed in decades. It many seem odd to have a formula that has not changed in years, but in a low margin market where competitors have cheapened their sealants considerably, Dow products remain an unthinned option with a proven track record.