

## **SUB: Water Penetration vs. Water Vapor Transmission**

### **WATER:**

Water can be encountered in concrete, concrete masonry, brick and natural stone structures in:

*liquid* form

or

*vapor* (gas) form.

### **WATER PENETRATION:**

Water in *liquid* form is prevented from passing through concrete, concrete masonry, brick and natural stone structures by waterproofing materials.

Generally speaking, waterproofing is required where hydrostatic pressure is present or structures are exposed to the elements above grade.

### **WATER VAPOR EMISSION:**

Water in *vapor* (gas) form is prevented from passing through concrete by vapor barrier materials.

In many cases where there is no hydrostatic pressure under a slab on grade, moisture from deeper in the substrate rises as vapor through the process of osmosis. Given sufficient pressure, this vapor penetrates through the concrete and can condense into water when reaching air-conditioned space where it can delaminate finished floor surfaces.

Generally speaking, vapor barriers are required under concrete slabs on or below grade which are covered with a non-breathable floor covering (i.e. vinyl tiles, epoxy coating, adhesive/glue for carpeting, etc.) in occupied or working areas. They are usually not required under concrete slabs on or below grade, which are exposed to an open space and not covered with a non-breathable floor covering such as in parking garages, etc.

### **ANHYDROUS CALCIUM CHLORIDE TEST:**

Before assuming that there is a water problem, we strongly recommend carrying out “anhydrous calcium chloride tests” (ASTM F-1869-98) on existing slabs on or below grade where finished floor surfaces have delaminated, to determine the amount of vapor pressure in lbs per 24 hours / 1000 SF. This test method was developed by the Rubber Manufacturer’s Association in the 1950’s, and has been widely accepted by the flooring industry as a quantitative measure of slab moisture.

The majority of floor covering material manufacturers and specification institutes recognize this test and deem that it is safe to install most flooring materials if the slab emission is 3.0 lbs or less. However, we recommend to consult floor covering materials manufacturer for permissible limits. Test kits can be obtained at Taylor Tools, Denver, CO. (303)371-7667 or <http://www.taylortools.com/index.html>, or equal.

### **AQUAFIN & VANDEX:**

#### **Waterproofing:**

AQUAFIN-2K/M & VANDEX SUPER, SUPER WHITE and UNI MORTAR cementitious waterproofing materials prevent water in liquid form from passing through above referenced substrates, but are not vapor barriers, allowing the substrate to breathe.

**Vapor barrier:**

AQUAFIN VAPORTIGHT COAT-SG2 extremely high density epoxy based product prevents water in gas and liquid form from passing through above referenced substrates. It **is** a vapor barrier.

AQUAFIN VAPORTIGHT COAT-SG2 reduces vapor pressure such as 8.5 lbs or greater per 24 hrs / 1,000 SF to below the standard limit of 3.0 lbs per 24 hrs / 1,000 SF.

Refer to the product data sheets for further details or call our technical department at (410)964-3165 or toll free 1-866-AQUAFIN (1-866-278-2346).

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