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A-Z OF TILING

Every week as part of our “Stay Positive, Back Stronger” campaign we will be providing you with our A-Z of Tiling Terms. Get in-depth description of many of the common tiling terms, plus some expert insight or top tips from our team.

A

ABSORPTION

A tile’s porosity indicates the degree of water absorption of the tile body and, in turn, this will determine its frost resistance; hence its suitability for external use. It also gives an indication of its resistance to staining and cleanability. The higher the water absorption, the greater will be its expansion in wet/damp conditions. Ceramic tiles are classified according to their level of water absorption. This is the ratio of the weight of water absorbed to the weight of the dry tile, expressed as a percentage.

Porous bodied glaze — more than 10%. Suitable only for use indoors.

Medium water absorption — from 6-10% water absorption. Suitable only for use indoors.

Semi-vitrified — from 3-6% water absorption. Suitable only for use indoors.

Vitrified — from 0.5-3% water absorption. Frost-resistant and suitable for external use, but may benefit from sealing.

Fully vitrified (Porcelain) — less than 0.5% water absorption. Frost-proof and suitable for external use.

BAL INSIGHT

Highly porous tiles can draw the moisture from adhesives and grouts more rapidly before they have fully cured and could reduce the bond strength.

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A ACIDIC CLEANER

A speciality cleaning product designed to remove cement or grout haze, soot, lime or light mineral deposits. May also be used for the removal of salts or efflorescence from brickwork, cement based grouts etc. It can be used with glazed, unglazed or porcelain ceramic tiles and some natural stone, but not with polished marble, travertine or limestone. It has a typical pH of 3.5 and needs to be neutralised chemically before subsequent sealers or coatings are applied.

BAL INSIGHT

In some cases a final wash with a diluted solution (as per manufacturers recommendations) can remove any remaining grout residues after the grouts have fully cured. Alternative proprietary alkaline cleaners are available for limestone, marble, travertine or other natural stone prone to acid attack.

A ACRYLIC

A synthetic polymer based on resins made by the polymerisation of acrylic monomers, such as ethyl acrylate and methacrylate and used for making baths, shower trays, tiles, adhesives, grouts, tanking membranes and sealants.

BAL INSIGHT

Most modern adhesives and grouts contain polymers to improve their physical characteristics. It is important that a second mixing of adhesives is carried a short wait of 2-3 minutes after the initial mix (without adding extra water). This gives the polymers chance to “wet out” and do their job fully.

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A ADHESIVE

Any substance which uses surface attachment to hold materials together, including cements, glues and pastes. In tiling, typically an organic substance used to bond tiles to a wall, floor or other surface. Rubber solutions, reaction resin-based and rubber emulsions are also sometimes used. Tiles had always been fixed with simple sand-and-cement mixtures of varying qualities until the early 1960s, when the British Ceramic Research Association and the British Ceramic Tile Council began to research specialist tile adhesives. This research led to the formation of Building Adhesives Limited, still the industry's leading name, which has manufactured tile adhesives in Stoke-on-Trent for more than 50 years.

BAL INSIGHT

Ready-mixed tile adhesives are usually referred to as Dispersions and dry by loss of moisture. Cementitious based tile adhesives set via a chemical (Cement hydration) reaction when mixed with water. The drying time of ready mixed tile adhesives will be extended when they are used over impervious backgrounds i.e. existing glazed wall tiles or a waterproof tanking system.

A ADJUSTABILITY

The degree to which a tile adhesive allows a tile to be moved and manipulated after fixing, normally measured in minutes.

BAL INSIGHT

Rapid setting cementitious tile adhesives will have reduced adjustability time compared to standard setting tile adhesives.

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A ADMIXTURE

A material other than water added to an adhesive or grout before or during mixing as a means of modifying its properties, such as increasing its flexibility. The availability of admixtures can increase the versatility of an individual adhesive or grout. Some commercial products are supplied with built-in admixtures.

BAL INSIGHT

Always pre-dilute any admixtures by adding into the mixing water to ensure a consistent mix, never put admixtures directly into the powders.

A ANTIMICROBIAL

The property of a substance of preventing or retarding the spread of infection or growth of fungus, typically through the use of specialist ingredients. BAL is the only manufacturer in the tiling sector with licence to incorporate Microban® antimicrobial protection within its grouts and sealants, a defence against 99 percent of all known microbes

BAL INSIGHT

Microban® can be found it many different industries and products, everything from kitchen chopping boards to sports socks can be protected using Microban® technology.

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A

ANHYDRITE / ANHYDRATE

Anhydrite is a mineral consisting of anhydrous Calcium Sulfate i.e. contains no water (Chemical formula $CaSO_4$). When water is added, the Calcium Sulfate can form either an alpha hemi-hydrate (a stronger and harder crystalline form) or a di hydrated Calcium Sulfate, commonly known as gypsum.

BAL INSIGHT

A moisture test is often recommended for anhydrite/calcium sulphate based screeds as their drying times will be affected by on site conditions. Some screeds are described as low latience or latience free. However, when considering priming and bonding tiles directly to the screed, any laitance or barriers to adhesion should be removed. An additional advantage is that this also helps the screed to dry out. Recent innovations in uncoupling system technologies also mean there are products available to use directly onto Anhydrite Screeds, without the need to prepare traditionally with laitance removal and priming to save both time and money, as well as allowing the screed to dry out underneath, meaning tiling can also commence sooner from 1.5% CM. Always check with the matting manufacturer for this suitability.

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B

BAL

Building Adhesives Limited, and BAL, its renowned brand, were both born in the 1960s when the British Ceramic Council, researching emerging adhesive products, created the company. It began manufacturing at its Stoke-on-Trent base in 1966 and remains the market leader in tiling adhesives and grouts. It offers a huge product portfolio catering for every type of tiling application, operates a free technical advice line which answers some 40,000 questions annually and leads the industry in tiling training, provided via its own specialist centres and training centres nationwide.

BAL INSIGHT

A nationwide team of Technical Support, both office based and out in the field. All of our field-based team are ex tilers and have a wealth of practical experience. If you’re ever in need of advice give us a call.

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B BACK BUTTERING

The primary method of applying adhesive is directly to the wall or floor using a notched trowel. When a substrate is not completely flat or the back of the tile has deep indentations or a raised profile, it can become necessary to apply additional adhesive to the back of a tile using a buttering trowel, known as back buttering.

BAL INSIGHT

The notched trowelling and back buttering method is recognised as an industry best practice both to enable wet on wet adhesive connection to aid with bedding of the tile and as tiles are becoming larger and larger to ensure the correct adhesive coverage is achieved i.e. solid bedding.

B BACKING

A backing may refer to any material used as a substrate over which tiles are to be fixed or may refer to backing material placed onto the backs of mosaics or some natural stone

BAL INSIGHT

Commonly found on mosaic sheets but becoming more common with the introduction of thin tile panels with a panel thickness ≤5.5mm. For mosaics, the backing material and its adhesive should not occupy more than 25% of the area of each tesserae, deteriorate whilst in service and be compatible with the tile adhesive bed in accordance with the manufacturer's instructions. This also applies to natural stone with a resin bonded mesh backing.

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B BACKING BOARD

Proprietary tile backing boards are installed, usually onto existing substrates and are available in a variety if materials and vary in thickness. The correct backing board should be selected for the suitability of tiling to the relevant on-site conditions.

BAL INSIGHT

There are many different types of backing boards, some are light weight and waterproof, some are for over boarding timber floors, others are used to improve the weight carrying capacity of a substrate.

B BATTENS

When fixing tiles to a wall, wooden battens are used to align the tiles horizontally and vertically and to support their weight while the adhesive dries. These should have perfectly straight edges and should be secured to the wall checking with a spirit level to ensure correct alignment.

BAL INSIGHT

Some modern cementitious adhesives can eliminate the need for time consuming battening. More time tiling, less time needed on the job.

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B

BED DEPTH

The depth of applied adhesive or mortar into which tiles are to be laid.

BAL INSIGHT

Bed depths are important. If adhesives are used outside their recommended range problems can occur with drying times or more importantly shrinkage during the curing process.

B

BONDING AGENT

A substance applied to a suitable substrate to create a bond between it and a succeeding layer such as a rendering, screed or plaster application.

BAL INSIGHT

There are different chemical types of bonding agents available. It is important to check with the manufacturer to ensure suitability for its intended purpose. It is also important to ensure that the bonding agent does not re-emulsify or breakdown whilst in service.

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B

BORDER TILE

Any tile differing in appearance to the field tiles and used to frame a central body of tiles to add colour or texture to the tiling scheme.

BAL INSIGHT

Border tiles are a common feature of Geometric Victorian-style floor tiles, like traditional Minton floors, which is making a comeback as people opt for heritage-style floors.

B

BS 5385 Parts 1-5

British Standards relating to wall and floor tiling:

Part 1 is a code of practice for the design and installation of ceramic, natural stone and mosaic wall tiling in normal internal conditions.

Part 2 is a code of practice for the design and installation of external ceramic, natural stone and mosaic wall tiling in normal conditions.

Part 3 is a code of practice for the design and installation of internal and external ceramic and mosaic floor tiling in normal conditions.

Part 4 is a code of practice for the design and installation of ceramic and mosaics tiling in specific conditions.

Part 5 is a code of practice for the design and installation of terrazzo, natural stone and agglomerated stone tile and slab flooring.

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C

CALCIUM HARDNESS (OF WATER)

Calcium hardness is a measure of the amount of calcium salts in water, particularly important in controlling swimming pool water. The ideal level for pools is 250 ppm to 350 ppm. Too low a measure means that pool fittings can corrode, staining the tiles. Too high a measure can lead to scaling on all pool surfaces.

BAL INSIGHT

Did you know soft water (with a low calcium hardness) is aggressive to cement based materials. In the case of swimming pools, where the mains water supply is soft, it is recommended to use a reaction resin grout such as an epoxide. This is because cementitious grouts can be subject to gradual erosion over a period of time, particularly if the pool water chemistry is not maintained in a balanced condition .

Further information on anything concerning tiling is freely available from BAL on 03330 030160.

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C

CEMENT & SAND

Since the birth of Portland cement in 1824, the most commonly used basic ingredients for a variety of building mortars and tiling adhesives.

BAL INSIGHT

Although traditionally used as a material for fixing porous bodied tiles, this has been largely replaced with cementitious based proprietary tile adhesisve which have many advantages over cement; sand fixing and are suitable for a wider variety of tile types.

C

CEMENTITIOUS

Made from, or having the characteristics of, cement.

BAL INSIGHT

Always add any cementitious based tile adhesive to water (not the other way around) and tis can lead to poor dispersion of the powder and the creation of powder lumps. Always discard any adhesive which has begun to set. Do not add further water and attempt to re-mix.

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C CERAMIC TILE

A wall or floor surfacing unit made from clay, or a mixture of clay and other ceramic material, which has been fired at a high temperature. The resulting tile, which can be glazed or unglazed, will offer varying degrees of durability and resistance to stains.

BAL INSIGHT

Always seek further advice from the tile manufacturer or supplier on the suitability of the ceramic tile for its intended application. Ceramic tiles should carry a suitable CE mark.

C COEFFICIENT OF RESTITUTION

The degree of impact resistance of a tile measured by methods defined in BS EN ISO 10545 Part 5.

