

Moisture and Your Floor by Chris O'Brien

Concrete is a very strong, durable material and the primary substrate on which flooring materials are applied. What is well-documented but seemingly not well-understood is the problems that moisture can cause on a concrete floor that has been coated with non-breathing flooring materials.

Concrete is essentially a hard sponge. Like a sponge, it readily absorbs water from any available source unless it can be sealed on all sides. Most new slab-on-grade (or ground) construction incorporates a vapor barrier on the positive side of the concrete slab (the bottom side of the concrete). This vapor barrier is designed to prevent moisture from entering the slab from the ground. If an effective vapor barrier is in place and the concrete is properly cured and dried it can be coated with impermeable flooring systems with a very high probability that there will not be a purely, moisture related failure. This is the near-perfect situation for applying impermeable flooring materials but what of the many other scenarios? In the following paragraphs we will explore some of the situations that have caused million dollar failures. The names have been changed to protect the not-so-innocent.

Scenario number 1-No Vapor Barrier

In this case the DIY flooring contractor has been told that there is not a vapor barrier. DIY does not want to make a mess by performing a core sample to verify if there is or is not a barrier but he does decide to perform ASTM F 2170 and F 1869. He follows the testing requirements to the T and creates a very nice report showing the owner that the average test for ASTM F 2170 showed 75% RH and ASTM F 1869 showed an average of 3 pounds per 1000 sq ft per 24 hours. DIY goes on to state that the flooring manufacturers published literature shows that the flooring material can be applied to concrete meeting these test results. The owner is thrilled and DIY proceeds to install the flooring material. After a wet fall the owner notices blisters forming on the 7 month old floor and contacts DIY. DIY finds blisters filled with an aqueous solution. He reruns ASTM F 2170 and finds that the concrete is now showing RH values of 100% on every test. He explains to the customer that the only fix for the blisters is to totally remove the flooring material. He denies any wrong doing stating that he ran the proper tests and complied with the manufacturer's technical data sheet. The customer is angry and threatens legal action against DIY and the material manufacturer. DIY loses the lawsuit and his reputation.



Scenario Number 2-He told me there was a Vapor Barrier!

A general contractor hired XYZ flooring company to install a 1/8 inch double broadcast epoxy flooring system to a converted auto repair facility. The GC tells XYZ that there is an existing vapor barrier. XYZ has done a number of jobs for this GC so he takes the GC at his word and does not take a core sample but does perform ASTM F 2170. The tests show an average RH value of 78% and this is well within the range required by the material manufacturer. The flooring system is installed and looks beautiful! 13 months after the installation the owner contacts the GC who contacts XYZ to say that there are slits with black goo coming out of them. XYZ determines that moisture is coming up through the slab and performs a core. XYZ finds that there is no vapor barrier in place; that the slab is contaminated with oil and goes to battle with the GC. The battle results in a lawsuit and the end of what was previously a great relationship. All parties lose a great deal of time and money.

Scenario Number 3-There is a Vapor Barrier

COOL MAN VCT company reviews the project specifications and finds that there was a required vapor barrier to be installed on the project he is about to start work on. COOL MAN meets with the project superintendent who tells COOL MAN that he was onsite when the concrete was poured and that the vapor barrier is definitely there. COOL MAN is glad to hear that and begins to prepare the concrete for VCT. Before long the VCT installation is complete and COOL MAN is tipping back a few brews with the gang. The building is complete and occupied 4 months from the date COOL MAN completed his work when he gets a call from the superintendent stating that the VCT is coming up all over the facility. COOL MAN visits the site and sees that what he has been told is true. He has many discussions with the superintendent and learns that the slab was poured long before the roof was on the building. He did not run any moisture testing because he wrongly believed that the existence of a vapor barrier meant that he did not have to worry about trapped moisture. COOL MAN owned up to his mistake but could not cover the losses and went out of business 6 months later.



Water wicks up concrete just like a sponge. If this Moisture is trapped above an effective vapor barrier it can cause moisture related failures once locked in.

If you have been in the flooring business long enough you have heard or even experienced situations like those described above. The fact is that there is great risk when applying impermeable floor coverings to slab-on-grade concrete construction. Performing core samples is critical. Testing per ASTM F2170 and to a lesser extent ASTM F1869 is critical. But even when the flooring contractor has done these things, moisture related failures are still a possibility. The best way to protect your company, your customers and your relationships is to offer a moisture suppression system! These systems are designed to stop moisture migration from eroding the adhesive bond line of the flooring system. It is critical that this offer be made in writing, stating that you cannot be responsible for moisture related failures and that if they choose not to select the option of installing a moisture suppression system they do so understanding that they have no warranty for moisture related flooring failures. When presented clearly and professionally there are few customers who will not see the wisdom in purchasing this much-needed protection. Contact your Rock Tred representative for more information on how you can protect your company, your customers, your relationships and your reputation!!!