



## Beaulieu Residential

Tek Newsletter

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### **Slab Testing Procedures and Requirements for Proper Direct Glue-Down Carpet Installations**

Strict compliance to the Carpet and Rug Institute's Standards for Installation, CRI 104 (Commercial Carpet) and CRI 105 (Residential Carpet) is required by carpet manufacturers in order to keep warranty rights intact and necessary in order to provide for proper carpet installations. These tested, industry approved and published standards cover all aspects of carpet installation including, but not limited to planning and measuring, required tools and materials, and installation procedures. This document is limited to only the tests procedures necessary for direct glue-down carpet installations over slab. All other installation requirements can be found in the BeauTech Installation Training Manual and the aforementioned CRI Standard.

Because of the destructive nature of moisture emission and alkalinity in slab, certain industry required tests are necessary prior to the floor adhesive application. This is particularly true when installing carpet over on-grade and below-grade slab but must also be taken into account when installing carpet direct glue-down above grade slab (e.g. balconies). The presence of excessive moisture in slab often becomes alkaline in nature as it migrates through the slab. By itself, moisture will significantly slow down the tack time of the adhesive. If high alkalinity is present it will burn-up the adhesive. In fact, the presence of alkalinity is much more destructive to adhesives than moisture.

Currently, the only industry approved test method used to determine and measure the presence of moisture in a slab is the anhydrous calcium chloride test. This test method requires the use of a gram scale used to measure the change in the weight of moisture-absorbing anhydrous calcium chloride, which determines the amount of moisture vapor emitted from a 1,000 square foot area of slab over a 24-hour period. The test procedures required to properly perform this test are outlined in ASTM F 1869-98 (Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Calcium Chloride). This test methodology, which was scientifically developed for accuracy, requires a minimum of three tests for the first 1,000 square feet and one test for each additional 1,000 sq. feet.

- On-site temperature and humidity must be controlled at least 48 hours prior to testing at a setting between 65-85 degrees F. and 40-60% relative humidity (RH).
- The slab must be clean and free of any debris (do not use any chemicals for cleaning)
- Prepare three test sites for the first 1,000 sq. ft. Add one test site for each additional 1,000 sq. ft.
- Set the tape sealed plastic dish on the gram scale and record its weight, date and time of the test.
- Carefully remove the tape along the edge of the dish, invert the lid under the dish and then stick the tape along the side of the dish to keep it safe. Be very careful not to spill any of the calcium chloride.
- Place the dish on the slab away from cracks and joints. Be sure the calcium chloride inside is level. Remove the white paper on the dome and place the dome over the dish.
- Firmly press the gasket under the flanges of the dome to seat the outer flanges of the dome to the slab and the gasket inside the edge of the dome. Place your hand over the dome and apply pressure, making sure there are no leaks in the gasket.

- Place the safety cone over the dome and allow the test kit to remain undisturbed for 60-72 hr.
- Cut open the dome and carefully remove the dish. Replace the lid and re-seal it with the blue tape.
- Weigh the dish again on the same gram scale, recording the ending weight, the date and time on the dish lid. Follow the test kit instructions to calculate the moisture emission rate to determine the weight of the water that is emitted. The weight measured represents the water vapor emitted from a slab surface 1,000 sq. feet over a 24 hr. period (1000 sq. ft./24 hr.).

All concrete slabs emit some amount of moisture. Most carpet manufacturers agree that it is safe to install carpet over a slab if the moisture emission rate does not exceed 3.0 lb./1000 sq./24 hr. Emission rates higher than this require corrective measures such as sealers and barriers to reduce the amount of moisture vapor emanating from a slab.

Testing for slab alkalinity is less complicated but just as essential to ensure for a successful carpet installation. This test requires the use of litmus pH paper strips following the test procedures outlined in ASTM F 710 (Practice for preparing Concrete Floors and other Monolithic Floors to Receive Resilient Flooring).

- Place several drops of distilled or de-ionized water on the slab area being tested until it forms a water puddle approximately 1 inch in diameter.
- Allow the water to sit on the slab for 60 seconds.
- Dip a strip of pH paper into the water and leave it in place for approximately 10 seconds.
- Remove the pH paper and promptly compare the color change of the pH paper to the color chart to determine the pH level of the slab.

A pH range of 5-9 is considered to be safe for direct glue-down carpet installations. A pH above 9 requires corrective measures. In this event it is recommended to contact the adhesive manufacturer to obtain their recommendations to reduce the existing slab alkalinity. This typically includes a damp mop of the floor using a 5-10% muriatic acid solution followed by two clear water rinses.

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