BAL INSIGHT

For a tiling installation in a light duty area such as domestic bathrooms and hallways, a coefficient of restitution of 0.55 is considered as being sufficient. For medium and heavy duty traffic areas, the higher the coefficient of restitution with the highest being for heavy duty areas

The long-term success of the installation will also depend upon several factors including the tiles being of a suitable type and thickness, the type of floor substrate, selection of a suitable tile adhesive and ensuring that, when installed, the tiles are solidly bedded i.e. voids are eliminated beneath the tiles.

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C

COEFFICIENT OF THERMAL EXPANSION

An indication of the extent to which a rise in temperature will cause a tile to expand, or contract dependent upon changes in temperature.

BAL INSIGHT

For larger tiles or panels, thermal expansion and contraction is cumulative across the area of the tile/ thin panel. Joints between thin ceramic panels should increase in width *"pro-rata"* as described in BS 5385; Parts 1-4 to panel size. As with any tiling installation consideration should be given to the use of movement joints perimeter joints, structural and intermediate joints.

C

COLOURED GROUT

A commercially prepared cementitious mix used for filling joints between tiles. Colourfast pigments are added to Portland cement, aggregate, plasticisers and water-dispersing agents. When set, the grout offers an attractive coloured finish to complement or contrast with the tiles.

BAL INSIGHT

Coloured grouts and those with fine grained pigments could potentially stain certain tiles. BAL always advises to check the potential risk of staining by applying the grout to s few tiles in an inconspicuous place as a trial area. If staining occurs apply a suitable proprietary tile sealer (as recommended by the manufacturer and repeat the test until staining is eliminated.

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D

DAMP PROOF MEMBRANE

A damp-proof membrane (DPM) is a membrane material applied to prevent moisture transmission. A common example is polyethylene sheeting laid under a concrete slab to prevent the concrete from gaining moisture through capillary action.

BAL INSIGHT

For external tiling installations a surface DPM is recommended onto the slab prior to tiling. This helps to provide protection for the finished installation from excess moisture from below which can manifest in the form of efflorescence.

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D DIMENSIONS (TILE)

Tiles are specified by size, with standard sizes given in millimetres: 150 x 150, 300 x 300 etc. These equate approximately, but not exactly, to the traditional standard sizes of 6” x 6”, 12” x 12” etc. Standard dimensions for mosaic tiles are indicated in the same way and can include 25 x 25 (approximating to 1” x 1”), 50 x 50 (2” x 2”), 75 x 75 (3” x 3”) and so on. Work size is the length, width and thickness of the tile, whereas the coordinating size includes the width of the joints between the tiles (work size + joint width).

BAL INSIGHT

As stated in BS EN 14411, the nominal size is used to describe a ceramic tile, however, “This and the following sizes are only defined for rectangular tiles. If the sizes of non-rectangular tiles are required, they are defined by the smallest rectangle into which they fit”

D DISPERSION ADHESIVES

Dispersion adhesives are pre-mixed products (also known as ‘ready-mixed adhesives’ or ‘pastes’) containing organic binders (polymer), mineral filers and organic additives. These are classified as either D1 or D2. The D1 adhesives are not water resistant and may be used for dry internal wall tiling. D2 adhesives are suitable for Internal wall tiling in wet areas such as showers, but not for total immersion conditions. Reduced slip, an optional characteristic, may also be classified and shown with a ‘T’ and an extended open time i.e. longer than 30 minutes shown with an ‘E.’ An adhesive classified ‘D2TE’ would therefore be a water-resistant dispersion adhesive with reduced slip properties and an extended open time.

BAL INSIGHT

Dispersion tile adhesives are water-based and form a bond between the substrate and the ceramic tile by the loss of water from the organic or polymer binder. This is why Dispersion tile adhesives are particularly suitable for use with porous bodied ceramic tiles.

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D

DRYING

Evaporation of water or other un-combined volatile substance from an adhesive, grout or other material or product.

BAL INSIGHT

Drying and curing are sometimes confused as being one and the same thing. Drying in terms of cement-based systems is basically loss of free water by evaporation (i.e. the free water not used in the cement hydration process). Curing is the prevention of the loss of moisture during the early stages in order to achieve better cement hydration. This is why BS 5385; Part 3: 2014 advises for cement;sand screeds “The screed should be kept covered with waterproof sheeting for at least seven days after laying to prevent drying out. The screed should be kept covered with waterproof sheeting for at least seven days after laying to prevent drying out” and “After the seven-day curing period, levelling screeds should be subjected to continuous air drying for at least a further two weeks before tiling is started”.

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D

DRY-PRESSED CERAMIC TILE

A ceramic tile which has been created in a die or mould, using direct pressure onto powdered or granular material.

BAL INSIGHT

Dry pressed or dust pressed tiles are classified with the letter B in BS EN 14411. For example, a dry pressed tile is designated Class B. A dry-pressed porcelain tile is classified by Group BIa and has a water absorption of <0.5%.

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E

EFFLORESCENCE

Whitish residue deposited on the surface of bricks, tiles, mortars or grouts caused by the crystallisation of soluble salts.

BAL INSIGHT

This is a phenomenon which affects the whole of the building industry. In ceramic tile installations, efflorescence takes the form of a whitish deposit which often manifests itself on the surface of the grout lines, most frequently in flooring applications. Visually this will often take the form of a surface stain discolouring the pigmented floor grout during the setting or drying out period, creating light and dark ‘patchy joints.

Proprietary cleaners are available for the removal of efflorescence, usually acidic based in the case of grout joints between ceramic tiles or specialist cleaners for grout joints between acid sensitive natural stone.

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E

ELASTOMERIC

Capable of returning to its original state after deformation. An elastomeric adhesive will deform under stress, then return to its starting condition.

BAL INSIGHT

Use of Rubber Crumb and polymer technology makes it possible to create an elastomeric tile adhesive. This means that the adhesive will offer much greater protection to the tiled finish and will hence offer greater resistance to non-deflection movement in general i.e. the tile adhesive behaves like an anti-fracture underlayment beneath the tiles. This is an advantage when tiling, for example to timberfloors, providing the floor is rigid and free from excessive deflection.

E

EXTRUDED (CERAMIC TILE)

A clay mixture is forced through a suitably shaped die. This creates a continuous ribbon of formed clay of uniform width, which is then cut by wire into appropriate lengths of tile.

BAL INSIGHT

Extruded tiles are classified with the letter A in BS EN 14411. For example, a dry pressed tile is designated Class B. A dry-pressed porcelain tile is classified by Group AIa and has a water absorption of <0.5%.

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ENCAUSTIC TILES

Usually taken to mean porous ceramic tiles which have been decorated with inlaid coloured clays before being fired, but also used to describe a number of single-coloured tiles laid to form a pattern.

BAL INSIGHT

The word encaustic is derived from the Greek for ‘burned in” Known originally as inlaid tiles, these tile types become popular in the 13th century particularly for use in Medieval churches and Abbeys and had a revival in popularity during the Victorian era.

Herbert Minton in Stoke-on-Trent refined the tile making process and developed new production techniques for production during the 1840’s.

Buildings which retain encaustic tile finishes today include the US Capitol Building in Washington DC, as well as the Palace of Westminster and the Victoria and Albert Museum in London

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E

EPOXY RESIN

A polymerised synthetic resin composed of epoxide used in conjunction with a curing agent (hardener) to form a reaction resin tile adhesive or chemical-resistant grout.

BAL INSIGHT

Epoxide based grouts are known for their high strength and durability as well as enhanced chemical resistance. Epoxy based grouts are also easier to maintain in a hygienic and sterile condition by regular disinfectant measures making them ideal for use in hygiene critical areas.

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E

ETTRINGITE

A natural mineral (hydrated calcium aluminium sulphate hydroxide) found in hydrated Portland cement system as a result of the reaction of calcium aluminate with calcium sulfate, both present in Portland cement.

BAL INSIGHT

Uncontrolled ettringite formation can be detrimental to cement based mortars due to its expansile nature and can lead to ‘sulphate attack’.
This is why it is important to ensure that Calcium Sulfate screeds are allowed to dry to a moisture level of less than 75% RH (Relative humidity) as measured using the Hygrometer method, or less than 0.5% (moisture content by wet weight).

Correct priming is essential before installing tiles directly to calcium Sulfate based screeds using cementitious based tile adhesives.
It is possible to install tiles using a suitable uncoupling membrane where the moisture content is higher than stated above. However, always refer to the manufacturer of the uncoupling matting for further advice.

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EXTERIORS

Exterior areas should be regarded as requiring tiles, adhesives, grouts and sealants suitable for total immersion.

BAL INSIGHT

External environments are the harshest in which to install tiles.
Factors such as freeze thaw expansion and contraction, thermal expansion and contraction, moisture expansion etc all can have a cumulative effect. It is therefore essential to select the correct materials for the intended applications, ensuring tiles are solidly bedded onto suitable substrates with DPM's installed (ground bearing concrete). For floors, suitable falls are required to ensure water is taken away from buildings and, ideally taken into suitable drainage outlets. Where recommended in BS 5358 Part 2 for external wall tiling mechanically fixed above storey heights. Movement joints should be installed as per British Standards BS 5385 recommendation.

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F

FAST SETTING

BS EN 12004 defines a minimum early tensile adhesion strength development after not more than 6 hours However, in practical terms, as a general rule, if tiles are ready for grouting within two to three hours of fixing, the adhesive used is deemed to be fast setting.

BAL INSIGHT

TThe mixing of water with a cement-based powder adhesive creates a complex ‘chemical’ reaction (cement hydration). As with any chemical reaction, the speed at which it takes place will very much depend upon the site conditions and the temperatures involved at the time of mixing and applying. The hydration of cement is also an ‘exothermic’ reaction i.e. gives out heat.

Therefore, in warm weather, when using a rapid setting tile adhesive, it is important to ensure that the cement-based powder is stored in a cool dry place before use. Keep the gauging water chilled and ensure good ventilation in the working area. Mix smaller quantities up at a time and when using a drill mixer, always use the slow speed to reduce additional heat generation.

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F

FIELD TILE

The main base tile used in covering a floor or wall, which may be complemented by inset tiles of a differing colour, pattern or type. It may also be bordered by tile trim.

BAL INSIGHT

Consideration when using other/different tile to be used for the design (thickness/size).

F

FINGER GRIP

A tile designed to be used at the edge of a swimming pool to aid swimmers in climbing from the pool. It typically has a raised edge for gripping and is made of unglazed, anti-slip porcelain.

BAL INSIGHT

The back of the tiles normally will be required to be filled and left to dry before fixing into position. The use of a thick-bed rapid-setting adhesive is normally used.

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F

FIXER

A professional layer of tiles: a householder laying tiles at home during the weekend may be fixing but, unless he or she lays tiles for a living, cannot be called a fixer.

BAL INSIGHT

As ex-fixers themselves many of our field-based Training and Technical Support can offer a wealth of “real world” advice and guidance. Don’t be shy in giving them a call.

F

FLOATING FLOOR

A floating floor is a floor that does not need to be nailed or glued to the subfloor. The term floating floor refers to the installation method but is often used synonymously with laminate flooring.

BAL INSIGHT

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FLOORS

Generally, a floor comprises a room's lower horizontal surface and the supporting structure beneath it. In tiling, a floor will be both the sub-floor upon which tiles are laid and the tiles themselves.

BAL INSIGHT

The trend of installing highly efficient boilers combined with heated screeds and larger format tiles on floors means that uncoupling systems and movement controls are becoming far more important. In many cases these are a recommendation or a best practise.

FROST RESISTANCE

The ability of a ceramic tile to resist frost, dependent upon its porosity and water absorption levels, is tested against the standard EN ISO 10545-12: This determines frost resistance for tiles intended for use in freezing conditions where water is present.

