



**Floor Covering Industry
White Paper Position Statement on
Moisture Emission Testing**

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**Moisture Emission Testing
Responsibility and Qualifications For Testing**

Bell Construction Sciences Group Addendum:

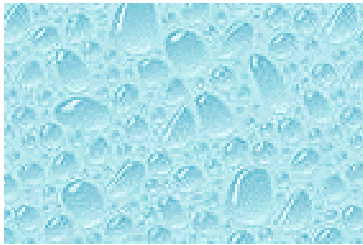
This white paper is limited to Moisture Vapor Emission Testing as it was approved by the original endorsing industry associations and organizations in 2001 which was before the ASTM F2170 Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes was established in 2002 and the ASTM F2420 Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floor Slabs Using Relative Humidity Probe Measurement and Insulated Hood was established in 2005.

For more information about concrete slab moisture and alkalinity as it relates to floor coverings and coatings, visit www.flooringtests.com or contact:

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FLOOR COVERING INDUSTRY WHITE PAPER POSITION STATEMENT ON MOISTURE EMISSION TESTING

This white paper is designed to provide general contractors, owners and architects with reliable assessments of substrate conditions. In light of the many changes in floor coverings and substrates in recent years, we recognize that flooring contractors or installers may not be the ones most qualified to determine the suitability of substrates for floor covering materials.

Because there is broad accepted precedent in the construction industry for independent testing, it is recommended using qualified independent testing agencies to test for vapor emissions and alkalinity.

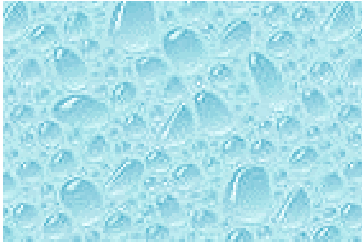
In the increasingly complex world of construction – with increasing environmental requirements, technological changes in formulations and advances in measuring and testing concrete – to provide general contractors, owners and architects with optimum substrate conditions/solutions requires greater knowledge and more stringent attention than ever before. Too, new innovative products, installation methods/materials and environmental regulations have created a more complex environment in which floor covering products are installed.

By and large flooring contractors have neither the expertise to determine such critical points as the chemical composition of concrete nor the ability to test for compatibility with floor covering products. Concrete is a specialized trade that requires a very special expertise and in-depth knowledge in order to determine its suitability for floor covering installation.

Testing by an independent specialist to determine the suitability for installation under current complex conditions is a prudent and necessary safeguard for general contractors, owners and architects.

Approved
25 OCTOBER 2001

Judy Marsh
Assistant to the CEO
Assistant Secretary to the Board of Directors
WORLD FLOOR COVERING ASSOCIATION



RESPONSIBILITY AND QUALIFICATIONS FOR TESTING

FOREWORD: WITH THE ADVENT OF RAPID CHANGES WITHIN THE CONSTRUCTION INDUSTRY, INCLUDING BUT NOT LIMITED TO:

1. The loss of asbestos as an ingredient in resilient flooring
2. The loss of solvents from adhesive and coating systems
3. Increased use of water to allow easier placement of concrete
4. Absorptive aggregate in lightweight concrete
5. Fast track construction schedules

Many unforeseen problems have surfaced that have lead to unnecessary disputes, increasing confusion and lawsuits. As an effort to reverse this trend, a more science-based approach was needed to clearly identify contributory problems associated with moisture-related flooring failures, with reasonable expectations for those responsible for moisture testing.

To identify those capable of moisture testing and the ancillary tests that may be appropriate for identification and diagnoses, the following contributing factors are to be considered within the evaluation and selection process of an appropriate inspector and/or testing agency.

FACTORS TO CONSIDER

Site Conditions:

It is important that the selected testing personnel at least be familiar with site conditions with a given building project.

Soil Conditions:

- Wet
- Dry
- Expansive
- Non-expansive
- Free Draining
- Non free draining
- Water table
 - Water table location (seasonality to its level and/or volume)
- Inert
- Contaminated

Underslab Conditions:

- Vapor retarder – yes or no. Also note: type, location, properly installed, properly protected during placement and subsequent construction.
- Sub-base
 - Cut
 - Fill
- Blotter layer – note if included or omitted. If included note if it is a compactable or non-compactable type.
- Screeding – Note whether screed stakes or form screeding was used.

Concrete:

- Water to cement ratio of the mix design
- Type and grade of aggregate
- Time of transit from plant to site. Also note any delays, for any reason.
- Rotations used in each load.
- Temperature of the concrete mix at time of delivery.
- Slump at time of placement.
- How much, if any, add water was used for delivery and placement of the concrete mixture?
- Water added to the aggregate (lightweight concrete). Was it factored into the water to cement calculations?
- Curing method: Curing agent, impermeable sheet, curing compounds, none used. How long was the concrete cured?
- Concrete finishing: hard troweled, power troweled, etc.
- Admixtures: If used, what type (i.e. CaCl, fly ash, plasticizer, water reducers, etc.)?

Building Envelope Condition/Environment:

- Temperature of room
- Relative humidity of room
- Concrete surface temperature
- Air movement

S U M M A R Y

WITH ALL THE ABOVE REFERENCED FACTORS LISTED, IT IS UNREASONABLE TO EXPECT A GENERAL CONTRACTOR, CONCRETE CONTRACTOR OR A FLOORING INSTALLER TO HAVE SUFFICIENT EXPERTISE TO ANTICIPATE AND ASK THE PROPER QUESTIONS FOR EVALUATION OF POTENTIAL CONCRETE/FLOORING PROBLEMS. ANOTHER COMPLICATING FACTOR IS THAT EACH HAS A VESTED INTEREST ON THE TESTING AND/OR PERFORMANCE OUTCOME OF THE INSTALLATION.

FLOORING CONTRACTORS SHOULD BE MADE AWARE OF TEST RESULTS, AS ALL FLOORING MANUFACTURERS HAVE PLACED UPWARD TOLERABLE LIMITS OF MOISTURE VAPOR EMISSION FOR THE INSTALLATION OF THEIR PRODUCTS, MOST HAVE ALSO RECOGNIZED THAT ADHESIVES WILL CURE WITHIN A MODERATE RANGE OF PH. HOWEVER, FLOORING CONTRACTORS' EXPERTISE SHOULD, BY REQUIREMENT, BE LIMITED TO FLOORING MATERIALS AND THEIR INSTALLATION. CHANGES IN CONSTRUCTION MATERIALS AND PRACTICES SHOULD NOT LEAD TO A MANDATORY IN DEPTH EXPERTISE OF ALL THE DISCIPLINES MENTIONED ABOVE.

IT IS THEREFORE OUR RECOMMENDATION THAT CONCRETE MOISTURE VAPOR EMISSION TESTING BE PERFORMED BY QUALIFIED INDEPENDENT AGENCIES.

DATED: 10/25/2001

**FLOOR COVERING INDUSTRY WHITE PAPER POSITION STATEMENT ON MOISTURE
EMISSION TESTING
RESPONSIBILITY AND QUALIFICATIONS FOR TESTING**

Endorsing Industry Associations and Organizations

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