

## DATE

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Many exciting, new flooring innovations are debuting in the marketplace for resilient flooring. One of the new technologies is adhesives for resilient flooring that can tolerate a high level of moisture in the concrete substrate. The new high moisture adhesives can help reduce down time related to waiting for concrete to dry and often have other beneficial performance characteristics.

Some confusion exists around exactly what these high moisture adhesives can and cannot do. Check out our frequently asked questions below for some insight into this new technology!

## What is a high moisture adhesive?

A high moisture adhesive is an adhesive that can tolerate a high level of moisture in the concrete. While there is not an industry standard for what “high moisture” means, these adhesives can typically tolerate relative humidity of 90% or higher. The concrete may have high levels of moisture because the slab is relatively new and the moisture of convenience, the excess water in the system not used in the hydration of cement, is still in the slab, or the slab may be older and lacking a vapor retarder beneath the slab. These adhesives are designed to have high resistance to the moisture in new concrete with declining moisture levels with an intact moisture vapor retarder.

The adhesive manufacturer will specify limits of relative humidity (RH) when tested in accordance with ASTM F2170, commonly referred to as the in-situ probe test. Occasionally, limits of moisture will be specified in terms of pounds per 24 hours per 1,000 square feet when tested in accordance with ASTM F1869, the calcium chloride test, but the industry is trending towards using ASTM F2170 as the preferred method to test moisture content in slabs.



**Figure 1.** Probe being used to check relative humidity within slab according to ASTM F2170

The role of any adhesive is to adhere the flooring to the substrate. These high moisture adhesives for resilient flooring do not block the moisture vapor coming out of the slab, nor will they hold back or tolerate liquid water in the substrate. Refer to the adhesive's product data sheet for the uses and tolerances of that specific adhesive, and always check the moisture limitations of the flooring itself set out by the flooring manufacturer.

## What are the benefits of using a high moisture adhesive?

A high moisture adhesive can tolerate elevated levels of moisture vapor leaving the concrete slab, so significantly less time is required between the slab being poured and the flooring being applied than when using a traditional adhesive. This allows for faster turnaround on tight construction schedules. Previously, moisture mitigation had to be applied in order for the flooring to be put down in time. High moisture adhesives may allow installers to avoid having to apply a moisture mitigation system which saves time, labor, and material costs.



**Figure 2.** TrowelFast™ being used to install luxury vinyl plank

Additionally, these high moisture adhesives often incorporate newer technology. With the new technology comes other benefits like resistance to high pH, longer open times, and reduced wait time before foot traffic. Each adhesive is different, so it is important to check the product data sheet to confirm exactly what value that adhesive brings.

## When would a high moisture adhesive be used?

High moisture adhesives were designed to assist in fast-tracked construction schedules where there is minimal time to allow the moisture levels in the concrete to decrease. Traditional adhesives require additional time for the moisture levels in concrete to reach the acceptable levels. High moisture adhesives perform well when the vapor emission levels are elevated in new concrete with an intact vapor retarder in place beneath the slab.

Even when the moisture in the slab is not elevated, these adhesives are great options. Having a high moisture adhesive and knowing that it works with the flooring and substrates commonly used eliminates the needs for having multiple adhesives with different moisture limitations.

## Why might moisture mitigation still be necessary? What doesn't a high moisture adhesive do?

A high moisture adhesive can tolerate moisture vapor, but the adhesive itself does not block the vapor. Commonly, the resilient flooring manufacturer will set limits for their flooring. Always defer to the flooring manufacturer for their limitations regarding moisture tolerances. For example, Flexera™ has a moisture limitation of 99% RH, but a major flooring manufacturer limits the relative humidity for their sheet vinyl to 90% RH. Here, the limitation of 90% RH must be honored, and the slab should be allowed to reach 90% RH or a moisture mitigation system should be installed.



Figure 3. LiquiDam™ being installed

With these new high moisture adhesives, there is typically a stipulation that the elevated moisture limitation is for new slabs with declining value with an intact moisture vapor retarder. Per ASTM F710, a moisture vapor retarder must be present to install resilient flooring on slabs that are on or below-grade, and the moisture vapor retarder must conform to ASTM E1745. With these older slabs, there is less of a chance that a moisture vapor retarder conforming to ASTM E1745 was installed. An older slab with elevated moisture levels indicates an issue, and adhesives should not be relied on to remedy the problem. Slabs that are older that either lack a moisture retarder beneath the slab or have one that has been compromised should receive moisture mitigation prior to the installation of resilient flooring.

### How are the high moisture adhesives for resilient flooring different than those used for wood flooring?

Be careful not to confuse high moisture resilient adhesives with adhesives used for glue-down wood applications. There are urethane and modified silyl adhesives that are used for wood flooring installations which also act as a moisture vapor barrier. These wood flooring adhesives have different chemistries than the resilient adhesives. The urethanes and modified silyl technologies used with wood flooring allow adhesion to the wood flooring and also block the moisture vapor coming up through the slab. Resilient flooring adhesives are acrylic based products, and do not have the same properties as wood flooring adhesives.

### Other than moisture limitations, what else needs to be considered when choosing an adhesive?

Moisture limitations should not be the only factor determining what adhesive is used on a job. Other variables need to be considered such as ensuring that the adhesive is compatible with the selected flooring type and backing. Some great questions to start with are:

- Is the flooring carpet or resilient?
  - The backings on carpet and resilient flooring are often different and require the use of different adhesives due to their different backings.
- What kind of resilient flooring? Luxury vinyl planks or tiles? Sheet vinyl?
  - While luxury vinyl tile and planks are often vinyl-backed, sheet vinyl can have other backings, like fiberglass, which can dictate the adhesive needed.
- What is the backing on the flooring itself?
  - The backing on the resilient flooring is ultimately what decides which adhesive can be used.

All of these questions can help in selecting the correct adhesive for the job.

Additionally, the substrate can dictate what adhesive is the best option. For a concrete slab with high moisture, a high moisture adhesive should be used. If the substrate is plywood, a high moisture or a traditional adhesive could be used.

Depending on the timeline and the jobsite conditions, other attributes of an adhesive may save time and headaches. On jobsites with many trades around, an adhesive that can handle foot traffic relatively soon after installation can help reduce the chance of the traffic from another trade disturbing the new flooring. When schedules are subject to change without notice, an adhesive with long open time can ensure that the adhesive will still be tacky after that emergency project meeting or team lunch.



Figure 4. Luxury vinyl plank installation in a break room needed to be able to accommodate foot traffic by lunch time. Flexera allowed this quick turnaround.

With all this new technology, flooring adhesives are designed to make installations faster, easier and allow turnaround sooner. Always refer to the adhesive data sheet to determine product attributes.

### The bottom line

When construction schedules are tight, and the slab to receive resilient flooring has just been poured, look to a high moisture adhesive to be able to tolerate the elevated moisture levels within the slab. While these products do not block the moisture from coming through, they will perform with a variety of other benefits under tough conditions.

Please be sure to click [here](#) for the full line up of TEC® adhesives.

### Questions?

Call the Technical Support Hotline at 1-800-832-9023.

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