BAL INSIGHT

As part of testing for compliance with BS EN 12004 for tile adhesives, one test involves measuring tensile adhesion strength after freeze-thaw cycles.

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F

FULLY VITRIFIED

The degree of vitrification of a material describes the extent to which its porosity has been reduced by firing or other processes. A fully vitrified material would normally be regarded as impervious, completely resistant to water penetration. BS EN 14411 defines a floor and wall tile with a water absorption lower than 0.5% as being fully vitrified (or porcelain).

BAL INSIGHT

This is another term used such as a porcelain tiles.

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GLAZE

Either a ceramic coating, in a glassy state, on a ceramic tile or the material from which such a coating is made. Types of glaze include bright glaze (high-gloss), clear glaze (transparent), crystalline (containing microscopic crystals), matt (low-gloss), opaque (non-transparent) and speckled (containing granules of contrasting colours).
.

BAL INSIGHT

It is important not to bed porous bodied glazed wall tiles in tile adhesive or cement;sand mortar at excessive bed thicknesses. Subsequent drying shrinkage movement could put the tile under stress resulting in cracking or crazing of the glaze surface.
Care also must be taken when grouting glazed surfaces, in particular soft decorative test a sample area/material before proceeding. The use of a hard plastic scraper for grouting purposes should also be avoided.

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G

GEOMETRIC TILING

An arrangement of tile shapes in two or more colours, and possibly of more than one size and shape, in such a way that the tiling forms a pattern. Such a pattern typically repeats several times in covering a wall or floor. Sometimes known as a tessellation.

BAL INSIGHT

Many traditional geometric tile installations can be seen in churches and Victorian houses, but geometric can also refer to printed patterns on the surface of tiles or even the shape of a tile.

G

GLASS REINFORCED BOARDS

A manufactured construction board composed of either gypsum or cement reinforced with glass fibres, offering enhanced strength and greater dimensional stability.

BAL INSIGHT

Backer boards are becoming more common in tile installations. They provide a thermal and moisture stable substrate for tiling, they can improve weight carrying capabilities, provide protection from moisture and some are light weight and easy to cut.

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G

GLAZED PORCELAIN

A translucent ceramic made of clay, fired at a high temperature and glazed to give the outer surface a shiny effect.

BAL INSIGHT

Glazed porcelain tiles are available in a wider range of designs styles and colours, Wood effect plank tiles are an example of this . They are hard wearing but can chip if mishandled during fixing. All glazed floor tiles are classed using a PEI rating (porcelain Enamel Institute) system which is a measure of abrasion resistance. This ranges from PEI Class I (Mainly for residential and light duty wall application) to PEI Class V (Residential and medium duty commercial applications for both walls and floors.

G

GRANITE

A natural stone that is made from molten lava that never rose above the surface of the earth. Granite is denser than marble and is extremely durable. It is available in polished, honed or flamed (rough) surfaces.

BAL INSIGHT

Granite is one of the hardest substances known to man, tiles quarried from granite are harder to cut but can provide a long lasting finish when installed correctly. Many granite tiles will still need sealing to prevent staining over time.

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G

GROUT

Originally a thin mortar, now defined as a strong mix used to fill gaps between tiles to provide a durable, hard wearing, low shrinkage decorative joint finish as well as to help protect the underlying layers beneath the tile from the outside environment. Available as either cementitious or chemically setting, grout is available in a range of colours to complement the tiles. A variety of tools are available both for applying new grout and for removing old grout.

BAL INSIGHT

Grouts are available in many colours and are usually complimented by colour matched silicone sealants. Different products are suitable for different situations, although cement-based grouts are commonly used sometimes an epoxy grout will be more suited particularly food hygiene areas or soft water supplied swimming pools.

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H

HARD WATER

Water with a high mineral content, typically comprising calcium (Ca2+) and magnesium (Mg2+) metal cations. May also contain other dissolved compounds including bicarbonates and calcium sulphates. The UK has mainly hard water which can be found in areas where ground water passes through porous rocks such as gypsum, limestone, and chalk.
.

BAL INSIGHT

Where the water supplied to a swimming pools is hard and can be maintained at a level over 250mg/litre expressed as CaCO3, a polymer modified CG2 cementitious based grout is generally suitable. This still means though that the pool water has to be managed and maintained to ensure the water chemistry is in balance.

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H

HEATING CABLE

Used for underfloor heating systems and can be either warm water or electrical. Heating electrical cable is available which can be installed directly underneath the floor tiles, including those using ceramic, porcelain and most natural stone.

BAL INSIGHT

Although heating cables can be bedded directly into adhesives it is generally regarded as a best practice to encapsulate these systems into a levelling compound prior to tiling. This serves to both protect the cables during installation and to provide a flat surface.

H

HOT WATER PIPES

When tiling around pipes, an insulating gap needs to be left to allow for expansion. Hot water pipes will expand faster and to a greater extent than the surrounding tiles.

BAL INSIGHT

Typically, these are feeds for radiators. Whilst it may look neat to have a nice close cut because they can be seen, these need room to expand so should be treated as expansion gaps. A clear area should be left, and a colour matched silicone used.

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HUMIDITY

Humidity means the amount of water vapour present in the atmosphere. It varies according to location and weather, with such variations tending to happen slowly. In buildings, some areas are prone to fast and extreme humidity variation, with shower rooms, bathrooms and kitchens being obvious examples. It is essential to consider varying humidity levels when tiling in such areas.

BAL INSIGHT

The amount of humidity, in the air combined with the site temperature can impact upon the curing rates of cement based materials. For calcium sulfate based screeds, the ideal drying conditions are 20°C and 65% RH (RH = Relative Humidity) in well ventilated areas.

HYDRATION

Hydration means reaction with water. When Portland cement is mixed with sand and gravel, nothing happens. When water is added, a chemical reaction occurs to produce the material known as concrete.

BAL INSIGHT

It is important to fully hydrate cement based products which is why all cementitious based tile adhesives and grouts have mixing guidelines. Adding too much or too little water into the tile adhesives or grout mix on site can adversely affect product performance.

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H

HYGROSCOPIC

Hygroscopic materials are those with the capability of absorbing water molecules from the surrounding atmosphere.

BAL INSIGHT

Salt is a common hygroscopic material and is often used to absorb moisture from the atmosphere in closed rooms used for storage. Small silica gel sachets are often used in packaging for electronic devices. Timber is a hygroscopic material which is why BS 5385 advises against the use of timber as a base for installing rigid floor tile finishes in wet, frequently damp or high humidity areas.

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I

IMPACT RESISTANCE

Impact resistance is the ability of a tile to resist damage when subjected to a sudden applied load. Ceramic tiles are tested for impact resistance under a test method defined in BS EN ISO 10545-5:1998 and is determined by using the Coefficient of Restitution (Dropping Ball).

BAL INSIGHT

The resistance of a tiled floor to impact resistance is dependent upon several factors including;

- Tile strength and thickness i.e. thicker floor tiles with increased impact resistance

- Compressive strength of the sub-floor

- Surface regularity i.e SR1

- Ensuring tiles are solidly bedding in the tile adhesive. Any voids are potential points of weakness under load.

- Type of traffic e.g. light or heavy, small hard wheeled traffic etc.

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ICONS

An image, picture, representation, etc.

BAL INSIGHT

A quick way to indicate warning signs or product benefits before reading the information.

IMPACT SOUND INSULATION

The noise of footsteps and other traffic on tiled floors can be reduced by the use of impact sound insulation as an underlay. One system, for example, is a matting which comprises recycled rubber and cork with a polyurethane binder in a thickness of up to 5 mm.

BAL INSIGHT

Some elastomeric tile adhesives can contribute towards the impact sound reduction in floors, when used in conjunction with a suitable resilient acoustic underlayment matting.

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INSET TILE

A decorative tile used in isolation within a plane of field tiles to enhance the appearance of a wall or floor.

BAL INSIGHT

Inset tiles are usually factory produced, but some fixers can cut their own on site to suit individual installations.

INTERIORS

The materials and techniques required for exterior tiling may not vary widely, but interiors cannot be regarded in the same fashion. Each area within a building will present its own challenges, with the potential for variation within a single room, and tiling of any interior area should not commence until its specific requirements have been checked.

BAL INSIGHT

In the same way as external tiling, internal areas may be subjected to significant thermal changes, for example when tiling onto underfloor heating or direct sunlight in a glass Atria or moisture expansion as in wet duty applications.

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INTERMEDIATE MOVEMENT JOINTS

Movement joints are required when a tiled floor may be subject to movement, to prevent cracking of tiles and grout. In such cases these will always be needed at the floor perimeter, typically of 6 mm x 6 mm cross-section. Larger floors may also need intermediate movement joints.

BAL INSIGHT

Movement joints should always be free of adhesive and grout to allow maximum movement. In heated screeds intermediate movement joints should be at least every 8m and in external tile installations they may need to be every 3m.

INSTALLERS

A person who places or fixes equipment, machinery or materials in place ready for use.

BAL INSIGHT

Installers are key to the tiling industry however it is a constantly changing workplace with the development of larger tiles, new substrates, new systems and fixing methods. It is important to stay up to date with the latest techniques so installers should look to take advantage of any training offered, this in turn will help them to work smarter and more efficiently saving them time and money.

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IMPREGNATOR (SEALER)

An impregnating sealer is designed to protect surfaces against staining from external sources such as grease, dirt, oil, water and other potential surface contaminants.

BAL INSIGHT

Impregnator sealers are used to protect the surface of tiles and stone before fixing or grouting. this can change the look of the finish so always check with the customers/client. BS 5385:Part 5: 2009 advises under 5.3.3 Selection of natural stone, clause 5.3.3.1 General that “NOTE 4 All natural stone will benefit from the application of an impregnator to assist in the cleaning.

and

“Surface treatment of stone might affect the slip resistance, either negatively or positively, and should be considered at the design stage”

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J

JOINT

The space between tiles usually filled with grout.

BAL INSIGHT

Recommended minimum joints widths for wall and floor tile installations as outlined in BS 5358 Parts 1 & 3 are:

- 2mm for wall tiles with a facial area <0.1m² (with no side over 600mm long).
- 3mm for wall tiles with a facial area between 0.1m² & 1m² (with no side over 1200mm long).
- 5mm for a 3 m long wall and floor ceramic panels. The minimum joint width should Increase proportionally, depending upon the panel size.
- 3mm for floor tiling

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J

JOINT, CONTRACTION

A formed, sawed, or tooled groove, typically in a concrete structure, intended to create a weakened plane and thereby regulate the location of any cracking which may result from dimensional change of different parts of the structure.

BAL INSIGHT

Structural or expansion joints in the tile and adhesive bed should be sited directly over any existing structural movement or contraction joints within the base and should be continuous.

J

JOINT, CONTROL

An intentionally weak break made in a concrete surface to accommodate contraction stress. The material is generally only scored, not cut right through, allowing the concrete to crack naturally at a joint rather than elsewhere in the slab. Control joints in concrete should extend through the tile.

BAL INSIGHT

Keep this in mind when you are setting out and if you can set out from the scored sections and provide movement joints at these points.

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J

JOINT EXPANSION OR MOVEMENT

A stress-relieving joint used to compensate for movement of tiles and / or the substrate, by separating a large tiled area into independently moving tile fields to prevent cracking, bulging/tenting or debonding. These joints, for example should extending through tile, adhesive and the screed, base and are typically used in larger tiled floors and walls. Movement joints should be planned for set points at the beginning of a project.

