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Founded 1959. In North America since 1979.



22-year member: Sealant Waterproofing and Restoration Institute. [What is SWRI?](#)

"Pre-cured-Caulk-And-Backerblock" Not New, Not Equal to EMSEAL's COLORSEAL

"The common law of business balance prohibits paying a little and getting a lot. It can't be done. If you deal with the lowest bidder, it is well to add something for the risk you run, and if you do that you will have enough to pay for something better."

-John Ruskin 1819-1900

Caulk in Large Joints Can't Handle Bond-Line Tensile Stresses:

(Click image to enlarge)



"...tensile stresses at the bond line and within the body of the sealant cause bond-fatigue..."

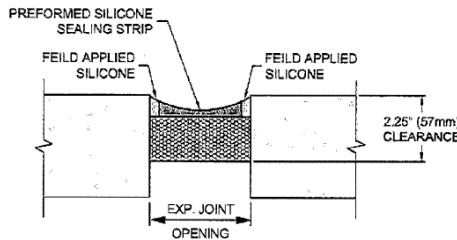
COLORSEAL: Tensionless Movement, Watertight, Aesthetic, Insulates:

(Click image to enlarge)



An old product is being marketed with renewed vigor. It is being presented as an equal in performance to EMSEAL's pre-compressed, hybrid, silicone-and-impregnated-foam sealant (COLORSEAL) at a fraction of the cost. Given the adage "if it sounds too good to be true, it probably is," the following provides a basis on which to understand the fundamental differences between these technologies and how this material is by no means an equal to COLORSEAL.

For purposes of description, we are comparing COLORSEAL to a "pre-cured, caulk-and-backerblock" material. It looks like this:



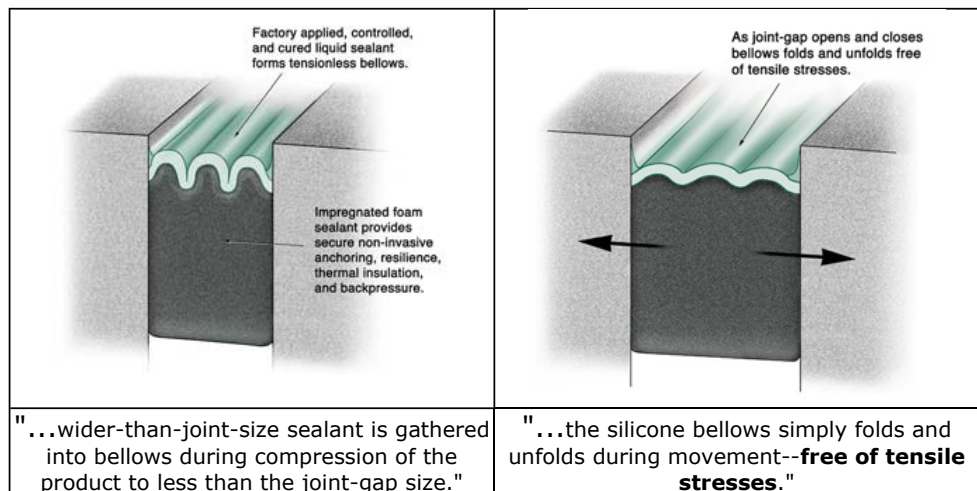
Old For New

This product concept was introduced nearly 10 years ago by a company called Williams Products. It never gained much traction in the commercial construction market but now has been picked up by other expansion joint products companies and is being sold by them as something new.

Tensionless Sealant Systems

The development of the COLORSEAL product is based on the fact that liquid sealants in large movement joints do not function because tensile stresses at the bond line and within the body of the sealant cause bond-fatigue over time and ultimately result in adhesive or cohesive failure of the sealant.

COLORSEAL overcomes this shortcoming through the application and factory-curing of a silicone sealant over a preformed, impregnated foam backing at a width nearly twice that of the intended joint-gap size. This wider-than-joint-size sealant is gathered into bellows during compression of the product to less than the joint-gap size. After installation into the joint, the silicone bellows simply folds and unfolds during movement--free of tensile stresses. The addition of a corner-bead of silicone is purely a redundant step in ensuring the bond of the silicone bellows to the substrate. EMSEAL'S COLORSEAL is watertight at the silicone face as well as watertight at the foam secondary sealant level.



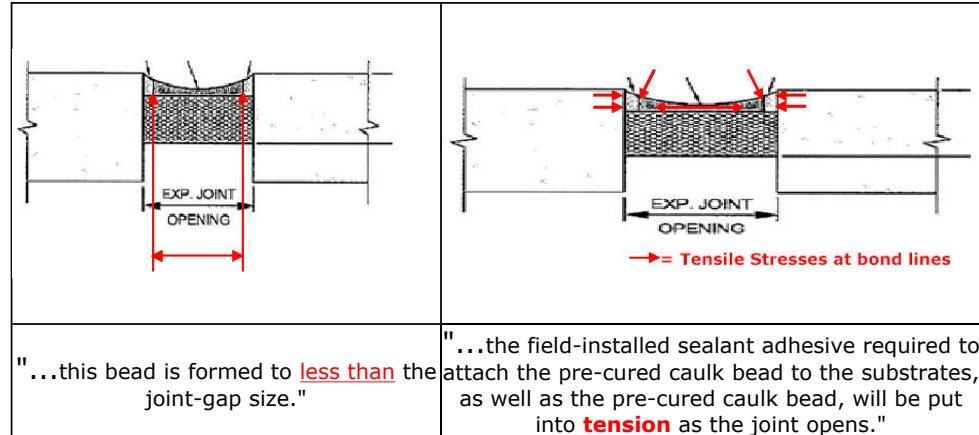
For a printable .pdf version of this discussion paper, click here:

