



Technical Article - April 2010

Written by Scott Worthington

How dry is dry for sealer application?

When I first entered the world of tile and stone sealers, water based sealers were in their infancy with Aqua Mix at the forefront of their development and promotion. One of the purported advantages of the new water based sealers was that they could be applied to wet or damp surfaces in contrast to the solvent based competition. There is no doubt that the old solvent based sealer technology around at the time needed the surface to be tinder dry; but to say that the water based sealers could in contrast be applied to wet surfaces was stretching the truth. If you scrutinize the technical data sheets of contemporary major brands of both water and solvent based sealers you will find that almost all recommend the surface needs to be dry prior to sealing. So looking specifically at Aqua Mix, what do we mean by “dry” and how can we tell if a surface is “dry enough”

The most common method to determine if a surface is dry enough to seal is to see if it can absorb water. The logic here is that if a tile or stone is dry enough to absorb water it can absorb the sealer and will also have a dry enough environment for the sealer to cure. Another common method is simply checking to see if the surface “looks dry”. In many cases using either or both of these simple methods will work in determining whether a surface is dry enough to apply an Aqua Mix sealer. However there are some situations where they will not work or offer enough information for the client. For example a dense stone or porcelain tile will not wet out easily with water making it impossible to know if it is too wet or simply too dense to absorb liquids. Secondly, as Aqua Mix (and sealers in general) become more of a specified product architects and designers will require a quantifiable definition of “dry”. Lastly, by using the word “dry” on all data sheets it is reasonable to assume that the moisture content can be the same for all the sealers. However this is not entirely true because we do have several sealers that are more sensitive to moisture than others and the two common methods will not always be able to identify the right conditions for each.

To quantify the definition of “dry” we need to establish the maximum moisture content for surfaces prior to applying an Aqua Mix sealer. This is something that can be measured in the field using a moisture meter. However there are a number of variables that can affect the accuracy of the meters and is the reason why we must look at establishing a range of moisture content rather than a single digit maximum. For Aqua Mix Sealers Choice Gold, Penetrating Sealer and Grout Sealer the maximum range of moisture should be 15-20%. (Note Same Day Grout Sealer can be installed with higher moisture content. See product label and technical data sheet). For Aqua Mix Enrich ‘N’ Seal, Grout Colorant and Seal & Finish Low Sheen it should be 10-15%. To understand these numbers we need to look more closely at exactly how moisture meters work and the variables involved in calculating their readings.

Moisture Meters work by using the relationship between moisture content and electrical resistance. Electricity is easily conducted by water and hence through a moist or wet environment such as wet tile or stone. The meter outputs a small known voltage into the material and then measures the resistance. The meters generally use two pins set at a specific distance apart measuring the resistance between the pins. The majority of these meters are calibrated for timber where they measure the actual percentage moisture content. However when testing other types of building materials such as stone and tile the meters measure the WME (wood moisture equivalent) of the particular material. The WME is the moisture level that would be attained by a piece of wood in equilibrium with the actual material being tested. Therefore the WME is a relative measurement rather than an absolute. As the critical moisture levels for timber are known the WME measurements enable you to establish if the tested material is in a dry, borderline or damp condition and hence expresses the measurements as a range. There are a number of variables that can affect the measurement.

For example the surrounding environment and climate, where in a humid climate a stone or tile will tend to, equalize its respective moisture content slightly higher. The density and pore size as well as the ability of the material to absorb water will all create variables in measurement, as can the different types of meters themselves. It is for these reasons that we must also express our maximum moisture levels for sealers as a range rather than a specific moisture percentage.

Some of the meters have very little penetration with their signals resulting in the measurement being relevant to the surface only. However in many cases we need to explore deeper than this especially if the visible surface looks dry, an example is when we apply Aqua Mix Grout Colorant in a shower base. In many instances the grout looks dry and yet there can be a lot of water stored in the saturated mortar bed underneath when the waterproofing has been installed under the mortar bed. If we apply the Aqua Mix Grout Colorant over the visibly dry grout in such an example then we risk the colorant de-bonding due to the high moisture content of the mortar bed that is evaporating through the grout joint.

I personally use the GE Surveymaster because it has two modes. One is to measure surface moisture and the other is a search mode that works to depths of up to 20mm making it ideal for analysing situations like our Grout Colorant example. Using both modes and taking a number of readings from across the area will give you a relatively accurate analysis of the overall moisture content of the installation.

In conclusion I think that for many installations the two simple methods of water absorption and visual inspection will allow an accurate enough evaluation of whether the surface is dry enough to seal. However for the instances of specification, where an architect requires a quantifiable definition, and installations where neither of the conventional methods work, then we need to measure the moisture content of the surface with the proper instrumentation.



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