BAL INSIGHT

For floor tiling BS 5385: Part 3 recommends that the maximum tile field should be no more than 10 metres in any direction but, in practice, it may be required to site movement joints at intervals of between five and eight metres e.g. where thermal influences exist or when tiling over suspended floors. For external tiling intermediate movement joints are required at 3 meters apart.

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K

KAOLIN

Generally, a clay mineral with the chemical composition Al2Si2O5(OH)4 (Kaolinite), also known as china clay. In tiling, refers to refractory clay which comprises essentially minerals of the kaolin group, firing to a white or nearly white colour.

BAL INSIGHT

Kaolin is the main component of porcelain ceramics and is used in porcelain tiles (White clay).

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LAITANCE

A weak, nondurable layer or crust commonly present on the top of new concrete, containing cement and fine particles from aggregates. It is caused by bleeding water to the top of over-wet concrete through overworking or overmanipulating concrete at the surface by improper finishing or by job traffic. Its thickness, from the barely measurable to 5 mm or more, can be gauged by scoring the surface until the aggregate is reached. Its relatively poor adhesion to the mass of the aggregate renders it liable to delaminating under impact or traffic. Laitance is best removed by suitable mechanical methods i.e, dust-free shot or grit blasting, mechanical plaining, grinding or abrading.

BAL INSIGHT

All laitance should be removed from the surface of concrete, cement;sand screeds and calcium sulfate/ anhydrite screeds using the methods as described above. Any loose debris and dirt should then be removed ideally using suitable vacuuming equipment. This should be carried out before any priming or tile adhesive application can begin.

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L

LARGE FORMAT TILE

Traditionally, loosely defined as a floor or wall tile over 300mmx300mm or even 400mm x 400mm . Recently Over the last couple of years however, the ever increasing use of larger size ceramic tiles (and ceramic panels) within the UK market , BS 5385: Part 1: 2018 defines a large format tile as a tile with no edge length greater than 1200mm or an area over 3600cm².

BAL INSIGHT

When fixing any large format tile, remember to install them using the float and buttering method ensuring that the tiles are solidly bedded in the tile adhesive. When fixing large format tiles (i.e. greater than 0.1m² in facial area) to internal or external walls at heights greater than 3 m above floor level, they should be mechanically fixed.

L

LATEX

As used in adhesives and sealants, a water emulsion of a synthetic rubber or plastic derived by polymerisation.

BAL INSIGHT

Common generic term sometimes used to describe a polymer additive. If you are adding this to a product, always check the amount and don't under use or put more in. this can affect the strength, setting and in grouts the colour. Styrene Butadiene Rubber or SBR is a type of general purpose synthetic rubber latex.

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L

LAYOUT STICK

A long wooden strip, marked at appropriate joint intervals, used to check the width, length or height of the tiling.

BAL INSIGHT

Provides accurate setting out, also termed has a gauging rod or staff.

L

LENGTH

Tile sizes are described in terms of length x breadth. Edge length is used in the definitions of large format tiles and ceramic panels (See Large format tiles above).

BAL INSIGHT

This is important to help with calculating the area required for pricing the job, ordering materials etc.

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L LIGHTWEIGHT TILE BACKING BOARDS

Backing boards are required when it is not practical to tile directly onto a wall, floor or other surface. They are available in a variety of materials, including glass fibre reinforced cement, foam cored, fibre cement, and magnesium oxide boards.

BAL INSIGHT

Due to their resistance to changing moisture and thermal movement, tile backer boards help to provide a dimensionally stable board to tile on to, both in wet and dry area. They are also capable of supporting an increased weight of tiling per m² and often are suitable as a substrate to lay electric undertile floor heating cables onto. Always follow the manufacture's guidance on when and where their boards may be used.

L LISTELLO

A highly decorative border tile, primarily for walls. If listellos are irregularly shaped, the field or trim tile layout may need to be adjusted to accommodate the fit.

BAL INSIGHT

Sometimes the back of the listello is hollow, and need to be filled. The required adhesive bed for dispersion based tile adhesives would be too thick and this can also be the case with some cement based adhesives. Excessive bed thicknesses can result in increased drying shrinkage and cracking (particularly soft body listello's) over time. A rapid-setting thick bed lower shrinkage tile adhesive would be better. Pourable adhesive are designed for use on floors only so I would back fill then all beforehand, providing a flat surface and once dry using the adhesive recommended for the project.

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LIGHTWEIGHT TILE BACKING BOARDS

A sedimentary carbonate rock, composed chiefly of calcite, a crystalline form of calcium carbonate ($CaCO_3$), and composed from the remains of marine organisms such as coral and shells. Calcite is a soft material, therefore careful consideration is required when selecting limestone for flooring, especially for slip and abrasion resistance. Limestone tiles are usually offered with a matt finish.

BAL INSIGHT

Always consider the environment when laying stone, wet area, a use of an uncoupling mat when underfloor heating is within the background. Use of a rapid-setting white cement-based adhesive with a relatively low water demand should be considered when fixing limestone, to avoid any potential risk of water staining.

The grout specified for use with limestone should, ideally be of a colour that is similar to the stone's because limestone's porous nature means that there is a potential risk of potential 'picture framing' i.e. potential migration of water and fine materials into the edges of the stone It's important to check if the stone may need to be sealed on the surface before fixing or grouting.

A neutral curing silicone or similar is advised for use in perimeter movement joints, as acid curing sealants i.e. acetoxy silicones react chemically with calcium carbonate. In high traffic areas, intermediate sealant movement joints should be avoided altogether.

Always check with the manufacture or suppler of the stone for further advice.

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M MAINTENANCE

Maintenance is essential for aesthetic reasons: there is no point in installing tiles if their appearance is allowed to deteriorate. More importantly, tiling should be maintained for health and safety reasons. Cracked, broken or missing tiles represent a trip hazard and should be avoided. The essential first step in successful tile maintenance is to fix them properly in the first place. Trying to cut corners in fixing by using poor quality materials is a false economy, as any minor saving on materials costs can be more than outweighed by the cost of subsequent remedial work.

BAL INSIGHT

Amongst the many advantages of ceramic and porcelain tiles, they are easy to maintain or replace locally “as new” condition.
Cleaning and maintenance of tiles is also important. Tiles can be easily maintained in a clean and hygienic condition using the correct cleaning agents and methods and the tiles are then dry.

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MARBLE

A quarried natural stone, commercially available in a broad range of colours. True marble is a metamorphic rock comprising mostly calcite, a crystalline form of calcium carbonate ($CaCO_3$). Marble's distinctive shine is not natural,but derives from the polishing process it undergoes. Quarried marble is usually sold in tiles of 20 mm thickness or less, in various sizes, with a range of finishes including polished, honed, split-faced and acid washed.. Carrara, Crema Marfil, Botticino are types of marble, although the term is also used loosely to describe any calcium carbonate stone capable of being polished.

BAL INSIGHT

Green marble, considered separately from true marble, contain the dark green mineral Serpentine and asbestiforms. Care should be taken to avoid contact with naturally occurring asbestiforms. Verde Alpi is one type of green marble which is susceptible to thermal changes and can undergo rapid moisture absorption and expansion which can cause warping or curling of the stone. For this reason this type of marble in flooring is often used purely as a decorative inset, rather than the field stone. Reaction resin tile adhesives may be used to install Green marble e.g. type R to BS EN 12004.

MICROPOROSITY

Extremely fine porosity, typically visible only at 50x magnification or greater through a microscope.

BAL INSIGHT

Before application of coloured grouts, the surface porosity of a ceramic, porcelain or natural stone and any associated potential risk of staining has to be considered. That is why BAL, in line with industry best practice advise that a small trial area of grouting is first carried out in an inconspicuous area. This is in order to test for the potential risk of tile staining i.e. by retaining fine coloured particles within micropores on the surface of the tile (See also coloured grout).

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M

MITREING

Cutting a tile at an angle other than at 90°, normally to fit an edge or corner.

BAL INSIGHT

Although a relatively simple process using an electric cutter or grinder for straight lines, mitreing unusual shapes such as L-shaped or other cutouts may require the use of a hand file for finishing.

M

MODULAR TILE

Tiles are manufactured in modular sizes, meaning that their dimensions are always multiples of the same index dimension ,e.g. 50 mm.

BAL INSIGHT

Typically found on floors, the set out and installation of modular tiles can be more time consuming. Using primers such as BAL Prime APD on porous substrates and cement-based adhesives with elongated “open times” will help make those minor adjustments which are often required on more complex installs such as these.

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M MOVEMENT

Movement can arise through changes in temperature or humidity, changes in moisture content and deflection or deformation (i.e.dead load and traffic load) which will impact upon any tiling installation. Any movement could lead to tiles lifting or bulging, debonding of tiles or cracking of tiles and grout joints.

BAL INSIGHT

The potential for movement will be different in every case and should be evaluated at the project planning stage with the appropriate precautionary measures incorporated into the tiling design.

M MOVEMENT JOINT

A movement joint is the interruption of the surface to allow for the accommodation of movement.

BAL INSIGHT

The frequency of movement joints required will depend upon factors such as the overall area of tiling, changes in environment i.e. internal and external areas and heated floors, changes in substrate etc. Therefore, the success of any tiling installation will depend upon selection of the correct type of movement joint placed at the correct frequency in the right situation.

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MESH BACKED STONE

Some naturals stone tiles are supplied with a resin mesh backing. Typically the resins commonly used for this are epoxide, polyurethane or polyester of which polyester is the most commonly used. A fibre mesh is often embedded within the resin coating i.e. a fibreglass mesh.
The reasons for this vary from providing additional strength to the stone, particularly in the case of thin marble, limestone or granite, or sometimes it may be designed as a 'temporary' backing.

BAL INSIGHT

When installing mesh reinforced resin backed stone tiles, the bond strength achieved is totally dependent upon the quality and consistency of the resin/ mesh backing applied to the stone. This applies to both the internal dry, wet duty and external conditions. BS 8000: Part 11 Workmanship on building sites Part 11: Internal and external wall and floor tiling – Ceramic and agglomerated stone tiles, natural stone and terrazzo tiles and slabs, and mosaics – Code of Practice recommends that: "With large tiles and slabs any reinforcing mesh should be well adhered to the underside, and the mesh and adhesive should not obscure more than 25% of the underside of the tile or slab unless they are mechanically fixed".
Always check the suitability of the natural stone for its intended purpose.

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MOISTURE EXPANSION

The increase in dimension or volume of materials e.g. ceramic tile due to changes in prevailing moisture conditions (water or water vapour). This expansion or contraction may occur within some materials over a prolonged period, but will happen more quickly if the tile is exposed to water or water vapour at greater than normal temperatures/higher humidity and pressures.

BAL INSIGHT

Moisture expansion is common in porous materials which are capable of absorbing moisture from the atmosphere such as wood-based boards. Conversely some porous materials contract (i.e. shrink)
as they dry out. Where these changes are large, any ceramic tile finish bonded to these backgrounds will be subjected to stress which can cause potential cracking or debonding of tiles and grout. The use of moisture and thermally stable materials such as tile backing boards or the use of an uncoupling matting for floors can help to reduce the effects of moisture movement.

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MOSAIC & MOSAIC TESSERAE

Mosaic

The art of creating an abstract or pictorial image on a wall, floor or other surface using small pieces of ceramic or porcelain tile, natural stone, coloured glass or other materials, including metals.

Mosaic Tesserae

A collection of ceramic (inc. porcelain), natural stone or glass tile of less than 49 cm^2 in area, whether square, octagonal, hexagonal or a random shape. Used to form a design, pattern or picture, they may be pre-mounted on a backing for ease of installation.

