



# Moisture Mitigation Summary

## Problem Definition

Controlling moisture is important to protect occupants from adverse health effects and to protect the building, its mechanical systems and its contents from physical or chemical damage.<sup>1</sup> Concrete slabs testing at high moisture levels are an unacceptable substrate for most flooring products and slab remediation is costly in materials, labor and time.

- High moisture in a concrete slab is caused by:
  - Excess water added to the concrete mix to achieve workability and promote strength during curing that does not evaporate from the system.
  - Water from the ground below the concrete slab migrating toward the dryer air.
- The most accurate, reliable, and consistent method of testing for moisture vapor is the in-situ Relative Humidity (RH) test.
  - The target is 75%-80% RH after 72 hours; over 90% RH is considered excessive.

## Impact

Moisture can cause health problems and building damage and can be extremely expensive to correct, with building owners and tenants bearing a significant proportion of these costs.

- Trapped moisture is never a good thing in a building environment, often causing “sick building syndrome” and/or mold growth and other microbes which may affect air quality and the health and wellbeing of building occupants.
  - Air quality issues may have direct financial impact on employers as a result of employee absenteeism and reduced productivity.

- Lawrence Berkeley National Laboratory concluded that building dampness and mold raise the risk of a variety of respiratory and asthma-related health effects by 30 to 50 percent.<sup>2</sup>
- Berkeley Lab estimates that the annual asthma-related medical costs attributable to exposures to dampness and mold total approximately \$3.5 billion in the U.S.<sup>3</sup>
- Repair and replacement costs associated with damaged furniture, products and supplies.
- Estimates indicate that up to \$1 billion is spent annually in the United States correcting moisture-related issues with concrete slabs.<sup>4</sup>
- Loss of use of building spaces after damage and during repairs.
- Increased insurance and litigation costs related to moisture damage claims.<sup>1</sup>
- Non-compliance with testing requirements may void manufacturer’s warranty.
- When exposed to excessive moisture, flooring may exhibit blistering or staining of the flooring or flooring coatings, breakdown and release of adhesives, and unsightly swelling of flooring materials which may also, in turn, create a trip hazard.<sup>5,6</sup>

## Solution

Although some moisture issues may be prevented through proper planning and construction techniques, moisture may still be an issue due to use of lightweight concrete, climate, or fast-track building schedules.

- Typical moisture remediation involves a multi-step process that effectively blocks the moisture from penetrating the slab’s surface. These systems,



while effective, are also the costliest and most time consuming of solutions.

- Using a flooring system that can tolerate high RH. These may include products designed for high-moisture and/or special adhesives.

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## Mohawk Differentiation

Mohawk is uniquely qualified to help customers address moisture issues through our knowledge, experience, and industry-leading portfolio of products and solutions.

- Through training and field experience, Mohawk can help customers identify moisture issues and offer a variety of solutions to mitigate the risk of damage, replacement, and an unhealthy environment.
- Mohawk has a wide variety of solutions available to solve moisture issues – from high-moisture flooring products to specialty adhesive systems – and can review and recommend the best options for our customers' projects without compromising other customer priorities.

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## Mohawk Solutions

### Resilient Solutions

- Mohawk glue-down LVT and sheet vinyl installed with Mohawk M95.0 premium resilient flooring adhesive allows test results up to 95% RH and pH between 8.0 to 10.0.
- Mohawk's MS160 aerosol resilient adhesive for LVT to 93% RH and pH to 11.0.
- Hard surface floating floors eliminate the need for full spread adhesives and create successful installations to 95% RH. Fast installation and immediate occupancy.
  - **Active Tec** – Peel and stick LVT with floating subfloor correcting underlay.
  - **Clic Step**- Floating LVT with Uniclic™ Locking System.
  - **Etchworks** – Floating LVT with Uniclic™ Locking System.

- **Hot & Heavy** – Loose lay with perimeter glue.
- **Mass Appeal** – Loose lay with perimeter glue.
- **VCT**, sheet vinyl, rubber tile and sheet installed using a pre-applied polyacrylic adhesive system designed to maintain a strong bond to 99% RH and high pH levels, are quickly installed, and allow immediate occupancy on the floor.

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## Carpet Solutions

- 99% RH Solution – Carpet tiles backed with EcoFlex NXT and installed using the FlexLok tab system may be used over slabs exhibiting up to 99% RH. Installation is fast and offers immediate occupancy.
- The FlexLok tab system provides an odorless, dry, and floating installation used in place of traditional wet spread adhesives. Fast installation with immediate occupancy.
- EcoFlex ICT Backing – Moisture conditions not to exceed 80% RH.
- EcoFlex NXT Backing – Moisture conditions not to exceed 99% RH.

*For additional information on Mohawk Solutions, please contact your Mohawk Group Account Executive.*



## References

1. EPA 402-F-13053 (December 2013) Moisture Control Guidance for Building Design, Construction and Maintenance, [www.epa.gov/iaq/moisture](http://www.epa.gov/iaq/moisture)
2. W. J. Fisk, Q. Lei-Gomez, M. J. Mendell (2007) Meta-analyses of the associations of respiratory health effects with dampness and mold in homes. *Indoor Air* 17(4), 284-295. doi:10.1111/j.1600-0668.2007.00475.
3. D. Mudarri, W. J. Fisk (2007) Public health and economic impact of dampness and mold. *Indoor Air* 17 (3), 226-235. doi:10.1111/j.1600-0668.2007.00474.x
4. White, Paul G. "Moisture Mitigation." Paul G. White Interior Solutions. BFT International, n.d., retrieved from <http://www.paulgwhite.us/moisture-mitigation/>; accessed 16 April, 2016.
5. Craig, Peter. "Moisture Mitigation for Concrete Slabs: A Brief Description of Alternative Methods for Dealing with Slab Moisture Problems." *Concrete International*. Aug 2003. Web. 16 April, 2016.
6. Kanare, Howard. "Why are We Still Having Problems with Moisture and Concrete Slabs." *Concrete Construction*. Hanley Wood, LLC, November 15, 2007. Web. 17 April, 2016.