As a roofing contractor, sooner or later, you will get a call that the roofing system you installed is leaking, but upon investigation, you will find the leakage is related to masonry. The masonry could be bricks, lime or Portland cement mortar joints, Portland cement or synthetic stucco, natural or manufactured stone, synthetic insulated stucco (Exterior Insulation and Finish Systems, EIFS),…

If the masonry has no large cracks or excessive deterioration but still allows water penetration, it is common for a roofing contractor to install a waterproof coating over the masonry or recommend a company specializing in masonry restoration. There are numerous clear or colored waterproof masonry coatings to choose from. Some materials penetrate the internal pores of masonry, while others seal surface pores and hairline cracks, acting as a surface barrier system.

Spraying a clear waterproof coating over a brick masonry chimney. Some types seal the surface, but most are designed to penetrate into the internal masonry pores of the masonry to repel moisture from penetrating.

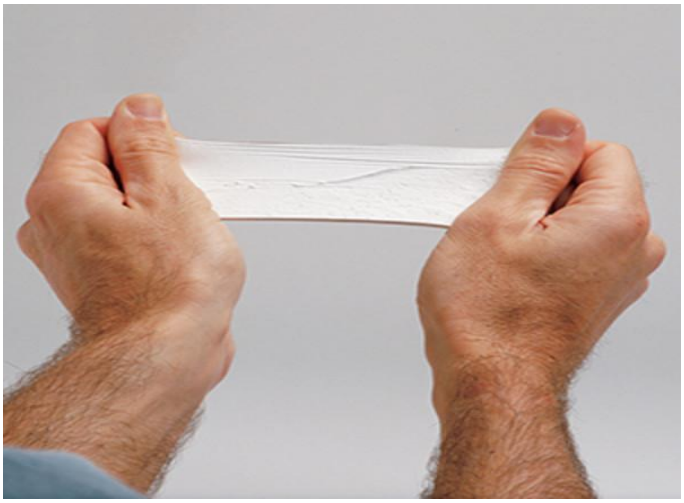
One of the most popular choices for a masonry barrier system are colored coatings marketed as either elastomeric or non-elastomeric. Properly installed, either material can create a waterproof masonry surface barrier while enhancing the masonry's appearance with numerous color options. They contain a mixture of materials that includes several different types of synthetic rubber-like molecules (elastomers), fillers, U.V. inhibitors, coloring agents, and the vehicle, e.g., water or solvent, that keeps the material in a liquid form, which allows it to be applied with a brush, roller, or spray application.

A colored elastomeric or non-elastomeric waterproof coating being roller applied over a masonry surface. These types of coatings waterproof a masonry wall's surface to act as a Barrier Coating.

But what are the differences between elastomeric and non-elastomeric coatings, and when should one product be chosen over the other? In many circumstances, it may not matter, but at other times, there can be a significant difference, and making the wrong choice could result in a long-term failure of the coating.

Elastomeric Coatings

If the coating mixture contains a high percentage of elastomers, and when the liquid vehicle evaporates after application to a masonry surface, it forms a thin rubber sheet, it is an Elastomeric Coating. These materials have crack-bridging properties that seal small, active, or inactive hairline cracks on masonry surfaces. Active movement cracks in masonry surfaces may occur due to normal building thermal movements, heavy winds striking the side of a building, or because the masonry substrate is designed to be lightweight and flexible, as in EIFS construction. The coatings have sufficient elasticity and elongation to seal cracks as movement occurs. Of course, we are only talking about hairline cracks, not larger cracks that must be filled with a backer rod and an elastomeric sealant before a coating is applied.



An elastomeric waterproof masonry coating. When it dries, it has the ability to stretch and bridge cracks

Elastomeric Coatings, with their high elastomer content and crack-bridging ability, are premium products and should be expected to cost more than Non-Elastomeric Coatings. Also, they have greater resistance to wind-driven rain penetration than a non-elastomeric coating. So, if a masonry building is exposed to high winds and rain, such as along a coastline, an elastomeric coating may be the best choice for exterior waterproofing.