BAL INSIGHT

The code of practice for tiling advise that for mesh backed mosaics, the reinforcing mesh does not obscure more than 25% of the underside of the mosaic. It is also important that the mesh and the mesh glue does not deteriorate whilst in service.

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N

NATURAL STONE

A wide variety of natural stone types is commercially available, in sizes ranging from mosaics to large format tiles. Popular stones include basalt, granite, limestone, marble, sandstone, slate and travertine. Each has differing characteristics and requires care when fixing. In particular, thought should be given to adhesives. With limestone or other light coloured stone, especially marble or travertine, a white cement-based adhesive is essential to avoid any discolouration. A rapid-setting adhesive would also be recommended to reduce the risk of staining. For such ‘green’ stones as green marble, which can become dimensionally unstable when wet, a resin-based adhesive, such as an epoxide resin (type R1 or R2 to BS EN 12004: 2001), is essential. If the look of natural stone is spoiled, it typically occurs during grouting. A grout colour which matches the stone’s own colouring is advised, especially with porous stone. A suitable sealer will reduce a ‘picture frame’ effect around the edges of very porous stone and the risk is further reduced if a rapid-setting grout or a cement-based grout containing a water-retaining agent is used. For white or light-coloured stone, grouts containing grey Portland cement should be avoided. A neutral curing silicone or similar should always be used to seal movement joints in stone tiling.

BAL INSIGHT

As has been mentioned throughout this A – Z, Natural Stone can provide a timeless look. However extra consideration is paramount. Always be aware that, even if the same type of stone, from the very same quarry, each and every tile/slab produced may have differing characteristics. Best practice solutions should always be employed to minimise risk of staining and damage to the aesthetic of the tile. Substrate preparation and the use of systems to limit stresses on tile that may be inherently weaker such as Travertine, must be considered. The adhesive system, with products that are sensitive to the colour of the stone and its porosity must be considered. Generally speaking, White, Rapid Setting and products with a low water volume are required and again when sealing perimeters always use neutral curing silicones to avoid “picture framing” of the stone.

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N

NARROW JOINT

Any joint between tiles of for example 3 mm or less, where grouts containing finer fillers are required.

BAL INSIGHT

With the influx of large format tiling, you should always be aware that with preferred “narrow joints” an installation will undergo heightened stress levels. Effectively, the grout joint (when using flexible grouts) is the point at which stress is relived in the tile installation. You may need to consider stress reliving systems such as an Uncoupling Membrane and always check the minimum permissible grout joint for an installation. For example for floor tiling a grout joint should not be any less than 3mm.

N

NATURAL CLAY TILE

A tile manufactured from clays using either the wet (plastic) method or the dry-pressed method, resulting in a tile with a dense body and a distinctive, slightly textured appearance.

BAL INSIGHT

Natural clay tiles can be very porous. In days gone by, pre-soaking the tiles in water to prevent quick absorption of the adhesives was and still may be required prior to installing. Applying grout can also be an issue for the same reason, sealing he tiles fully (prior to installation) or even temporarily for the grouting process is something that should be considered, to prevent staining of the tile itself and subsequent over washing of the grout.

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N

NON-VITREOUS

Wall and floor tiles are considered non-vitreous when water absorption exceeds 7%.

BAL INSIGHT

It is difficult for any tile installer to fully know the absorption rate of any tile and on occasion even know what type of tile is being installed. A simple on-site test of immersing a tile in water and observe the water i.e. does the body of the tile absorb the water and darken? Or does the water “bead” and simply roll off the surface? Ultimately a tile should not be installed in any area unless fit for purpose and suitable for the installation, to avoid damage to the tiles, people and of course costly repairs.

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N

NOGGINS

Short timber struts, used between joists to strengthen or stiffen a timber base before tiling.

BAL INSIGHT

Generally speaking when under-taking a tile installation on a timber floor, the very first thing that fixers consider is to over board the floor with extra layers of Ply Wood or preferably Backer Boards. Be very aware that the information from the industry refers to “Minimum” requirements such as a minimum of a 15mm WBP Plywood overlay for existing floors. On many occasions these minimum requirements are not sufficient and work to the structure of the subfloor may be required, i.e. repairs to the joists and the addition of extra supports in “noggins”. Noggings ensure that the joints are not acting independently, but as a one structure and one that will significantly improve the stability of a subfloor and increase the success of any tile installation on a suspended floor.

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N

NOTCHED TROWEL

A trowel of either serrated or toothed design, with square, trapezoidal or round notches available in various sizes. It is used for the consistent application of a gauged amount of adhesive in ridges of a specific thickness and cross-section. The right tooth size and depth must be used to ensure the correct thickness of adhesive, as specified by the manufacturer. Notched trowels are used in applying all types of tiling adhesive.

BAL INSIGHT

The notches on a trowel, serve to give regular bed depth to the adhesive being applied to the given substrate. This bed depth is appropriate to the tile and substrate conditions, not the type of substrate i.e. wall trowel or floor trowel.

The notched perform a function in allowing air to be expelled once the tile depressed the adhesive, which creates a natural vacuum. This means it is paramount that when applying adhesive, it is done so in the same direction, consistently, so as to avoid air lock and difficulty installing and bedding the tile.

Chose the trowel with consideration of the tile and always check frequently as to the bedding on the tile. If the required coverage is not achieved, then using a trowel with a different profile e.g. round notched or square notched or use a larger notches if required. Like wise when installing smaller formats such as mosaic sheets, consider using smaller trowels such a 4mm trowel, this will avoid unnecessary mess in the joints and improve on the finish of the tile.

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NVQ

National Vocational Qualifications recognise competence in a variety of work-related skills, with more than 1,300 occupations covered. An NVQ demonstrates that the holder has the ability to do a particular job. By 2010, a fixer wanting to work on a construction site will need to hold a Construction Skills Certification Scheme (CSCS) card, which will require the achievement of NVQ Level 2 in Wall and Floor Tiling.

There are no formal entry requirements to NVQs, which are earned through assessment and, where necessary, training. A qualified assessor will test a fixer's knowledge and ability across a number of areas, ranging from general workplace safety, through materials handling and surface preparation, to tile fixing. The fastest route to a Level 2 tiling NVQ is through Experienced Worker Practical Assessment (EWPA), in which fixers with at least five years of checkable experience can be assessed on-site during two to three days. Others could qualify through the On-Site Assessment and Training (OSAT) route, probably involving either refresher training or short courses in particular areas. Even the most experienced of fixers could be in need of training to meet NVQ standards if they have specialised in a particular area. A fixer who has mainly or entirely worked on floors, for example, would probably benefit from reviewing wall fixing skills.

For both the EWPA and OSAT routes to qualification, government help with the costs is available through grants from the Construction Industry Training Board. Less experienced fixers will certainly need some degree of training before reaching NVQ levels of ability. Before undertaking any tiling training, a fixer should check the credentials of the prospective trainer. The best training centres will be those which are also accredited to carry out NVQ assessments.

BAL INSIGHT

BAL has supported the industry for many, many years in terms of providing industry links to the colleges that train tilers and also by providing training for those who would wish to gain "formal" qualifications at our Head Quarters in Stoke on Trent. As well as NVQ's you can also train on specific industry techniques such as installing tiles to Anhydrite Screeds. Not always are specific installations catered for within the NVQ qualifications, but with regular courses available and our Training & Technical Ream on hand, you can always stay on top of your trade.

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O

OPACITY

A tile may be fully or partially opaque or, as with glass tiles, transparent. Any tile which, when fired, would normally be transparent can be rendered opaque by the use of a coloured or colourless glaze prior to firing. When using transparent or only partially opaque tiles, consideration should be given to the colour of the dried adhesive. In most cases, an adhesive which dries to a white finish is advisable. In addition, care will be needed when fixing such tiles. The spread of adhesive needs to be uniform, with no gaps which could show through the tile as discolorations.

BAL INSIGHT

Doing the research into which type of tile you will be using is just as important as the adhesive you choose, most natural stone tiles will only accept white adhesives due to the opacity properties they have. Using grey can cause discolouration in the form off shadows and burning due to a reaction with grey cement, Glass tiles also have special requirements so at Bal we have reduced the production of grey adhesives to aid in the choosing the correct product for the Job.

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O

OPEN TIME

The length of time after adhesive has been applied to the substrate during which it retains its ability to adhere to and bond a tile. An open time of 20 or 25 minutes is typical for most tile adhesives, including ready-mixed products. In other words, after the adhesive has been spread on the floor or wall, there is then a period of 20 or 25 minutes for tiles to be placed, into the adhesive successfully. Open time should never be confused with pot life.

BAL INSIGHT

Every job will be different and choosing an adhesive based on open time should depend on how quickly you get the tiles into the adhesive before in skins over, Don't over spread, think about working in M² areas at a time as a guide and overtime you will waste less in turn save money.

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0

OVERLAY

Use of timber or tile backing board to “overlay” or strengthen an existing subfloor prior to tiling.

BAL INSIGHT

Getting the overlay correct ensures the tiles are fully supported and also decreases the likelihood of too much lateral movement and deflection, These are two of the most common causes of failure in floor tiling. A good solid and stable overlay ensures the tiles are down securely.

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P

PENDULUM TEST

The pendulum coefficient of friction test was developed with the intention of providing a ‘portable’ method of assessing slip resistance on flooring, where slips account for at least 35,000 accidents annually in the UK. The standardised test, as defined in BS 7976: Parts 1-3, 2002 , is used to measure the dynamic coefficient of friction in order to measure the slip potential of tiles and other flooring. A swinging arm with a standardised rubber sole, is swept over a set flooring area in a controlled way. The slipperiness of the flooring is shown as a pendulum test value, also known as a slip resistance value.

BAL INSIGHT

Always consider slip of tiles before installing, The Tile Association can provide this service and test the slip resistance and guidance. The Pendulum test is the preferred method of testing by the Health and Safety Executive (HSE).

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P

PERIMETER MOVEMENT JOINTS

Required where tiles meet restraining elements, including walls, window and door frames, baths and other fixed building elements. They provide the flexible connection necessary to accommodate any movement of the tiled surface caused by environmental and other changes. These can include temperature or humidity changes or increased loading.

BAL INSIGHT

Every tiling installation will require a perimeter movement joint. Formed using matching silicone to the grout colour or installing using preform movement joints depending on the spec and preference. Always leave a minimum of 6mm gap and never fill will a flexible grout.

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P

PITTING

Small indentations in the finished surface of an individual tile, typically the result of corrosion, cavitation or manufacturing defects. Such indentations at the corners or edges of a tile are more likely to have been caused by the sharp edge of a trowel.

BAL INSIGHT

Always check all defects before starting or if it can be used for cuts. Make sure all boxes of tiles are mixed up to help with design and shading.

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P

PLASTER

A powdered mixture of either cement, lime or gypsum and water, which may or may not be combined with aggregate, which forms a paste when mixed with the right amount of water. When this is applied to a surface, it adheres and subsequently hardens to a rigid representation of the form or texture imposed upon it while still plastic. Used to refer to both the paste and the hardened mixture.

BAL INSIGHT

Always leave to dry for a minimum of 4 weeks and never tile onto Bonding or Browning plaster. If the finishing plaster is polished, remove with a stiff bristled brush and prime the surface (dilution depending on the adhesive used). Note: weight of tiles is important, Plaster as a weight limit of 20kg per m², equivalent to a minimum 8mm thick ceramic tile or a maximum 7mm thick natural stone tile (including the weight of the tile adhesive).

