



Globally Proven  
Construction Solutions

# Crack Suppression/Isolation Methods for Tiles

TDS-1019

There are currently no industry standards defining or measuring crack suppression membranes or adhesives in Australia. However ANSI A118.12 5.4 does provide a method of determining the crack suppression abilities of membranes and adhesives for tiling systems. In this test, products with the ability to resist up to 3mm cracks are rated as a high performance.

Cracks in concrete surfaces or other backgrounds can and often do cause telegraphing of the crack or reflective cracking into the tile finish. Crack reflection into tiled surfaces are a defect and is seen as the responsibility of the system designer or tiler to eliminate its occurrence. It also does not reflect very well on the tiling industry as a whole.

With the fast-paced and competitive environment of today's concrete industry, crack free concrete is difficult to achieve. The same can be said about tiler's standard mortar beds. Shrinkage crack control of these surfaces are often lacking, resulting in uncontrolled cracking that may be obvious, may not occur immediately or persists for many years as the concrete or mortar continues to shrink and crack during its life under the tile finish. Modern adhesives can accommodate a certain amount deformation, horizontal to the plane the tiles are laid on, but there is a limit to their abilities. There is even LATICRETE® Antifracture adhesives that deliver crack isolation in some service duty cycles. However, employing a loadbearing crack suppression membrane offers a unique buffering layer, which allows further deformation, increasing the amount of allowable movement in a tile installation. After recognising this you could be excused for thinking that there is a good case for always using crack suppression membranes over masonry and other surfaces that are susceptible to shrinkage cracking.

The construction of LATICRETE crack suppression membrane is such that movement in the concrete or like surface is buffered and not directly transferred to the tile. Although the membrane is bonded to the concrete and the tile to it, the membrane deforms as required to prevent or reduce force transference. It is important to note the protection provided by these membranes and adhesives is for in plane movement parallel to the background and tile installation and not vertical movement perpendicular to the background and tiling installation. LATICRETE crack suppression membranes are load bearing; paint on, trowel on or sprayed on products that usually perform other functions as well. See drawing AES F125a on the next page for an overview of a typical detail on crack suppression or isolation.

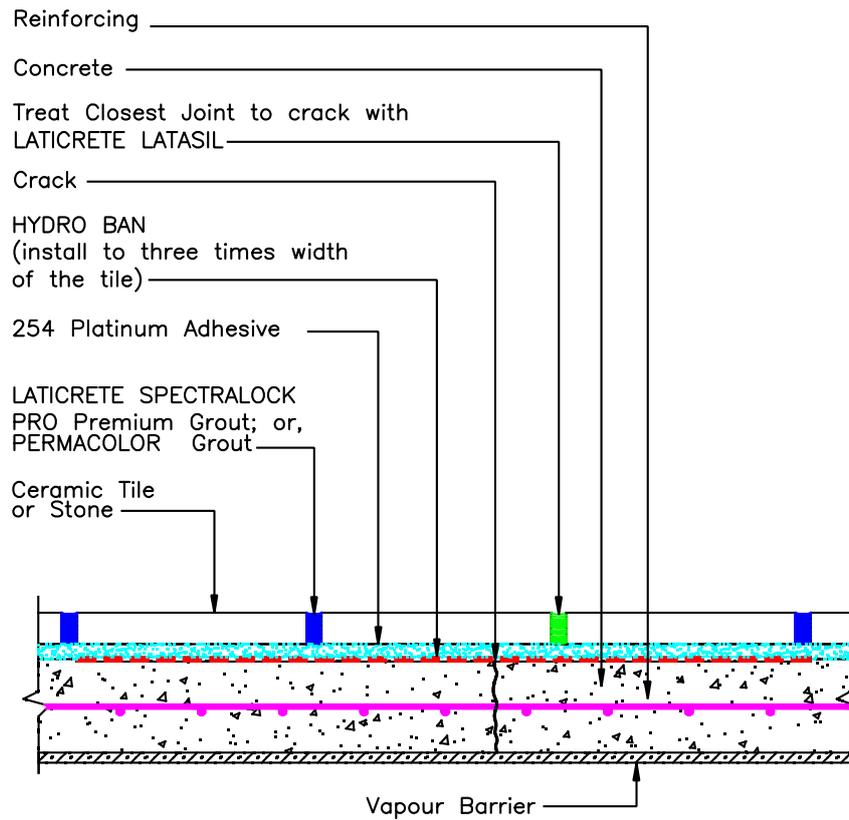
Continued curing of concrete and mortars under tiled finishes can cause cracks to develop, expand or propagate and resolving this reflection into the surface can be generally achieved by installing tile using antifracture adhesives or installing the tile over a load bearing crack suppression or isolation membrane using the thin-set method. The use of an uncoupling mat or floating mortar bed can also achieve crack suppression and sometimes isolation of other types of structural movement outside the scope of this note.

