

# Crack suppression fundamentals

Words by Anthony Stock

Shrinkage cracks naturally appear in concrete flooring substrates as the water present in the concrete mix evaporates. Consequently these cracks can transfer from the substrate to the surface of the ceramic or natural stone tiles.

Crack suppression membranes, also known as anti-fracture membranes, are designed to act as a barrier between the substrate and the tile.

A variety of crack-isolation systems are available, including liquid membranes that can be combined with a mat. Other membranes are applied with a trowel. Some peel and stick sheet membranes can be directly applied to the substrate, others are applied to a preliminary layer of mortar, which isolates the membrane from the substrate.

In both cases the tiles are laid in a suitable thin-set adhesive.

The assumption that the absence of cracks in new concrete means that cracks will not appear is entirely false. Shrinkage cracks appear at an early stage usually within 12 months of the concrete being poured.

Some crack-isolation membranes incorporate waterproofing and noise reduction elements. These products have to be installed in strict accordance with the manufacturer's instructions. Most of our leading adhesive manufacturers provide guidance on this subject. →64



Right: Surface cracks usually appear in new concrete within 12 months of the screed being poured. The entire floor can be covered with an anti-fracture membrane like the featured GreenSkin, which can also be used effectively to isolate individual cracks. (Images courtesy of CDK Stone.)



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## INSTALLATION

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*“One of the advantages associated with use of some crack-isolation systems on new concrete relates to their ability to cope with the pressure the tile bond creates when moisture evaporates from the substrate. This may permit installation of tile or stone to commence after three days rather than four to six weeks.”*

It can pay dividends to use one system of materials – adhesive, grout, waterproofing, sound and crack suppression.

However, some of the best crack suppression systems can be used in conjunction with appropriate thin-set adhesives and thick-bed installation methods.

One of the advantages associated with use of some crack-isolation systems on new concrete relates to their ability to cope with the pressure the tile bond creates when moisture evaporates from the substrate. This may permit installation of tile or stone to commence after three days rather than four to six weeks.

When waterproofing of the substrate or installation of tile over new concrete is not required, a system can be specified that permits crack-isolation and tiling to be carried out promptly.

### Are crack-isolation systems essential?

Products are getting larger and, in many instances, thinner. Larger tiles

equate to a reduction in the number of grout joints and, in some instances, the width of the grout joint. This may provide a pleasing aesthetic but it may place greater stress on the tiles when there is no barrier between the substrate and the tile.

Crack-isolation membranes can prevent shrinkage cracks but will not prevent cracking caused by structural problems. In most instances, contractors fill shrinkage cracks before they apply the specified crack suppression membrane. However, it is important to realise that, ultimately, the key factor is the ability of the over-laid crack suppression membrane to withstand any movement generated by the crack. The act of filling or bridging a crack does not provide a total solution.

In some instances, it will be advisable to cover the entire floor with a membrane prior to tiling. Much depends on the size and location of the area to be tiled: this usually determines the need for movement (expansion) joints. In relatively small internal areas perimeter movement joints, which are normally hidden beneath skirting boards or tile upstands, will cope with anticipated movement. In large, internal or external locations, movement joints should be incorporated in the tiling, directly over, or as close as possible to movement joints that are present in the substrate. This is particularly important in areas where tiled floors are subjected to strong sunlight.

Tile layers need to obtain precise instructions about installing crack suppression membranes over existing movement joints.

In many instances, old concrete floors, which are scheduled to be re-tiled, will feature a number of cracks. These can be treated individually with careful use of a peel and stick crack suppression membrane. Care must be taken to ensure that the applied membrane is installed correctly, with the right width and length to negate any movement in the crack that might transfer to the surface and cause reflective cracking in the tiling. ■