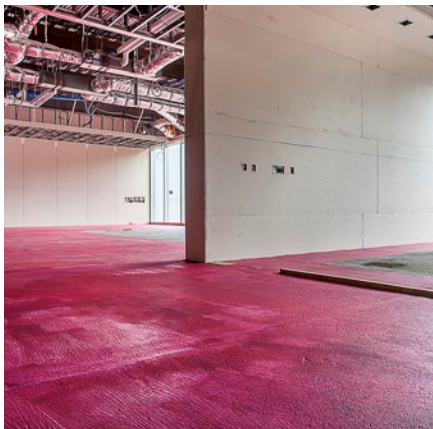




## The Benefits of Liquid-Applied Membranes for Waterproofing and Crack Isolation in Large and Exterior Tile Installations

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As tile and stone sizes have increased through the years, crack prevention has become an even more important part of the tile installation. Heightened awareness of moisture intrusion into building envelopes has also made waterproofing a significant element of many exterior tile assemblies.



**To ensure that the tile assembly is completely waterproof, it is important to install a waterproofing membrane before the tile is set.**

The Handbook of the Tile Council of North America (TCNA) includes membranes in most of its construction details. Waterproofing membranes are mandatory for interior wet areas and highly recommended for many exterior and intermittently wet tile assemblies. Crack prevention membranes isolate minor cracks in the substrate and keep them from transmitting to tile and grout.

When expanses of tile, especially large format tile or natural stone, are installed outdoors, the job requires versatile membranes that protect both the tile and the building from the effects of weather. And, the bigger the project, the more essential installation time becomes. Many liquid-applied membranes can also be sprayed to speed large scale or fast-track installations.

### The Need for Waterproofing

Aside from tile, there are very few other floor or wall coverings that can be routinely exposed to water over time without deteriorating. However, tile and grout are not watertight surfaces. Cement-based grout contains micro-capillaries that will wick moisture from its source into the substrate below. Many tiles themselves are porous enough to allow water penetration. Regular sealing treatment of grout, ceramic and stone will slow this process, but cannot totally prevent moisture penetration.

To ensure that the tile assembly is completely waterproof, it is important to install a waterproofing membrane before the tile is set. CUSTOM recommends installing a liquid membrane just below the tile bonding mortar as close to the tile as possible. This will minimize the amount of water in the assembly and immediately stop moisture penetration into the substrate and beyond.

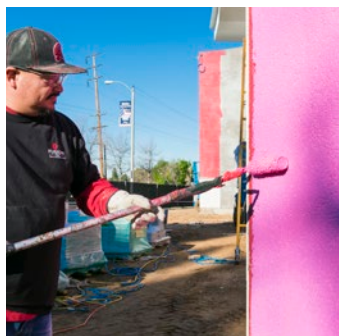
### Waterproofing Standard

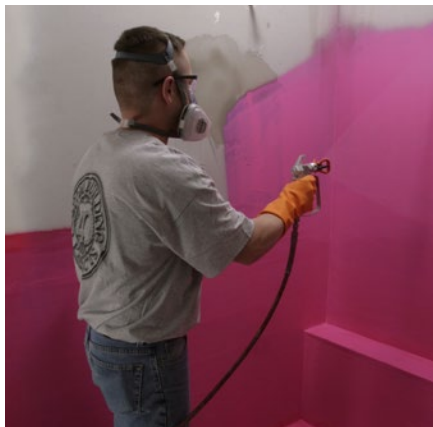
There are many choices for membranes that will waterproof the surface before the installation of ceramic or natural stone tile. Waterproof membranes that are used in the installation of tile per one of the many details in the TCNA Handbook must meet the requirements of ANSI A118.10. This standard not only assures that the membrane is waterproof, but that it also has the strength to hold up in the tile installation for the life of assembly. CUSTOM RedGard® Waterproofing and Crack Prevention Membrane is an elastomeric liquid membrane that provides continuous, monolithic waterproofing throughout the tile installation. This makes it especially appropriate for large installations and exteriors.

### Fast Dry Time

Depending on climatic conditions, the drying time of a liquid-applied waterproofing membrane can vary by product. RedGard is designed to promote faster drying. This formula is made with the latest polymer technology so that each coat dries more quickly than similar products.

RedGard can also be applied thinner and still meet the requirements of ANSI A118.10 for waterproofing membranes. For these installations, apply two coats at a coverage rate of 40 SF per half-gallon of product with each coat. For general waterproofing, apply two coats at the rate of 55 SF per half-gallon of product with each coat. Depending on environmental conditions, each layer can dry in as little as 45 minutes. Always allow the initial coat to dry fully and turn from pink to red before applying the second coat.