[COLORSEALvs PreCuredCaulk.pdf](#)

The Weakest Way to Use an Adhesive:

The "pre-cured, caulk-and-backerblock" does have a pre-cured bead of sealant, however, this bead is formed to less than the joint-gap size. It relies as a result on the field-applied silicone to adhere the pre-cured caulk to the substrate.

It is a well known fact of engineering that adhesives are weakest in tension. This means that the field-installed sealant adhesive required to attach the pre-cured caulk bead to the substrates, as well as the pre-cured caulk bead, will be put into tension as the joint opens. Consequently, there is no difference in performance between using caulk and backerrod and "pre-cured, caulk-and-backerblock".



The product is not pre-compressed and relies on the field installation of sealant to attach the undersized preformed bead to the substrate. As movement occurs at the joint-gap the sealant is put into tension and is therefore susceptible to bond-fatigue failure as well as cohesive failure of the sealant bead. Furthermore, installation in this manner adds two new bond lines to the system multiplying the potential for bond-line failures.

The system prescribes a 3/8" x 1/2" adhesive sealant bead. Given the likelihood that the joint-gap into which the sealant is being installed will vary in size from the base of the building to the roofline, it is improbable that this adhesive mass will be regularly achieved. Consequently the presence of sufficient adhesive to withstand likely tensile stresses will be unlikely.

Precompressed vs. Forced In Place

The cellular polyurethane/polyester backer block used in the "pre-cured, caulk-and-backer-block" is not pre-compressed – it is a "force compressive joint" (squeezed by hand and shoved in), nor is it impregnated with any waterproofing additives. Like backerrod in conventional caulk-and-backerrod installations, the backer-block of foam performs no function other than to support the caulk bead during installation. If the sealant on the "pre-cured, caulk-and-backer-block" is breached **the foam by itself is not watertight** and will actually retain water.

EMSEAL's COLORSEAL features an impregnated open cell foam which is *pre-compressed* at the factory to less than the joint opening and, once released from compression constraint at installation, is designed to push against the substrate with 1 1/2 to 2 lbs per square inch of back pressure.

The water-based, stabilized, polymer-modified acrylic adhesive impregnated foam of COLORSEAL is water tight without the addition of silicone and therefore provides real belt-and-suspenders sealing in a single material installation.

Performance Testing--The Final Proof

An understanding of the principles of performance of the two systems should be sufficient to demonstrate the considerable differences in composition as well as performance. In addition, however, COLORSEAL by EMSEAL has endured rigorous independent performance testing and passed all three of the following performance tests usually reserved for evaluating curtain wall systems. After all, shouldn't the sealant system used in the wall meet the same standards applied to the components of that wall?

ASTM E283	Rate of Air Leakage Through Curtain Walls
ASTM E331	Water Penetration of Curtain walls due to Uniform Static Air Pressure Difference (with and without punctured and damaged primary seal surface)
ASTM E330	Structural Performance of Curtain Walls under Uniform air Pressure Difference (Gust Loads)

Watertightness, ability to handle expected movements, durability, and aesthetics are

reasonable standard performance expectations of an expansion joint sealant. In addition, with today's emphasis on energy efficiency, having your expansion joint sealant insulate an often overlooked thermal breach is an added benefit. COLORSEAL provides 2.94 R value per inch of depth making it unique in its ability to contribute to your buildings climatic stability.

Conclusion

On this basis, the "pre-cured, caulk-and-backerblock" product is by no means equal in design or performance to the pre-compressed, hybrid, silicone-and-impregnated-foam sealant COLORSEAL material.

As always when conducting a comparison of two materials, [Request a sample](#) to compare composition and performance claims of the contenders.

In this age of conglomerations, buyouts, consolidations and spin-offs, the commoditization of specialty products is a likely result. There do remain a few suppliers whose integrity remains tied to that of their owner/founders. That is not to say that these are the only reliable sources of lasting joint sealing solutions but a healthy skepticism of bold claims, rapid changes, and old technology revivals will serve your clients well.

Thank you for your consideration and continued support of EMSEAL's products. As we move forward, one satisfied building owner at a time, we find validation in our approach and in the words of a nineteenth century observer of society and the construction arts, John Ruskin:

“It is unwise to pay too much, but it's worse to pay too little. When you pay too much you lose a little money—that is all. When you pay too little you sometimes lose everything, because the thing you bought was incapable of doing the things it was bought to do. The common law of business balance prohibits paying a little and getting a lot. It can't be done. If you deal with the lowest bidder, it is well to add something for the risk you run, and if you do that you will have enough to pay for something better.”

To give us feedback on this or any other topic on our website please feel free to call 508-836-0280.

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