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PLASTERBOARD

A globally used building material, also known as gypsum board or drywall, used for the finish construction of interior walls and ceilings. Paper is used to cover an inner core of plaster mixed with fibre, typically fibreglass or paper, plasticiser and water. Various other components are added, including additives designed to retard the growth of mildew and to increase fire resistance.

BAL INSIGHT

Ideal to be tiled onto direct (decorating side of the board), providing a flat surface for tiling. Weight limit is increased to 32kg per m².

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P

PACKING HOUSE TILE

An unglazed tile made from natural clay, similar to a quarry tile but typically of greater thickness.

BAL INSIGHT

Ideal to be used externally and generally cut using a wet cutter because of the thickness. Also, if using a pigmented colour grout a protective sealer would be advised.

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P

PAVER

An unglazed natural clay or porcelain tile for exterior use in such areas as drives and patios. Formed by dry pressing, pavers are thicker than standard flooring tiles.

BAL INSIGHT

When laying any materials, consider checking if a DPM is installed or if one need to be required. Drainage mats or pedestals (not for drives) can be used depending on the use and thickness of the paver/porcelain.

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P

PLASTICISER

A material that increases fluidity or plasticity of a mortar, cement paste, or concrete mixture. When added to plaster, less water is required, and drying times are reduced.

BAL INSIGHT

Used in mortars and not recommended in cement-based tile adhesives.

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P

PORCELAIN

A vitreous ceramic whiteware which can be glazed or unglazed, created by heating raw materials, typically including clay in the form of kaolin, to high temperatures. Porcelain's properties can include brittleness, durability, glassiness, hardness, resistance to chemical attack, resistance to thermal shock, resonance, strength, translucence, whiteness, low elasticity and low permeability. Its durability, strength and translucence derive from the formation of glass and mullite within the material during firing. Porcelain tiles are dense, normally impervious, fine-grained, smooth and usually produced in clear colours. By definition, porcelain tiles are dense and have a water absorption of ≤0.5% (see BS EN 14411).

BAL INSIGHT

Always consider all tiling tools used including drilling. To improve adhesion to the tiles always use a flexible polymer modified adhesive. Certain polished porcelain may require the use of protective sealer when grouting using darker colour grouts.

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P

POROSITY

The relationship of the open pore space, meaning the spaces between individual particles within material, to the bulk volume. It is expressed as a percentage so, the higher the figure, the greater the amount of open pore space. In ceramic tiles, the degree of porosity can influence mechanical strength, durability and frost resistance .

BAL INSIGHT

This can impact on where the materials can be used i.e. walls/floors internal/external etc. when sealers are required and even how soon grouting can start washing off.

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P

POT LIFE

The period of time during which a material, such as adhesive or grout, maintains its workable properties after it has been mixed.

BAL INSIGHT

Never extend the pot life of any product by adding more water once the pot life is over.

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P

PREPARATION-ADMIXTURES

The use of polymer admixtures with cementitious adhesives can improve their physical properties and performance, including adhesion and flexural strength. Similar admixtures are also available for use with grouts. Both types normally require dilution with clean water in varying proportions, in accordance with the manufacturer's instructions, and are available for both interior and exterior use.

BAL INSIGHT

Admixtures are not always used in all adhesives and grouts, always follow the instructions and never add more because this may cause problems with both application and performance.

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PREPARATION - FLOOR LEVELLING

Self-smoothing compounds are available, as single-part or two-part products, for levelling uneven floor backgrounds. They are available for use with exterior and indoor installations and for wet and dry areas.

BAL INSIGHT

Not all levellers can be used for external so always check beforehand. In a lot of cases if using fibre levellers, spike rollers are not normally used. Certain leveller may require longer drying time when applied in thicker coats. Also, when other materials are used such as vinyl's etc, drying times are exceeded.

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PREPARATION - WATERPROOFING

Waterproof coatings and tanking systems are recommended for pre-preparation prior to tile fixing, particularly when applied in such wet duty installations as wet rooms, showers and, if required bathrooms and, sometimes, kitchens and laundry rooms. They should also be used around pipework, drainage channels and in other potentially wet zones. They can be used with most backgrounds and require, typically, 24 hours to set or using rapid-setting systems.

BAL INSIGHT

Depending on the background material (plaster/plasterboard and certain cement/tile backer boards), in most cases it is important to protect the surface from water and tiles with a waterproof grout is not a substitute for tanking.

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PREPARATION - FLOORS

All floors require some form of pre-tiling preparation, varying according to the surface being tiled. The aim is to provide a tiling background which is clean, dimensionally stable, rigid and flat enough for the tiles to adhere properly for a durable finish. The need for dimensional stability of some surfaces, such as sand-and-cement screeds and concrete, may be beyond the fixer's control. Fixers can influence the rigidity, flatness and cleanliness of the surface.

The first step is to determine whether the surface is capable of being tiled. Any background containing linseed oil, such as linoleum, will be unsuitable. Other unsuitable backgrounds will include resilient floorings including cork and rubber, parquet floors and any other flooring which is likely to be insufficiently rigid or susceptible to deterioration once covered with an impervious flooring. Fixers working on older (pre-1920) buildings should look out for magnesite, coloured pink or greenish-blue, which needs to be completely removed and replaced with an alternative screed.

Before tiling can begin on any surface, a floor must be clean: free of dirt, dust, grease, plaster, paint and any other material that could form a barrier to the adhesive. It also needs to be level and true.

A new sand-and-cement screed should have had at least three weeks to dry. For new or existing screeds any hollow or weak areas must be cut out and repaired. This assumes ideal conditions, of 20° C and 65% relative humidity. If conditions are less suitable, with a cooler or poorly ventilated environment, the drying time will need to be extended. When the fixer is laying the screed as well as the tiles, they should cover it with an impervious sheet for the first seven days, then allow it to air-dry for at least a further two weeks.

Particularly dry or dusty surfaces should be primed. Note that anhydrite screeds based on gypsum-derived calcium sulphate or anhydrite (anhydrous calcium sulphate) can look like traditional sand-and-cement screeds but require specialist treatment. If in doubt, check. Such screeds need the surface to be primed using a suitable proprietary product or covered with a watertight polyethylene membrane, to protect against penetration by moisture, to which gypsum is especially sensitive.

A new concrete floor will need to have been laid for at least six weeks before tiling can start, in order that shrinkage can have taken place. As with sand-and-cement screeds, this should be extended if the drying conditions are poor. First, it has to be examined for any weak or hollow areas which need cutting out and repairing. If necessary, a primer should be used.

PREPARATION - FLOORS (CONT..)

Both sand-and-cement screeds and concrete are likely to have laitance when newly laid, which will have to be mechanically removed to enable correct adhesion of the tiles. Older surfaces may retain residues of previously used adhesives, which may have to be removed.

When tiling heated screeds, these should be pre-heated (conditioned) before fixing. There will also be a need for movement joints within the screed, with a further requirement for metal mesh reinforcement of the screed.

When fixing onto existing ceramic or natural stone tiles, these should be checked first. They need to be sound, clean and firmly bonded to their beds. If the tiles are terracotta or quarry tiles, they may have been polished with waxes and will require more intensive cleaning to remove these. Any existing movement joints should be noted and carried through to the new tiling.

Wooden tongue-and-groove floorboards need to be dry and free of paint, wax, varnish or other finishes. They should be fixed securely to joists, using non-rusting screws with the fixings not protruding. If the floor is free from deflection, tiling can be carried out using appropriate primers and adhesive. Otherwise, the use of a water-resistant plywood or tile backing boards may be necessary. In the worst cases, it may be necessary to re-lay the floor, with the boards lifted and additional noggins inserted between the joists.

Timber-based boards can be treated in the same way as tongue-and-groove floorboards. If WBP (water and boil proof) plywood has been used as an overlay, it should be allowed at least 48 hours to acclimatise before further work. The plywood's surroundings, backs and edges should be sealed with a suitable proprietary sealer to prevent distortion due to atmospheric moisture and it should be screwed down at 300mm intervals with non-rusting screws. Note that any plywood other than WBP quality will be unsuitable as a background for tiling, as will MDF, hardboard and chipboard. Such surfaces need to be removed or overlaid with tile backing boards before tiling.

If there are existing vinyl tiles or sheet, these need to be firmly bonded to the background and thoroughly cleaned of any loose or brittle material, waxes, polish or other contaminants. Linoleum, cushioned vinyl, thermoplastic tiles and the associated adhesive should be removed. A smoothing compound should be used for repairs, as necessary.

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PREPARATION - FLOORS (CONT..)

BAL INSIGHT

By preparing the floor it will help in many ways, better adhesion, speed of installation, provide a solid framework for tiling and a flat surface. All this will reduce costs in the long term and provide a quality installation.

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PREPARATION - WALLS

As with floors, walls will always require form of pre-tiling preparation to create a background that is clean, dry, flat and free from any barriers to adhesion.

For plaster and plasterboard, the surface should be checked for loose or hollow-sounding areas and repaired as necessary. Any traces of previous wallpaper or wallpaper adhesive should be removed. If any re-plastering is necessary, or the surface is newly plastered, it should be left to dry and shrink for at least four weeks. This period will need to be extended if the environment is cold or damp. Once dried, any fine plaster particles should be removed using a stiff-bristled brush. Before fixing, prime the wall with an acrylic primer, either diluted or undiluted according to the manufacturer's instructions. As plaster is not water-resistant, a waterproof coating/tanking system should be applied for installations in shower rooms and similar wet areas.

Sand-and-cement render is mainly found in commercial and industrial premises. If it is at least two weeks old, it requires little preparation beyond cleaning and checking for soundness, dustiness and flatness for tiling.

Apart from sand-and-cement render, tile backing boards represent the best surface for fixing wall tiles. Provided that they are securely fixed, clean, dry and straight, no additional preparation is generally necessary.

If tiling is to be fixed to a painted surface, the most vital aspect of preparation is either to remove the paint completely before starting, to reveal the surface underneath, or to cover it with a tile backer board. Certain paints, such as emulsion, will generally not be sufficiently adhered enough to support the weight of tiles.

Existing ceramic or natural stone tiles can be tiled over, provided that the correct adhesive is used and that the total weight of both old and new tiles can be supported by the underlying surface. They will need to be cleaned with a suitable detergent, dry and free of dust. Any cracks, holes or other blemishes will have to be repaired with an appropriate filler, which will need to be allowed to dry completely in accordance with the manufacturer's instructions. The existing tiles should then be scored with a tile scriber, in both horizontal and vertical lines, to improve the bond with the new tiles. It is usually worth considering the complete removal of existing tiling, as the increased thickness may mean that the new tiles do not align correctly with door frames, windows and other edges.

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PREPARATION - WALLS (CONT..)

BAL INSIGHT

Just like floor preparation it is important to provide a dry, solid, clean flat surface and making sure the tiles can withstand the weight for the tiling. Never short cut the prep in any case, this can lead to installation problems further down the line.

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P

PRIMER

A liquid, typically acrylic-based, used for preparing floor and wall backgrounds prior to fixing of ceramic/mosaic and natural stone tiles. It may need to be used either undiluted or diluted in varying proportions according to the background, tile type and environment. It needs to be used in accordance with the manufacturer's instructions. Fixing can normally begin approximately 30 minutes after priming (depending upon temperature and humidity). Note that PVA-based primers are not normally recommended for tiling applications, as the water content changes the constituency of the PVA, returning it to a tacky state. It prevents the adhesive from penetrating the substrate which could lead to de-bonding of tiling.

