

Fixing Porcelain Wall & Floor Tiles

Fully Vitrified and Porcelain Stoneware Floor Tiles

Porcelain is definitely the product of the moment. Since its introduction some ten years ago porcelain (or fully vitrified) tiles have seen a huge growth in popularity as designers get an understanding of their impressive performance characteristics. For the installer, however, porcelain tiles raise technical issues and cannot be treated in the same way as standard ceramic tiles.

Porcelain tiles are made of the same basic materials as standard ceramics, but are fired at a much higher temperature – typically 1,300°C. The result is a tile that is extremely strong as well as being frost and stain resistant. Porcelain stoneware is obtained from a mix of raw materials whose composition does not substantially differ from that of vitreous china (used in making sanitary ware and dinner ware). The product is almost completely vitrified, and hence completely impervious and with excellent mechanical properties. Traditional 500x100mm and 100 x100mm have grown increasingly popular. Usually unglazed, porcelain stoneware is used for floors and more recently walls, of all kinds; large slabs (1000x600mm) have been introduced for use as exterior wall and floor coverings.

Porcelain stoneware originated as a product for technical use, such as for floors in heavily trafficked public and industrial areas. Research and development effort have gradually produced new products that combine porcelain's unique technical strengths with ever-greater aesthetic properties, for areas that have design requirements as well (like airports, malls, offices, hotels, restaurants, etc.). The body is often coloured by introducing colouring oxides into the mix that blend extremely well, with the matrix during firing. This type of tile, obtained by mixing raw materials of various colourations to obtain a surface and support with a granular look, is sold under various denominations (such as "ceramic granite" or "ceramic porphyry"). Porcelain stoneware tiles, also available with a polished, glossy surface, are used for interior and exterior wall covering. Besides the unglazed products described above, other variations have also been emerging that feature various types of surface treatments: for example, applications of penetrating salts, or glazes, which create a sophisticated look that is in increasing demand. Porcelain stoneware with surface decors is also growing in popularity.

In the mid 1990's Biscem were the first adhesive manufacturer to recognize that a special adhesive was required to fix this type of material as standard cement based adhesives do not provide the adhesion and bond strength to grab and secure the back of the tile. This product was Vitri-Flex.

Due to the increasing demand for specialist adhesives Biscem have introduced a range of products incorporating *Vitri Technology* an additive included at the production stage to enhance performance and bond strength to alleviate the problems traditionally associated in fixing fully vitrified tiles and porcelain stoneware. These products include Vitri-Rapid, Bis-Xtra, Bis-Flex, Vitri-Flow and Vitri-Grouts.

As porcelain tiles are frost resistant, they are increasingly being chosen for exterior applications – in which cases a frost resistant adhesive (such as Vitri-Rapid, Vitri-Flow, Bis-Xtra or Bis-Flex) is also required and the quality of the grout should also be considered. It is recommended that a water and frost resistant polymer modified cement based material (Vitri-Grouts) is used for grouting internally as well as externally as this will enhance the bond strength at the tile/grout interface.

Porcelain tiles are only likely to increase in popularity, so it is vital for both adhesive manufacturers and installers to understand the implications for the fixing process. Most manufacturers, such as Biscem, now provide a range of products designed specifically to meet the challenges presented by porcelain tile products, but, when presented with an unusual or unfamiliar installation situation, it is always advisable to get advice from the adhesive manufacturer.

Vitri-Flex A fast setting cementitious adhesive suitable for adhering porcelain wall and floor tiles, fully vitrified tiles, natural and artificial stone and quarries, to a variety of dry substrates such as dense concrete, cement sand screed, masonry, sand cement plaster and plasterboard. Vitri-Flex is Ideal for fast track applications as it is sufficiently hard so that tiles can be grouted after only 2 hours. With an increased polymer content the use of Vitri-Flex removes the need to add Flexibond when using low porosity tiles. Vitri-Flex requires, for most applications, only the addition of clean water. It is available in both grey and white.

Vitri-Rapid A fast setting cementitious adhesive suitable for external and internal applications of porcelain and fully vitrified wall and floor tiles, natural and artificial stone and quarries, to a variety of substrates such as dense concrete, cement sand screed, masonry, and sand cement render. Vitri-Rapid is Ideal for fast track applications as it is sufficiently hard so that tiles fixed can be grouted after only 2 hours. With an increased polymer content the use of Vitri-Rapid removes the need to add Flexibond when using low porosity tiles.

Bis-Xtra A specially prepared polymer modified adhesive suitable for use as a thin or thick bed adhesive. Bis-Xtra can be used for most applications and is particularly suitable for fixing low porosity tiles such as vitrified and porcelain tiles. Bis-Xtra can also be used to fix ceramic wall and floor tiles, ceramic and glass mosaics, terrazzo tiles and slabs, natural and artificial stone to a variety of substrates such as dense concrete, cement sand screed, masonry, sand cement plaster and plasterboard. Bis-Xtra is suitable for use in both external and internal applications together with specialist areas such as swimming pools and other wet areas.

Bis-Flex A fast setting cementitious, rubber crumb adhesive suitable for adhering fully vitrified and porcelain stoneware, ceramic floor tiles etc onto rigid timber surfaces and other substrates where movement may occur. Bis-Flex is a two part system and has a high flexural strength making it able to withstand larger flexural strengths than a standard cementitious tile adhesive. Bis-Flex should always be mixed in the correct proportions of 1 bag of Bis-Flex powder (7.5 Kg) to 1 bottle of Bis-Flex liquid (5 litre). Once mixed Bis-flex has an open time of approximately 20-30 minutes and tiling can be light foot trafficked or grouted after approximately 3 hours.

Vitri-Flow A fast setting cementitious adhesive suitable for adhering ceramic floor tiles, terrazzo tiles and slabs, natural and artificial stone to a variety of dry substrates such as dense concrete and cement sand screed. Vitri-Flow is ideal for fast track applications as it is sufficiently hard that tiles can be grouted after only 2 hours. Vitri-Flow remains flowable for approximately 5 minutes after which time it stiffens up and can be used as a normal adhesive. It is

specially designed to allow bed thickness of up to 25 mm to be formed and hence is ideal for natural tiles with variable thickness. Vitri-Flow requires only the addition of clean water.

Vitri-Grout Wall A specially prepared flexible water & frost resistant polymer modified cement based material for grouting of joint widths between 1mm to 3mm. When using porcelain or vitrified tiles Biscem Vitri-Grout should be used as this will enhance the bond strength at the tile/grout interface. It can also be used for grouting tiles in both interior and exterior situations such as power showers, swimming pools, steam rooms with glass mosaics, marble, natural stone and areas where increased flexibility, water resistance and durability are required.

Vitri-Grout Floor A specially prepared flexible water & frost resistant polymer modified cement based material for grouting of joint widths between 3mm to 15mm. When using porcelain or vitrified tiles Vitri-Grout should be used as this will enhance the bond strength at the tile/grout interface. It can also be used for both interior and exterior situations, shower areas, swimming pools, steam rooms, under floor heating, wooden floors and areas where increased flexibility, water resistance and durability are required.

