



Uncoupling Membrane

*By Steve Taylor, Director of Architecture
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Should I use an uncoupling membrane/mat before I install my tile floor? We at Custom Building Products believe that the best installation is one that is continuously bonded from the tile to the subfloor. A tenaciously bonded floor will assure there is no movement in the tile that can lead to cracks in the tile, or loss of bond. Before installing ceramic or stone tile the subfloor must be prepared. There are a lot of choices today for preparing the subfloor to receive a new tile floor. You can bond directly to the concrete or plywood subfloor itself; although most likely the installation will require an underlayment over the subfloor to prevent the transmission of movement that can result in cracked tiles or grout. This underlayment can be a preferred bonded material like backerboard or an elastomeric membrane; i.e. WonderBoard® or CrackBuster® Pro from Custom Building Products, however you may install over an un-bonded system.

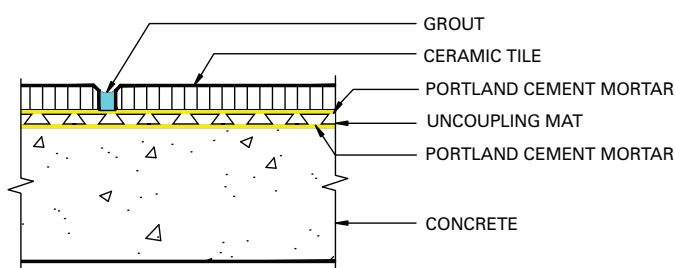


ABOUT THE AUTHOR

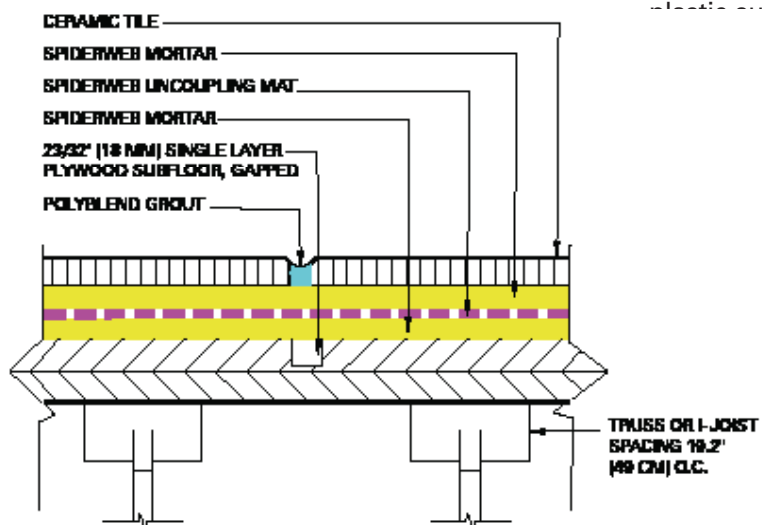
Steve Taylor, Director of Architecture and Technical Marketing for Custom Building Products and has more than 30 years of experience developing products for the construction industry. Steve is a member of the Tile Council of North America (TCNA), helping to determine proper tile installation methods and standards; including the simplification of tile installation processes which enables tile professionals to save time and money.

Much of new construction and remodel today are not designed for the added floor height and weight.

CF128 Floors, Interior
Crack Isolation Membrane
Young Concrete Uncoupling membrane



CF148 Floors, Interior
Wood Subfloor
Uncoupling Membrane, 19.2" o.c. Joist Spacing, Thin-Set



For centuries, tile has been installed on reinforced mortar beds that have been free to move independent of the subfloor. This has been accomplished with a loose or weakly bonded plane placed between the reinforced mortar bed and the subfloor. If the subfloor moves and a crack opens it will not be transmitted to the underlayment and through to the tiled surface. This method of installation is still used today and is detailed in F111 of the TCNA Handbook. This method has a long history of success, providing that the floor will accommodate the addition of a 1 1/2" - 2" thick underlayment.

Much of new construction and remodels today are not designed for the added floor height and weight. These rely on the use of the thin-set method to install tile. To minimize the thickness of the floorcovering a thin-set mortar can be used to bond tile directly

to the existing flooring; total increase in floor height is less than 1/2". Bonded membranes and flexible mortars have been developed to prevent the migration of crack movement in the subfloor to the tiled floor and are detailed in F125 of the TCNA Handbook.

In some situations, a crack isolation membrane or mortar may not be appropriate. For instance, most manufacturers of tile installation products require that concrete slabs cure 28 days before bonding tile directly. During the first 28 days a concrete slab undergoes a lot of dimensional changes; as the concrete cures it will shrink. If tile's bonded to the surface too soon, the stresses developed as the concrete cures can be transmitted to the tile installation and cause the tile to come loose, or develop cracks in the tile and grout. One solution to this is the proven method detailed in F111 for un-bonded, reinforced mortar beds. Another solution is uncoupling membranes/mats to provide this function in a less intrusive manner. The tiles are bonded to the top surface of the membrane, while the loosely bonded, bottom side of the membrane is bonded to the concrete subfloor. Any movement in the concrete will "uncouple" the tile installation from the concrete floor surface.