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### Airless Spraying Speeds Installation

Airless spraying will greatly increase the installation speed of liquid membranes on large projects. The membrane can typically be applied to the surface in less than a third of the time required to roll or brush on the liquid, with even more time saved over cutting a fabric sheet membrane and installing it with mortar. Appropriate airless spray equipment can be purchased, but for many contractors, it may be more convenient to rent the equipment when it is needed. The concept of airless sprayers has become commonplace; it is simply applying the materials without conventional air-powered spray systems. This eliminates the need for air compressors and bulky hoses on the jobsite.

Most airless spray units are self-contained models designed to accomplish the same thing. However, it is important to select a spray gun suitable for the installation. All guns contain filters and these will have to be cleaned occasionally to ensure proper flow of material to the tip. The most important part of the system is the spray tip.

Airless spray tips are a key component to the successful operation of an airless spray system. They define the spray pattern, control the flow of the coating being sprayed and ultimately tell the pump how hard it must work. It is important to remember that the orifice size, in conjunction with the fan width size, determines the spray characteristics of the tip.

The sprayer must produce between 1900-2300 psi, with a flow rate of 1.0-1.5 GPM and must have a tip orifice size of 0.025- 0.029. Apply a continuous film of liquid membrane with overlapping spray, following with a second coat once the first is dry, similar to roller application.

When beginning a project, choosing the right tip size and fan width will determine how profitable you will be through both coating consumption and production time. For additional information, see our Technical Bulletin *Spray Application of RedGard Membrane*.

### Crack Isolation

Liquid-applied membranes can actually fulfill multiple functions in the tile installation. After waterproofing, the most important use is protecting tile from cracks transmitted by movement in the substrate. The elastomeric quality of RedGard makes it an ideal choice as a crack isolation membrane to isolate the tile assembly from cracks in concrete subfloors. For general crack isolation, apply a single coat at a coverage rate of 100 SF per gallon. To meet the requirements of ANSI A118.12 Crack Isolation Membranes, apply two coats of RedGard at 25 SF per half-gallon of product.

CUSTOM® 9240 Waterproofing and Anti-Fracture Membrane is another example of a versatile liquid-applied membrane. This product is applied with a reinforcing fabric component to add higher tensile strength and tear resistance. After an initial liberal coat of the CUSTOM 9240 liquid is applied, the non-woven fabric is laid into the wet liquid. The unique characteristics of the fabric wick the liquid waterproofing into its structure. A second coat of the liquid is immediately applied over the fabric, fully saturating the fabric and locking it into the membrane. When this is dried, a third coat is applied to fill in any voids that may still be present. Coats of CUSTOM 9240 should measure 20-30 mils thick when wet.





**Both RedGard® and CUSTOM® 9240 are rated appropriate for heavy service conditions.**

### Protecting Tile Installations

Whether the membrane is applied for waterproofing, crack isolation or both functions, complete the tile installation system with a mortar designed for demanding conditions and include correctly placed movement joints. For interior applications, place movement joints every 20-25 feet and at all changes of plane. For any tile assembly that is exposed to direct sunlight or installed outdoors, install movement joints every 8-12 feet and at all changes of plane. This will help protect the tile against temperature fluctuations and freeze/thaw cycles. Movement joints should measure no less than 1/4" and should be filled with a permanently flexible, waterproof sealant like CUSTOM Commercial 100% Silicone Sealant. Consult the project architect or structural engineer for movement joint placement.

RedGard and CUSTOM 9240 membranes exceed the requirements of ANSI A118.10 for waterproofing tile installations and the requirements of ANSI A118.12 for preventing the migration of cracks from the substrate into the tile. These membranes will isolate non-structural cracks up to 1/8". Both RedGard and CUSTOM 9240 are rated appropriate for heavy service conditions.

When these liquid applied membranes are used with a system of qualifying mortars and grouts, the project may be eligible for CUSTOM's Lifetime System Installation Warranty. See [www.custombuildingproducts.com](http://www.custombuildingproducts.com) for details and limitations to the warranty.



### About the Author

Steve Taylor is Director of Architecture and Technical Marketing for Custom Building Products and has more than 30 years of experience developing products for the construction industry.

Steve is a member of the Tile Council of North America (TCNA) and Materials & Methods Standards Association (MMSA). In these roles, he helps to determine proper tile installation methods and standards. This includes simplifying the tile installation process to save tile professionals time and money.

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