



Natural Stone Products

Natural stone has been used by mankind since the beginning of time for its aesthetics and hard wearing properties. They can be used in most cases for interior and exterior floors, walls and surfaces.

Most natural stones can be supplied either in a calibrated thickness or varying thickness. They are supplied in various facial sizes from small mosaics to large format slabs of more than 1 metre²

Preparation

All substrates should be sound, rigid and free from oils, chemicals and other materials that can act as parting agents. Preparation of the various substrates likely to be encountered is itemised in the Bisцем Guide to tiling manual. (Available on request or as a pdf download from www.biscem.co.uk)

Fixing and Grouting should not be applied when the material, substrate or ambient temperature is below 5°C. Doing so will significantly retard the setting times. At temperatures in excess of 30°C it is likely that setting times will be accelerated to such a level that the material becomes impossible to use.

Adhesives

Bedding of these materials should be of the solid bed method using either standard cementitious or polymer modified cementitious adhesives.

Due to the fact that these materials are usually of varying thickness the use of a

pourable thickbed adhesive such as **Bisцем Vitri-Flow** is recommended.

In general the fixing of natural stone utilises similar techniques used in fixing most other ceramic tiles. However certain natural stones have special needs that will have to be taken into account.

Light coloured and translucent natural stone and marbles require the use of a white adhesive and probably a light coloured grout. Using grey adhesives will show through and darken the appearance of the finished floor.

Thin or thick solid bed is the best method of fixing. The blobbing (spotting) technique should always be avoided as again the adhesive will be visible through the tile and voids will cause stresses, weaknesses in the installation. Water can also penetrate the adhesive bed and cause problems.

Before the adhesive is set, spare material should be removed from the surface of the tile and the grout joints. Polymer modified adhesives and grouts can be especially difficult to remove once cured. A grout joint half filled with adhesive will generally appear as a different tone to one which is correctly filled with grout. For information on grouting see the relevant section below.

Slates can contain mineral oils which, when secreted, will cause a failure between the tile adhesive interface. Check for water absorbency with a droplet test to start with but then carry out an adhesion test for compatibility. This can be done with any off cuts.

Certain types of conglomerate marble tiles are prone to swelling on absorption of moisture. These normally contain green marble and therefore warping can occur as a result of the backs of the tiles being wetted by the adhesive bed. This is mainly seen with large format tiles as the warping effect occurs too rapidly for even these types of adhesives to be effective. Priming the backs of the tiles with a diluted solution of **Bisцем Neobase** and subsequent fixing with a rapid setting polymer modified adhesive is effective in most internal situations. Epoxide adhesives can also be used.

Grouting

Either wide joint, narrow joint or epoxide grouts can be used with most natural stone products. Several factors may

affect the selection of the grout to be used therefore it is always advisable to contact the supplier of the stone or carry out a trial application to ensure compatibility.

Natural stone tiles tend to be thicker than ceramic tiles and the joint depth ratio is generally higher, therefore wide joint grouts are generally used in this situation.

Some natural stones require sealing prior to grouting. Check with the supplier the type of sealer required. Care should be taken to prevent the sealer coming in contact with the sides of the tiles; otherwise the adhesion of the grout may be compromised. Sealing also helps to prevent water staining and helps with the cleaning off of the grout. Sealers and waxes can affect the tone of the lighter colour grouts.

With deep, narrow joints grouting may consist of two applications. This is because the first application may see the grout sink into the voids at the bottom of the joints if a solid bed of adhesive is not achieved.

The joints to be grouted should be clean and free from adhesive, dust or dirt. As a general rule of thumb the grout depth should be twice the desired grout width.

Grouts should be mixed to a thick, smooth consistency. Excess water should be avoided as this will give rise to an increased risk of cracks forming in the joints and will produce a weaker mix that will be less permeable and less durable. If the grout is mixed too dry it will be hard to apply and may result in an unsightly finish. Suggested mix proportions should be given on the grout packaging. The use of a mechanical stirrer for at least five minutes will help in obtaining a suitably useable mix.

Grout should be thoroughly worked into the tile joints with a grouting trowel or rubber faced float until the joints are completely filled to the face of the tile. Surplus grout should be removed from the tile face with a rubber squeegee. When the joint is finger hard, i.e. stiff enough to withstand the pressure of a finger, the joints can then be pointed by compressing the joint with a rounded piece of wood or pointing trowel or other suitable material. Grout joints will exhibit variations in absorbency due to varying porosity in the stone (the sides of the tiles), substrate, adhesive bed, ambient temperatures and therefore manifest themselves as colour variations. If the grout is finished off too early while still wet, or a smooth tool is

used to finish the joints, the laitance, or fines, within the material will be brought to the surface. These will dry with a characteristic white colour which may again then be unsightly.