Crack suppression or isolation membranes are applied directly to the concrete or mortar bed surface, and the tile is later thin-set fixed to the surface of the membrane. Antifracture adhesives act as an adhesive and crack suppression/isolation membrane in one operation providing greater productivity but generally with a lesser ability to support a load when compared to more rigid tile adhesives. Newer underlayment systems or uncoupling mats allow uncoupling and crack suppression in thin sections. The idea behind an uncoupling membrane is similar to floating mortar bed where it can absorb the movement of a subfloor before that movement results in loose or cracked tiles. The floating bed or divorced method allows the isolation of the independently structurally sound mortar bed from a cracked, or surface with a propensity to crack - with a cleavage plane.

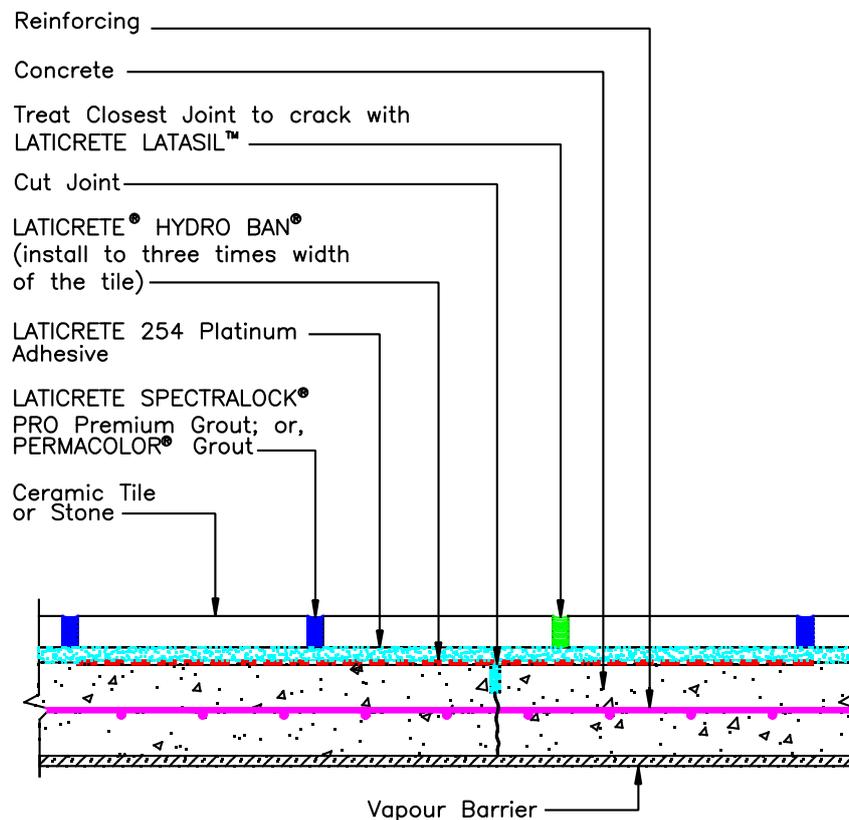
Antifracture adhesives and crack suppression membranes do not allow you to eliminate movement joints. There must always be properly constructed joints in tile work to facilitate movement in accordance to standards and good trade practice.

**Can you tile over control joints using an anti-fracture membrane?** Antifracture adhesives and crack suppression membranes should not be used over expansion joints, structural cracks or areas with differential movement.

However LATICRETE do allow the treatment of cold and saw cut joints. Refer to LATICRETE Detail AES-F125b on the next page and written instructions on their product data sheets. A crack suppression membrane must be applied a minimum of 3 times the width of the tile or stone being installed. The tile installed over the crack cannot be in contact with the concrete. Follow the in principle detail below for the treatment of hairline cracks, shrinkage cracks, and saw cut or control joints. Treat closest joint to crack, saw cut, or cold joint with LATICRETE LATASIL™.



Detail AES F125a outlines treatment of shrinkage crack



Detail AES F125b outlines treatment of saw cut or cold joint in slab

The following LATICRETE® products are suitable for crack suppression/isolation (check for product suitability for internal/external use) for non-structural cracks up to 3mm in width according to the ANSI test methods. They can be used where ever hairline cracking or “spiderwebbing” occurs in the substrate. They are ideal to cover joints in cement backer boards and floors containing radiant heating. They generally add no appreciable thickness and are easy to apply. See the individual product data sheets for more information and installation instructions.

Crack suppression membranes - LATICRETE HYDRO BAN®

Crack suppression adhesive - LATICRETE 125 Sound & Crack Adhesive.

Un-coupling mats - LATICRETE STRATA MAT™