

Crack-isolation basics

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by

MAPEI Product Support

We have all seen them — unsightly cracks running through tile floors. While ceramic tile and stone flooring are durable, they cannot overcome the laws of physics. When cracks open up in the substrate below, they often will telegraph up through the tile (and grout). Anyone who has chipped out several tiles to replace them can tell you — it is not a fun project. The answer for most installations is the use of a crack-isolation membrane.

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What is a crack-isolation membrane?

As the name implies, crack-isolation membranes are designed to isolate what is above the membranes (the tile and grout) from what is below them (the substrate). The membranes do this by providing a stretchy layer between the two areas.

Typically, manufacturers of crack-isolation membranes will state that the membranes comply with ANSI standard **A118.12**. This standard requires the membrane to isolate the tile from cracks of 1/16" (1.5 mm) for standard performance and 1/8" (3 mm) for high performance.

Crack-isolation membranes can protect tile, stone and grout from either new cracks that form in the substrate or existing cracks that get larger — as long as the crack does not exceed the width of the stated performance of the product.

What is not a crack-isolation membrane?

Crack-isolation membranes do not protect tiles from cracking because of a force from above, such as a heavy object falling on the tile. These membranes also will not prevent cracks if they have been poorly installed and have voids in the mortar beneath them. In addition, these membranes are not “anti-fracture” membranes; tile can always fracture in the presence of stress.

Crack-isolation membranes are designed to keep stress away from the bottom of the tile. While some companies tout crack-isolation mortars, no cement-based mortars are flexible enough to meet the ANSI requirements for crack isolation. Crack-isolation membranes also do not protect against out-of-plane cracks.

In general, three categories of crack-isolation products exist on the market today. They are the following:

- **Sheet-applied membranes:** Sheet-applied crack-isolation membranes typically come in rolls and feature a “peel-and-stick” application. The positives of sheet-applied membranes are that they can be immediately tiled over after they are placed and often will provide superior protection from wider cracks. For example, ***Mapeguard 2*** can protect from in-plane cracks up to 3/8" (10 mm) in width. Most sheet-applied membranes do require a primer, such as ***MAPEI SM Primer Fast***, to develop a proper bond with the substrate.
- **Liquid-applied membranes:** Liquid-applied crack-isolation membranes, such as ***Mapelastic CI***, have become quite popular in recent years. These membranes are typically applied with a roller to a certain thickness (a wet-film gauge should be used) and allowed to dry. Once they are dried, liquid-applied membranes will adhere to the substrate and stretch if cracks develop. In some cases, these membranes are used to treat existing cracks.
- **Uncoupling and multi-purpose membranes:** Unlike sheet- and liquid-applied crack-isolation membranes, uncoupling membranes work differently. Instead of a reliance on the product stretching, these membranes (such as ***Mapeguard UM***) typically have a fabric layer that allows some movement before shearing from the upper plastic mat. A variety of multi-purpose membranes that combine crack isolation with waterproofing such as ***Mapelastic AquaDefense*** (ANSI A118.10), or sound control such as ***Mapesonic 2*** (ANSI A118.13), are also available.

With a wide range of crack-isolation membranes on the market, an option for every job schedule and budget exists. These products are great added insurance in preventing today's beautiful tile floor from ending up as tomorrow's cracked floor in need of replacement. For more information about MAPEI products or for help in choosing the correct one, **contact us**. We are here to help!

Author

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