If polymer modified grouts or Flexibond is mixed in with the grout, any surplus should be cleaned off the tile surface immediately with a sponge and clean water. This mix should not be allowed to dry on the surface of the tile or it will be difficult to clean off. Polymer modified grouts will generally be of darker tone than non polymer modified grouts, therefore only use one type of grout on the installation.

With pigmented coloured grout there is a potential risk of staining to the tiles. A small area should be trialed to ensure that the tile and grout are compatible. If staining is likely the tiles should be sealed with a surface sealer prior to the application of the grout.

Epoxy Resin based grouts can be partially absorbed into the surface of some natural stone, which can darken the surface appearance. This type of material is very difficult to remove once it has cured.

Discolouration

Certain porous stones may show signs of water staining when using standard setting (24 hour cure) adhesives. This situation is exasperated if the tiles are blobbed (spotted) and not fully bedded. This will give a blotchy / patchy effect. These organic deposits and minerals can move through the body of the tile, rising to cause a sub surface discolouration or staining of the tiling. The only way to prevent this is to use a rapid setting adhesive.

Types of Natural Stone

GRANITE In the tile industry the term Granite is used to describe a whole variety of dense coarse to medium grained igneous rocks.

LIMESTONE A sedimentary rock composed mainly of calcite. Most Limestone are hard enough to mechanically grind to a polished finish and are suitable for internal use in floors, walls, steps, balustrades, fireplaces and surrounds. Hard limestones are used extensively in flooring and steps whereas the Bath type limestones are used in non flooring applications. The finer grained limestones are easy to work and much used in carved masonry and sculptures.

MARBLE / TUMBLED A metamorphosed limestone in which calcium forms the greater part and other minerals in the minor quantity gives it

colour and decorative features. For internal use only in the UK.

SANDSTONE A sedimentary rock quartz (silica) grains. Most sandstones are suitable for internal use in floors, walls, steps, balustrades, fireplaces and surrounds. Depending on use, some applications will require hard sandstone to ensure durability: eg. in heavily trafficked walkways and steps.

SLATE / HONED / RIVEN A dense rock produced by metamorphosis of fine-grained sedimentary silts, mudstones and marls. Slates are characterised by distinct cleavage planes, which allow the rock to be split into thin, smooth sheets. These can be supplied in many colours as cut tiles or slabs with a smooth finish.

TRAVERTINE / POLISHED / FILLED / BRUSHED / HONED / FILLED & UNFILLED Travertine is a limestone formed as a result of the precipitation of calcite from the surface of ground water. The name Travertine is also used to describe beige linear veined and pitted marbles

Adhesives & Grouts

Biscem primers, adhesives, grouts and screeds cover a comprehensive range of products suitable for most natural stone applications

Adhesives

Thin & Thick Bed*

(24 hour set internal external, swimming pool grade)

Fast Set Adhesive*

(Internal Rapid 2 hour set)

Vitri-Flex*

(Internal Rapid 2 hour set for Vitrified tiles)

Vitri-Rapid*

(Internal External Rapid 2 hour set for Vitrified tiles)

Vitri-Flow*

(Pourable Thick Bed Internal External suitable for Vitrified tiles)

Bis-Xtra *

(Single part flexible 24 hour set swimming pool grade)

Bis-Flex*

(Rubber crumb flexible adhesive 3 hour set)

Grouts

Wide Joint Grout

(Joint width 3-15mm Grey, Brown, Sandstone & Limestone White & Ivory & Anthracite)

Bisgrout Wall

(Joint width 1-33mm White, Grey, Ivory & Natural)

Full Joint Grout

(Joint with 3-20mm Rapid 2 hour Set -Grey)

Speed-E-poxy

(Epoxy Grout in Grey, White, Ivory, Brown and Black)

Vitri-Grout Wall

(Joint width 1-3mm, single part flexible grout)

Vitri-Grout Floor

(Joint width 3-15mm, single part flexible grout)

Screeds

LF25 Latex Screed

(Two part Latex flooring screed underlayment)

LF01 Latex Screed

(Single Part polymer modified screed, pumpable)

Florcem

(Cement based levelling screed)

Primers

Flexibond

(Flexible additive and primer)

LFP5

(All purpose primer)

Neobase

(Neoprene latex)

SDPM

(Surface Damp Proof Membrane)

EDM1

(1 coat surface damp proof membrane)

RPEJ

(Polyurethane expansion joint filler)

Bis-Vapourstop

(Surface moisture suppressant)

Bis-Epoprime

(Water-based epoxy primer)

Tanking System

Bis-Watertite

(Single pack waterproofing system)

*Also in white

