

## Moisture Management

### The Real Story

Impervious to moisture, moisture barrier, moisture resistant, moisture impermeable, moisture guard, moisture seal. In today's commercial flooring market you will be faced with various terms about moisture. What do they all mean and how can you determine if the products provide the performance benefits you need?

Let's talk about three issues: 1) what the terminology means, 2) what tests measure moisture penetration for the carpet itself, and 3) what is required during installation and after the building is occupied to address moisture.

#### **Terminology**

**Impervious:** moisture will not damage or harm the carpet

**Barrier:** something that impedes or separates; a substance (man- made or otherwise) that will not allow moisture to penetrate

**Resistant:** something that prevents or resists a particular action

**Impermeable:** not permitting passage of fluids through its surface

**Guard:** a protective or safety device

**Seal:** to secure against access or leakage

Describing moisture management with any terms basically means hat something prevents moisture from seeping through from the top of the product to the back of the product. And that's important in end uses like healthcare, education and government. Carpet in these end uses face spills and spots, frequent wet extraction and possibly even contaminants, such as in healthcare. Selecting the appropriate high performance backing is one of the best ways you can insure a successful installation in situations where moisture is a concern.

#### **Tests that Measure Moisture**

Although each manufacturer may define the terms differently and warrant a certain number of years of floor performance, it's important to know how the products are tested and which ones are certified. There are three main tests that measure moisture but only one is standardized test certified by the American Society of Testing and Materials (ASTM) or the AATCC (American Association of Textile Chemists and Colorists). Over the years individual manufacturers however, several of those tests have yet to be certified.

**Hydrostatic Pressure Test** (AATCC TM 127 — a certified test) determines whether moisture coming through the backing of carpet from the concrete or sub-floor can cause problems with carpet.

Test Protocol: Using a test specimen of carpet on a platform, water is pressed through the sample (if possible). The results are expressed in inches or centimeters based on the height of the water column that passes through the sample.

**British Spill Test** is a test with protocol but not a standardized test. It was developed several years ago by the West End Medical Association in Great Britain and has been since adopted by several U.S. manufacturers.

Test Protocol: A swatch of carpet is placed face yarn upward. From a height of 1 meter, 100 milliliters of a blue dye solution is poured on the carpet. A blotting cloth under the carpet measures how much of the dye passes through the face and the backing of the carpet in a 24-hour time period. The piece of carpet is rated between 1 and 4 (1—no transfer of dye through the sample; 2—minimum discoloration, but hardly visible; 3—very visible but light in color; or 4—very visible and deep in color).

**Moisture Penetration under Dynamic Crush Test** (or sometimes listed as 10,000 impact test) is a test with protocol but also not a standardized test.

Test Protocol: A swatch of carpet is placed under a dynamic crush apparatus that strikes the carpet at 10.0 pounds per square inch. A small amount of red dye solution is poured onto the surface with a filter paper under the back of the carpet. At the conclusion of the required cycles (usually 10,000), the filter paper is graded in this manner: 1 — no transfer of dye through the sample; 2 — minimum discoloration, but hardly visible; 3 — very visible but light in color; or 4 — very visible and deep in color.

### ***Moisture Control Before Installation***

The moisture content of the concrete slab should be no higher than a rate of 5 lbs. per 1000 sq. ft. for 24 hrs. before carpet with non-porous backing is installed. Otherwise, the adhesive will not tack and the carpet installation will have problems with bonding strength and moisture migration, and also will not be warranted.

The minimum requirement for new concrete to cure is 90 to 120 days and is measured using an Anhydrous Calcium Chloride Test for a 72-hour period. This is the responsibility of the General Contractor. In addition, there are specific adhesives and seam sealers that are required for certain types of backing systems. Call Shaw Inforum at 1.877.502.7429 for technical assistance with these issues.

### ***Moisture Management in Occupied Buildings***

Once the carpet has been installed, the issue is to then make sure that liquid spills do not soak into the face fiber and through the backing into the sub-floor. This is important because spills and stains can wick back up over time and require repeated

cleaning. If the liquid spills contain contaminants, such as in a healthcare setting, it would be important to clean those up immediately and possibly have the benefits of other treatments, like anti-microbial protection.

Additionally, at seam areas it is important that the seams have been sealed to prevent moisture from reaching the back of the carpet and sub-floor through the seam. Mechanical seams, those sealed with seam sealer certified by the CRI Green Label, are preferred over chemically welded seams because of adverse effect that the fumes and VOC's of harsh solvents used in chemical welding have on the indoor air.

### **Select Shaw Contract Group**

Shaw Contract Group is your technical resource by providing you with today's commercial flooring information. Moisture management is a high priority for those involved in the institutional segment. That's why in this issue we provided you with moisture terminology, testing methods, and how to manage moisture after the installation. We hope that this information will keep you informed and help you manage your moisture issues in the future.