BAL INSIGHT

We sometime unsure when priming is required. Priming provides a mechanical key to help with adhesion, protects against chemical reactions (plaster and cement), and allows to keep the water in the adhesive mix to help to setting (such as porous materials like new screeds and boards). Always apply an even coat and follow the dilution amounts recommended.

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P

POLISHED SURFACE

The face of a natural stone or porcelain stoneware tile which has been ground with fine abrasives to produce a shiny finish.

BAL INSIGHT

This is a technique used with terrazzo to provide a smooth flat surface after fixing.

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POLYMER MODIFIED

Polymers were first used as additives to cement mortars and concrete during the 1920s, when natural rubber latex was added to road paving materials. There has been considerable subsequent development of commercial products, called admixtures, with a significant area of polymer-modified Portland cement being the production of tiling adhesives and grouts. Polymer-modified adhesives are often referred to as thin-set mortars. The polymers interact with the cement's components when in contact with water and several different types have been used to improve application and the physical and mechanical performance characteristics.

Polymer modification of adhesives and grouts offers improvements including easier handling, increased tensile and flexural strength, enhanced adhesive characteristics, improved water resistance and greater durability. It also tends to prolong the hydration period, giving increased density and shear strength, extending the working time and, of particular importance with grouts, promoting colour uniformity in the end product. A key benefit is increased water resistance. Adding latex to a typical grout will reduce water absorption to around 3% to 5%, compared with a range of 10% to 20% for the standard product. The advantages are easier maintenance, increased durability and greater resistance to the potential damage from freezing and thawing cycles.

BAL INSIGHT

Dry power polymer modified cementitious based products allows for consistency of mixing. When using liquid admixtures always use at the correct dilution rate. It is best to pre-dilute with water before starting (use the bottle of liquid to provide the correct volume of water). When used in grouts be aware it can change the colour of the finished grout. Very important to achieve consistency mix to mix water to liquid to powder ratios in all cases.

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Q

QUALIFICATIONS

Formal tiling qualifications are desirable for fixers for two reasons. For those working in the construction industry, even if only occasionally, there is no choice: by 2010, only a fixer holding a CSCS (Construction Skills Certification Scheme) card will be allowed to work on a construction site. This is granted to a fixer who passes a health and safety test and achieves the NVQ (National Vocational Qualification) Level 2 for Wall and Floor Tiling. NVQ Level 2 includes preparing backgrounds for both tile walls and floors, laying sand-and-cement screeds and fixing both ceramic and natural stone tiles. See also CSCS card and NVQ.

BAL INSIGHT

This important to you, to recognise to your customers and also will enable you to work on construction site (CSCS). The Tile Association (TTA) have funding available up to the end of the year. If you are an experienced fixer? you can undertake a one-day practical assessment route (EWPAR) Level 2 Wall & Floor Tiling qualification.

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Q

QUARRY TILES

Extruded tile, typically of 13 mm to 19 mm thickness and 150 mm or more square, manufactured from shale or natural clays. Usually unglazed, although glazed types are not unknown, and generally available in terracotta, brown and black. Unglazed quarry tiles can be slightly porous. Quarry tiles are typically specified for floors requiring a highly durable surface and are normally fixed with 5 mm joints or wider, requiring the use of wide joint grout. They are rarely used on walls but may occasionally be seen on countertops.

BAL INSIGHT

Ideal to be used external or heavy trafficked areas, when cutting always use a wet cutter due to the thickness of the tile. Also, the use of a protective sealer may be used when grouting with darker coloured grouts.

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Q

QUARTZITE

A hard metamorphic rock, formed from sandstone subjected to heat and pressure.

BAL INSIGHT

Quartzite is a natural stone whereas quartz is a manufactured stone (See quartz tiles).

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Q

QUARTZ TILES

Tiles described as “quartz tiles” are not natural, but engineered or agglomerate stone. They are manufactured using quartz sand, resin and mirror flecks. The mixture is heated to an extremely high temperature to create the finished articles. Quartz tiles are resistant to heat, and scratching.

BAL INSIGHT

Quartz tiles are a type of resin agglomerated tile., Always check the suitability for the intended application with the manufacture or supplier. (See also Resin Agglomerated Stiles

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R

READY-MIXED

Tiling adhesives are available in two forms: powder and ready-mixed. Powder adhesives, which require the addition of water, are available for both floor and wall use but ready-mixed adhesives are generally only suitable for use on walls. This is due to the essential difference between their characteristics: powders set through a chemical reaction brought about by adding water, while ready mixed adhesives set by losing the water already contained within the mixture. In use, a ready-mixed adhesive takes at least 24 hours to set before grouting, while 16 hours would be normal for a powder — or as little as two hours for a rapid-setting adhesive. In addition, the typical floor tile would be too large for a ready-mixed adhesive to set properly.

BAL INSIGHT

Ideal when you have not got water close to hand on-site. Used with small ceramic tiles for internal wall tiling. No need to mix and the product can be used again by just placing the lid on the bucket when finished. Minimum 24 hours before grouting.

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R

REACTION RESIN

Any resin involving two or more components including a synthetic resin and mineral fillers or additives and which requires a chemical reaction to harden. Typical examples would include polyurethane and epoxy resins.

BAL INSIGHT

Reaction resins can be used as an adhesive or grout. Normally used when specified for a project.

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R

RECTIFIED

Although ceramic tiles exit an extruder or press with virtually identical dimensions, the drying and firing processes cause shrinkage which can vary from tile to tile. In order to assure users that tiles are consistently sized, they can be rectified after firing. This consists of machining each tile, with saws or grinders, to ensure that all tiles within a batch are the same size. The significance is that the use of rectified tiles is essential when, for aesthetic or other reasons, the use of narrow joints is required: the narrower the joint, the less room is available to allow for variation in tile size.

BAL INSIGHT

Whilst allowing for narrower tile joints, guidance on the minimum recommended joint widths required for internal or external wall and floor tiling can be found in BS 5385 Parts 1 to 4.

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R

REFERENCE LINES

Two lines marked accurately on a substrate, intersecting at a 90° angle, to establish a starting point for layout lines used in placing tiles. Typically marked in chalk or pencil, but almost anything else could be used as the lines will be hidden once covered by the tiling.

BAL INSIGHT

Used when gauging and setting out before laying the tiles.

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RENDERING

Although tiles can be fixed to a wide range of substrates, the preferred background for wall tiling is cement-and-sand rendering. Guidance is available from British Standard Code of Practice BS5385 Wall Tiling (BS5385-1, BS5385-2 and BS5385-4). An important point to note is that a cement-and-sand render will shrink as it dries. If it is not fully dry before subsequent plastering and tiling, the continuing shrinkage could weaken the adhesion between the substrate and the tiles.

BAL INSIGHT

It is recommended in BS 5385; Part :2018 that a Portland cement-based render should be applied ideally at a thickness of approximately 12 mm. If required, the maximum thickness of render should not exceed 20 mm in order to avoid higher shrinkage stresses and be applied in two coats. Render coats should be 8 mm to 12 mm thick.

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RESIN AGGLOMERATED TILES

A resin agglomerate stone tile is a composite material, based upon the use of recycled natural stone aggregates or stone pieces which are then bound together at the manufacturing stage using a synthetic resin.

The agglomerated stone to resin binder ratio has a direct affect upon the physical, mechanical and performance properties of the tiles. For example, use of quartz or granite agglomerates produce in general a harder wearing tile with increased resistance to acidic chemicals when compared with those based on marble agglomerates. Two main types of polymer resin binder are used in the tile manufacture and these are either epoxide or polyester. The ratio of resin binder to agglomerates varies from 5% to 7% (with 95% to 93% Agglomerate). The higher the percentage of resin present; then the greater the reduction in abrasion resistance. This is especially evident with increases in the Coefficient of Thermal Expansion of the tile.

BAL INSIGHT

British Standards code of practice BS 5385: Part 5: 2009 and floor tiling Design and installation of terrazzo, natural stone and agglomerated stone tile and slab flooring – Code of Practice offers the following recommendations in clause 11.2.1 of BS 5385: Part 3 2014;

“To avoid moisture from the adhesive bed distorting resin-based agglomerated stone, reaction resin adhesives, or quick drying low alkalinity cement-based adhesives should be used”.

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R

RUBBING BLOCK

A hard-abrasive block used to remove rough edges on ceramic wall and floor tiles. The typical rubbing block is made of silicone carbide and has different grits on opposing faces. It is also used for shaping and mitring of tiles.

BAL INSIGHT

It is always good practice to rub down all cut tiles before installing.

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S

SANDSTONE

A natural stone, comprising mainly sand-size grains of rock or mineral and usually composed of quartz, feldspar or a mixture of the two. Its typical resistance to weathering but easy workability makes it a popular material for tiles. Sandstone occurs naturally in a variety of colours, including browns, yellow, red, grey and white. Not all types of sandstone are suitable for use as tiles, with the once-popular Collyhurst sandstone no longer being used because of its lesser durability. Sandstone is a common choice of material for kitchen floor tiles, although sealing is advisable for protection against spillages.

BAL INSIGHT

As with any light-coloured natural stone, the use of a white rapid-setting adhesive and fully back buttering is recommended because the material’s porous nature means that otherwise there could be a risk of discolouring of the stone.

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S

SCREED

A layer or strip of material used either for levelling a floor or to give it a smooth finish prior to tiling. Sand-and-cement mixtures and concrete are both commonly used. Can also mean flat, level strips of wood or other material at the edges of a screed, used to guide a straight edge in levelling.

BAL INSIGHT

With Calcium Sulfate based and pumped screeds becoming more commonly used in the domestic market, as with any type of screeds, it is important to ensure that the correct preparation of all substrates is carried out prior to tiling.

For cement; sand screed, the minimum recommended thicknesses are;

Bonded screed – A design thickness of 40mm to ensure a minimum thickness at any point of 25 mm

Unbonded screed – 50 mm, when laid on a suitable damp-proof membrane (See also separating membrane

Floating screed – 65 mm for domestic and similar locations where light loading is expected otherwise a minimum of 75 mm

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S SELF-SMOOTHING COMPOUND

Self-smoothing compound, also known as self-levelling compound, is used on both new and existing sand-and-cement or concrete substrates to take out any surface irregularities and provide a smooth finish. It is available in powder form and, mixed with water, finds its own level. If the surface to be levelled has flaking or cracks, these should be raked out. Not all compounds are suitable for use with underfloor heating, so manufacturers' instructions should be checked before purchase. The compound should be allowed to dry thoroughly according to the manufacturer's instructions, which will normally take between one and six hours, before it can be walked upon. Some will then require sealing before fixing can commence.

BAL INSIGHT

There is a difference between dry and fully cured. Some self-smoothing compounds (levellers) can take days to fully cure before tiling can commence depending on depth etc. As this is a base layer if this hasn't fully cured it can impact on adhesive choices and potentially cause inconsistencies in final grout finishes.

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S

SEPARATING LAYER

Designed to separate two layers of different materials. One example of such use would be when considering tiling onto an existing concrete substrate which has become contaminated in some way. A cement;sand screed would be laid unbonded over the concrete, by the use of a separating layer.

BAL INSIGHT

Separating layers can also be applied onto a damp-proof membrane except for an epoxy resin based membrane which can also function as a bonding agent .

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S

SETTING TIME

The time taken, for example for an adhesive to become fully hardened. It is measured from the point of application for ready-mixed adhesives, for which it is typically a minimum 24 hours. For powder adhesives, it is measured from the point of mixing and, whilst it can be in excess of 24 hours, it can be as little as two hours for rapid-setting adhesives. Not to be confused with working time or pot life.