However, one major question should be investigated before choosing an Elastomeric Coating over a Non-Elastomeric Coating. The question is, "What is its *Perm Rating"? A perm rating is a numerical value that indicates a product's ability to release moisture from beneath its surface. Under test conditions, Perm Ratings less than 10 retard moisture release to some extent; the smaller the numerical value, the less moisture is released from beneath its surface. Numerical values greater than 10 are considered permeable enough to release moisture from within the masonry. In non-technical terms, and in common use within the construction industry, you may see the word that a product or construction is "breathable" if it has a Perm Rating greater than 10 or "non-breathable" if it has a Perm Rating less than 10. However, inanimate constructions, objects, products, etc., don't breathe, so, to be technically correct, the term Permeability or a specified Perm Rating should be used when discussing how much moisture is released from beneath the surface of a coating.

Product Data Sheet Information

Freeze/thaw resistance, 200 cycles	No change	ASTM C 666 (Procedure B)
Salt spray resistance, 300 hours	No defect	ASTM B 117
Carbon Dioxide (CO_2), in (mm)	1/16 (1.6) Equivalent to 3/4" (19 mm) new concrete	Lab Method Diffusion
Permeance, perms (metric permeability)	12 (0.10698) 18 x 10^3 resistance	ASTM E 96 (water-vapor transmission)

Perm Rating is 12
ASTM E-96 Test A

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*Notes – With so many variables in masonry construction, moisture sources, products, temperatures, vapor drives, etc., the Permeability or the published numerical Perm Rating values of ASTM E-96, Test A or B are based on laboratory test conditions and may not reflect real-life moisture release values in field conditions.

Test A measures moisture drives through materials, and the results are used in the roofing industry for coatings, underlayments, etc. Test B results are used when materials are exposed to wetter environments, such as below-grade waterproofing products.

The results of each test are not interchangeable, and contact should be made with the manufacturer for the correct test method applicable to a coating or to any product's end use.

So, what do Perm Ratings have to do with masonry coatings? New or aged masonry surfaces will always contain varying amounts of moisture within their construction or absorb moisture for many reasons, including new-construction moisture in the masonry, poor wall flashings that allow rainwater into the masonry, an interior building vapor drive that pushes moisture outward through the masonry, etc. Whatever the cause, if the moisture cannot escape fast enough through an Elastomeric Coating, it will be trapped between the coating and the masonry substrate. The coating may then delaminate as a thin rubber sheet, creating unadhered pockets between the substrate and the underside of the coating. Generally, delaminated coating pockets start small but grow over time into noticeable bubbles.

Furthermore, you can often puncture unadhered bubbled areas of the coating and observe the release of liquid water, as moisture vapor trapped behind the coating condenses when the temperature is cold enough.

Water bubbles under an exterior elastomeric masonry coating.

Non-Elastomeric Coatings

Many types of Non-Elastomeric Coatings contain the same basic ingredients as Elastomeric Coatings; however, with more fillers and a much smaller ratio of elastomers, if included in the formula, they are less costly and don't dry into a rubber sheet. Thus, they lack the active crack-bridging ability and greater waterproofing resistance of Elastomeric Coatings.

However, Non-Elastomeric Coatings may have higher Perm Ratings and a greater ability to release moisture vapor from the underside of masonry through their surface than Elastomeric Coatings. But if excess moisture on the underside cannot escape through the coating quickly enough, the Non-Elastomeric Coating doesn't delaminate in large sheets or form water bubbles under its surface; it simply flakes off the wall in the area of excess substrate moisture. Also, affected areas of flaking can easily be recoated with another coating layer once the masonry surface has been scraped clean and the moisture has escaped from within the wall

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Flaking of a non-elastomeric masonry coating off of a masonry wall.

From a quality standpoint, Elastomeric Masonry Coatings are a higher-quality product and offer greater waterproofing and crack-bridging benefits than Non-Elastomeric Masonry Coatings. However, try explaining to a customer who purchased the high-quality, higher-cost Elastomeric Masonry Coating over a lower-cost Non-Elastomeric Masonry Coating that the high-quality Elastomeric Coating delaminating in large sheets from the wall or developing water-filled bubbles under the coating is not your fault.

But by first reviewing manufacturers' product data sheets before installing a coating, the Perm Rating of an Elastomeric or Non-Elastomeric Coating can be found and used to determine a coating's ability to release moisture from beneath. Moreover, whether the coating is Elastomeric or Non-Elastomeric, find a coating with a Perm Rating of 10 or higher.

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