



Tech Tips by Thomas

Welcome back to another edition of my Technical Tips letter that I would like to share with our customers, installers, factory representatives, or anyone else that is looking for that special edge to make their rubber installation a success.

In this article I would like to address one of the largest problems resulting in resilient flooring failures. This topic, if you haven't already guessed, is moisture. This seems to be one of the most overlooked issues in the industry but, in retrospect, the most important. One of the factors challenging everyone involved in modern construction is time. Fast track construction is becoming the norm and concrete slabs are not being given sufficient time to dry naturally prior to the installation of floor coverings. This issue is being exacerbated by the use of sealers and curing compounds, which inhibit or prevent concrete from drying. These sealers will jeopardize the integrity of the bond between the adhesive and the substrate.

There are some situations where the fast track method must be utilized, but rest assured, there are also products on the market that can be used to make this type of installation a success. For information on these techniques, please contact ECORE's Technical Services Department and be sure to stay tuned for an exciting new product from ECORE designed just for this purpose.

Let's now take the time to discuss moisture and our recommendations on how to measure it, control it, and most of all, understand it.

Water is one of the components that when mixed together with cement, (Portland cement being the most common variety) and aggregates, creates what we refer to as concrete. Similar to our moisture cured urethane adhesive called EGRIP III, the water or moisture must be introduced to make it react and, in the end, will give it the strength required to perform well. Concrete gains its strength over time, making it of vital importance not to allow it to dry too quickly.

Temperature and moisture are both important factors in proper concrete drying. As the concrete dries, it will begin to shrink. To prevent this process from taking place unevenly and/or warping the finished slab, it's important to keep the surface of the concrete damp to slow the shrinkage uniformly. To simulate this process, try placing a common 1/4" sponge on the window sill that has been dipped in water. Once dry you will see how the edges tend to curl. This is similar to what happens to concrete when it dries too quickly.

Extremely low or high temperatures can also pose a problem. Extreme heat will cause rapid curing, while chilly temperatures can draw the process out and produce weaker concrete. To help slow this process many contractors introduce curing compounds and topical sealers to protect the concrete. Another method, though not as common, is wet curing the concrete with the use of material such as burlap that is consistently kept wet until the concrete can cure evenly.

Keep in mind that all topical sealers and curing compounds must be removed from the surface of the concrete before applying our adhesive. For more information on sealers and how to check for them, please reference my last article on substrate preparation.



The main reason I have covered concrete to this extent is because moisture is what gives it strength. Moisture of course is my topic of discussion in this article. Concrete needs both moisture and time to become strong. As mentioned earlier, time is something that is not always readily available in real world conditions.

Through this drying and curing cycle the concrete releases the type of moisture that is so dangerous to resilient flooring and adhesives. This moisture is released in the form of vapor emissions. These vapor emissions, when not controlled, can cause high pH levels on the surface of the concrete and can re-emulsify certain types of adhesive. The continued high emissions can also cause bond failure with ECORE's recommended urethane adhesive.

Again, moisture is one of the most overlooked issues in the industry but in retrospect, the most important. Now that I have identified moisture vapor emissions as a potential enemy I will cover our recommendations on how to check for it and also how to suppress it.

The ASTM F-710 standard for preparing concrete is what ECORE International, along with most other flooring manufacturers, mandate prior to the installation of resilient flooring material. This particular standard references 15 other standards within, but the two I would like to reference now are:

ASTM F-1869 Test Method for Measuring Moisture Vapor Emissions in Concrete
ASTM F-2170 Test Method for Determining Relative Humidity in Concrete

The ASTM F-1869 is a test method used to obtain a quantitative value indicating the rate of moisture vapor emission from a concrete floor, and whether or not that floor is acceptable to receive resilient floor covering. This method uses Anhydrous Calcium Chloride to measure the weight of the vapor emissions.

I will spare you the specifics of this test and cut to the chase on the maximum allowable level as authorized by ECORE International. The ASTM F-710 standard allows 3 lb/1000 ft² but ECORE will allow a value of up to 5.5 lb/1000 ft² using this test method. If you have emissions that exceed this amount then a recommended vapor retardant must be used to bring the emissions down to an acceptable level. Please contact the ECORE Technical Services Department for our recommended list of vapor retardants that will work with our EGRIP III adhesive.

The next method I would like to address is the ASTM F-2170. This moisture test is used to determine the Relative Humidity in concrete floors using the *in situ* probes. The RH method has been in existence for many years and finds its basis for testing in Europe. The ASTM F-2170 is increasing in popularity in the United States, forcing many flooring manufacturers to become more familiar with this standard. In the past most flooring manufactures allowed only the Calcium Chloride test method to determine suitability. The RH has become increasingly popular over the past few years and many requests for its acceptance have been received.

The ASTM F-2170 test method covers the quantitative determination of percent relative humidity in concrete slabs. This test method uses probes placed in the surface layer of the slab which will measure the amount of moisture by percentage. These probes once placed in the concrete can be monitored daily as the concrete cures. Once the slab is at an acceptable level the probes can be feathered over and the resilient flooring material can be installed.

Many of you have been asking ECORE for acceptance of the RH and ECORE has been listening! We have spent countless hours in research over the past two years evaluating this method. Now, with the help of our



adhesive manufacturer, ECORE is ready to take a stand and allow the ASTM F-2170 test method to determine suitability of moisture in the concrete slab.

The ASTM F-710 standard mandates the maximum amount of RH be at 75% or lower. ECORE will allow up to and including a measurement of 75% RH as acceptable for installation of our recycled rubber flooring. All other recommendations per our technical and installation manual should be followed to ensure a successful installation. Keep in mind that both of the referenced tests contained within this document have a set of steps that must be followed. Any test completed, as well as any flooring that is installed, should be carried out according to the written procedures created by the manufacturer or as mandated per the ASTM guidelines. It is quite important to remember that cutting corners on these test methods or on the flooring installation procedures could end with the same result... failure.

These articles are designed for each of you to learn and to help you through the technical questions when installing ECORE products. If you have a successful “real world” tip or story, we’d love to hear about it. Please email me at Thomas.Utley@ecoreintl.com. ECORE’s technical department is available from 8am-5pm, Eastern Standard Time, to answer questions on installation or substrate preparation. We welcome your questions, concerns, and comments and look forward to helping you achieve an installation that falls within the standards of excellence. Until next time, best of luck to you and your crew and thank you for choosing ECORE for your flooring needs.

Best Regards,

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