Method F128 in the TCNA Handbook describes using an uncoupling membrane over "young concrete". Young concrete is defined as concrete that has cured sufficiently to support tile installation traffic. While we do not expect tile to be installed until the concrete is placed, it may be installed 14 or 21 days after the concrete is placed. Custom Building Products has developed SpiderWeb™ Uncoupling Mat for these installations. The fleece side of the SpiderWeb Uncoupling Mat is bonded to the young concrete and tile is bonded to the geometrically configured plastic surface; any movement in the concrete will cause the fleece to un-couple and protect the tile installation, while the reinforcing will hold the mortar and tiles securely on the surface.

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Porcelain tile manufacturers recommend ANSI A118.4 mortars for bonding tile.

SpiderWeb Uncoupling Mat is also suitable for installing tiles over single sheet plywood subfloors supported by joist spaced 19.2" oc. This is detailed in F148 of the TCNA Handbook and is useful when there is a need to further minimize the height gain of the floor. It is important that an ANSI A118.4 mortar is always used to bond the mat to the plywood surface; an ANSI A118.1 mortar will not develop a bond to the wood surface.

Use a Mortar recommended by the Tile Manufacturer

Many of the uncoupling membranes available today recommend the use of an ANSI A118.1 non-modified thin set mortar to bond the ceramic or stone tile to the plastic surface of the membrane. Many of the manufacturers of porcelain or natural stone tile caution against using a non-modified mortar for installation instead recommending a polymer-modified mortar meeting the requirements of ANSI A118.4. A dilemma is created if you need to bond a tile requiring an ANSI A118.4 modified mortar to an uncoupling membrane that recommend using an ANSI A118.1 non-modified mortar. Custom Building Products has resolved this dilemma with new SpiderWeb Uncoupling Mat. As with many bonded membranes, such as Custom Building Products' CrackBuster® Pro and EasyMat®, it is preferable to use a polymer-modified mortar meeting ANSI A118.4 to bond tile to the surface of the SpiderWeb Uncoupling Mat. Extensive testing in Custom Building Products lab has shown that the polymer-modified, Portland cement based mortars will cure under the tile and support traffic as expected when bonding over any impervious surface. As the Portland cement cures it hydrates absorbing the water used to make a workable mix. As the water level is consumed by the hydration process in the mortar, the polymer will coalesce to aid in forming a strong bond between the tile and the SpiderWeb mat. The polymer will improve the bond to smooth surfaces, where it is difficult for the cement to achieve a mechanical bond alone. The dilemma is solved and the recommendation of many Porcelain Tile and Natural Stone Tile manufacturers to use a polymer-modified thin-set or medium bed mortar meeting ANSI A118.4 for installation is satisfied.

Large Format Tile requires Medium Bed Mortars

Many of today's tile are considered large format, greater than 15" on one side. To properly install these tiles, special mortars have been developed to compensate for irregularities in the flatness of the tile and floor. Because an uncoupling mat will follow the contours of the floor, it becomes necessary to compensate for irregularities with tile bonding mortar. Thin-set mortars are suitable for correcting irregularities up to 1/4". However, when installing large tiles, where both the floor and tile are not completely flat, it may be necessary to correct larger than 1/4" variations. In this case it is best to use a medium bed mortar, which can be applied up to 3/4" thick. Thicker mortar beds are more easily damaged

from movement in the floor. For this reason many manufacturers of medium bed mortars add a polymer modification in either latex (two component) or spray dried (water only add) form. While there are no ANSI specifications for medium bed mortars most of the available mortars can also be used for Thin Set applications and meet the ANSI A118.4 performance specifications. Custom Building Products has developed a mortar to specifically address these needs for large format tiles and work in conjunction with their SpiderWeb Uncoupling Mat. SpiderWeb Uncoupling Mortar can be used as a thin-set or medium bed mortar to install tile onto a properly installed SpiderWeb Uncoupling Mat.

Improved Bond with Flowable Mortar

SpiderWeb Mortar is based on the latest technology for flowable bonding mortars and offers complete transfer of the mortar to the back of the tile with minimal effort. The mortar is designed to flow under normal installation pressure to completely fill in the valleys between the ridges left by the notched trowel. This improves coverage of the mortar to the back side of the tile assuring maximum bond strength to the tile. This can be critical with the large format Porcelain tile common today. The unique nature of SpiderWeb Mortar allows it to support the weight of large format tile, reducing the possibility of lippage between tiles. SpiderWeb Mortar is polymer-modified and meets the requirements of ANSI A118.4; desired by many manufacturers of Porcelain Tile and Natural Stone Tile. SpiderWeb Mortar also meets the requirements of ANSI A118.11, making it ideal for bonding the SpiderWeb Uncoupling Mat to plywood substrates.



SpiderWeb Uncoupling Mat and Mortar Solve Problem

While most ceramic and stone tile installation projects will benefit from a fully bonded system, there are instances that demand the unique properties of an uncoupling system. While there are several uncoupling products and methods available to the installer, the use of an uncoupling mat minimizes the floors height gain from the tile installation materials. This translates into less work in surrounding areas to maintain level floors when transitioning to different floor coverings. It is important to respect the recommendations of the manufacturer and supplier of the ceramic and stone tile that is being installed. If they recommend a higher performing ANSI A118.4 polymer-modified installation mortar, then look to Custom Building Products and our system of SpiderWeb Uncoupling Mat and SpiderWeb Mortar. Utilizing the complete installation system from a single manufacturer guarantees the maximum warranty for the installation. Using SpiderWeb Mortar with SpiderWeb Uncoupling Mat to properly install the ceramic or stone tile warrants the installation for 10 years.