BAL INSIGHT

Setting times need to be followed to ensure longevity of any tile installation. For dispersion (ready-mixed) based tile adhesives, where the background porosity is low i.e. primed surfaces or tiling onto existing glazed wall tiles, for example, can extend the setting time of the adhesive prior to the commencement of grouting i.e. at least 3 days at 20°C.

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S

SHEAR ADHESION STRENGTH

Shear adhesion strength describes an adhesive's resistance to a force applied along a plane in parallel to the direction of that force.

BAL INSIGHT

Dispersion (D) and Reaction Resin (R) tile adhesive are tested for shear adhesion strength under various conditions as per the test methods described within BS EN 12004: Part 2; 2017.

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SHOWERS

Any shower, ranging from taps over a domestic bath to a communal shower, could be exposed to water varying from splash contact to the full force of a power shower directly onto tiling. The use of correct adhesives and grouts will be essential, and fixing should be carried out in accordance with BS 5385 Part 4 1992 - Code of practice for tiling and mosaics in specific conditions.

BAL INSIGHT

It is good practice to apply waterproof tanking to wall or floor background in showers (See BS 5385: Part 1 & Part 4) Many homes now have combination boilers so even the most basic shower could have mains pressure for both the hot & cold feeds resulting in more water flowing through the system.

The preferred background is cement-and-sand render, provided that it is at least two weeks old. Existing ceramic tiles in sound condition and suitably braced cement backer boards will also be suitable. Plaster and plasterboard are not normally suitable, but may be acceptable for domestic installations, if the plaster is at least four weeks old.. For plaster and plasterboard tanking is recommended.

The floor should be checked for soundness, flatness and smoothness before the shower tray is installed, primed and allowed to dry. A specialist waterproof coating should be applied with a 1 mm thickness over the whole floor and up the walls. This should be to at least a one-metre height, but it may be preferable to continue it to the ceiling line. In areas of heavy use or where vibration is likely, matting reinforcement should be laid. The waterproof coating should be reinforced with suitable waterproof tape at corners, junctions, penetrations, cracks and joints. A further application of waterproof coating should then be laid over the tape and allowed a minimum of 24 hours to dry.

There must be no voids beneath the tiles, so solid bed fixing will be necessary, using the correct adhesive applied with an appropriate solid bed trowel. Grouting should not be commenced until at least 24 hours, or preferably longer, after tiling.

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SHRINKAGE

Contraction or decrease in volume of a material, such as cement based systems i.e. concrete, cement: sand screeds etc caused by a physical or chemical change in the material or escape of substances from it i.e. water.

BAL INSIGHT

If adhesives are used thicker than their intended bed depths they can suffer from excessive shrinkage. This can result in things like tiles “pulling back” where they are no longer flat once the adhesive has cured or in extreme cases cracked glazes.

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S

SILICONE SEALANT

An elastomeric material used to fill and seal expansion joints to allow movement at the joint while preventing the passage of moisture. It is only suitable when a non-epoxy grout has been used. Typical applications include sealing the joints between sinks, baths or shower trays and surrounding tiling. When using silicone sealant between a bath and a wall, the bath should be filled with water before starting to apply the sealant. Some baths will give slightly when full, stretching and eventually weakening the seal.

BAL INSIGHT

Clean tools, dipped in water should be used when tooling in any silicone. Wet fingers and saliva can introduce bacteria into the silicone resulting in mould growth soon after installation.

As a general rule, Acetoxy based silicone sealant are suitable for use with ceramic and porcelain tiles. However, for natural stone such as limestone, travertine or marble, always use a suitable neutral curing silicone sealant where perimeter movement joints are required.

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S

SLATE

A metamorphic natural stone, slate is typically very durable and will resist severe weathering for many years and rarely exhibits any degradation. Frequently grey in colour, although a range of colours can occur even within slate obtained from a single source. Slate from North Wales, for example, can be obtained in shades of cyan, green or purple as well as pale to dark grey. Slate is very durable with a high flexural strength, low porosity, making it ideal for use on floors.

BAL INSIGHT

When installing uncalibrated slate, it is always a good idea to separate the slate into three thicknesses, (thick, medium and thinness. When fixing use the thick medium thicknesses over the main floor areas and the thinness to be fixed around the perimeter and for any cutting.

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SLIP RESISTANCE

The level of slip resistance of floor tiles describes the degree to which tiles resist slipping. It is the coefficient of dynamic friction, as related to somebody walking on it. The greater the amount of friction between any floor surface and the shoes of a person walking on it, the less likely they are to slip.. However, slip resistance can be affected by contaminants. Most typically, this will be water, which acts as a lubricating film, for example in bathrooms, showers or swimming pool surrounds.

BAL INSIGHT

The dangers of flooring with low slip resistance were recognised in the Workplace (Health, Safety and Welfare) Regulations 1992, which stipulated that floors should not be slippery enough to create a safety risk. Several methods are available which can be used to determine the slip resistance of tiles. However, the preferred method of both the Health and Safety Executive and the UK Slip Resistance Group is the Pendulum Test, which simulates the action of a slipping foot. This test is used by such standards as BS 7976 (pedestrian surfaces), EN 1341 (external paving) and EN 14231 (natural stone modular tiles).

Always refer to the tile manufacturer or supplier for further advice as to the suitability of the tile for its intended application.

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S

SLURRY COAT

A coating of a soft, paint-like consistency which may comprise a mixture of water with a finely granulated insoluble material, such as cement, slag, or clay in suspension or cement mixed with a suitable polymer additive i.e. BAL Bond SBR. A slurry coat can be used, for example, as a primer or to increase bond strengths i.e. between cement-based screeds/renders and the substrate to which they will be applied.

BAL INSIGHT

Sometimes known as a bonding grout or slurry bonding coat and comprises of typically 1 part cement to 1 part screed sand aggregate , mixed by weight. The aqueous polymer additive is then added to the cement; sand aggregate mix until a creamy consistency is achieved. A bonding slurry can also be achieved by mixing the cement only with a proprietary bonding agent.

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SOFT WATER

In chemical terms, this is water containing low calcium or magnesium cations. Soft water has a calcium carbonate content of less than 50 mg/l. In swimming pools, as defined in BS 5385: Part 4: 2015, “Where the pool water is hard or can be maintained at a calcium level over 250 mg/l, expressed as calcium carbonate” , a cementitious based grout may be used for joints between the tiles. This is still dependant fundamentally upon the ability to maintain the pool water in a balanced condition.

BAL INSIGHT

Soft water is particularly aggressive towards cementitious grouts. If the mains water supply for swimming pools is soft water, an epoxy grout is recommended to reduce the risk of erosion of the joints.

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SOLID BED FIXING

When tiling small format tiles on walls in dry internal locations, it is not normally necessary for the backs of tiles to be completely in contact with adhesive. Adhesive is applied to the substrate and then combed into ribs using a suitably sized notched trowel. Best practice is that a minimum of at least 50 per cent of the back of each tile should be in contact with adhesive (spread evenly over the tile), Some internal dry use wall trowels will provide approximately 70-80 per cent adhesive coverage offering maximum performance. In all other applications — external walls, wet area walls, all flooring — solid bed fixing is necessary because of the nature of the environment, the load upon the tiles or both. It means that the back of every tile has to be completely adhered, with no gaps or voids. Depending upon the amount of adhesive applied to the substrate and the profile on the back face of the tile to be fixed, additional back buttering with adhesive may be required.

BAL INSIGHT

When fixing large format wall tiles greater than 600mm in one length a solid bed must be achieved in all environments Solid bed fixing is a requirement on all floors and external tiling. For the fixing of large format tiles, the notched trowel and buttering method is advised. In this method, the tile adhesive is applied to the back of the tiles in a thin coating. The tile adhesive is also applied to substrate using a suitable notched trowel i.e. a thick-bed solid bed trowel. The back-buttered tile is applied to the notches of tile adhesive 'wet on wet'. The overall final bed thickness underneath the tiles should be a 3-4 mm solid bed.

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S

SPA

A spa pool may be described as a thermal bath for the use of health treatment using warm water, often including the use of moving water, i.e. multiple water jets or whirlpool effect. In terms of tiling they must be considered a wet area and should be tiled using the same degree and of planning and preparation as for a shower or swimming pool.

BAL INSIGHT

Saline water is used in medicinal spa water. For pools with water features such a wave making facilities or other rapid moving water facilities, this can expose a cementitious based grout to more intensive attrition. Therefore careful consideration should be given to the use of an epoxide resin based grout under these conditions.

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SPACERS

Plastic spacers are inserted between tiles as they are placed in position on walls and floors to ensure consistently accurate width of the gaps between the tiles. Widths of 1 mm, 2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 8 mm and 10 mm are generally available, as straight spacers and in ‘T,’ ‘Y’ and cross shapes. Plastic wedges are also offered for use when fixing wall tiles above an uneven surface, such as rough concrete. They enable precisely level positioning of a row of tiles and prevent them slipping down the wall while the adhesive dries.

BAL INSIGHT

When using any spacers, it is always recommended to remove the spaces when required before grouting. Spacers should not be left in the joint and grouted over. This is to help with movement within the environment once the tiling is completed.

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SPECIFICATION

The use of standard specification templates to describe building projects can remove ambiguities and misunderstandings. It allows a particular job to be described in great detail by an architect, using standard, pre-defined terms which can be understood not just by other architects but by contractors and sub-contractors. In effect, it means that the person or company creating a design can say, “Here is what has to be done, the materials to be used and the ways in which the work is to be done,” in a manner that is readily understood by whoever will be carrying out the work.

BAL INSIGHT

In the UK, there is a recognised national standard specification service for building construction, produced by National Building Specification (NBS), which has more than 100 staff and is owned by the Royal Institute of British Architects. Its wide range includes the standard M40 Tiling Specification in two formats: architects’ specification and contractors’ specification. For any given job, the information will be consistent between the two, but emphasis and level of detail will differ.

It is important to also ensure that those recommendations given are also aligned with the appropriate, recognised industry guidelines and standards e.g. relevant BS EN codes of practice e.g. BS 5385 Parts 1-5, BS 8000 Part 11.1, TTA technical specifications etc.
An M40 Tiling Specification will cover much more than merely an overview of the specific tiles to be used, the background, preparation, bedding, adhesives, grouts and joint widths. It will address every possible aspect of the project in fine detail, laying out exactly what is to be done — and including what should not be done. As an example, a typical specification could address the issue of adverse weather thus:

- Tiles will not be fixed if the temperature is below 5°C or in damp conditions.
- Frozen materials will not be used nor will adhesives be applied to frozen or frost covered surfaces.
- Tiles will not be fixed if the temperature of the background/base is in excess of 65°C.
- Adequate precautions will be taken to protect work from inclement weather, frost and premature drying out.

SPECIFICATION (CONT...)

BAL INSIGHT

This might seem obvious common sense to the experienced fixer but including this level of detail serves two valuable purposes. It ensures that everything is understood and agreed, in advance of work starting, by all involved parties: there is no possibility, after project completion, of anyone claiming not to have realised at the outset that bad weather might cause delays. Equally importantly, the end customer seeing a comprehensive formal specification is immediately reassured of the fixer's expertise, thoroughness and professionalism. This is why BAL Quote Builder, when creating an instant professional quotation for a fixer always includes a Contractors Specification. It not only ensures that every aspect of a project has been considered, it demonstrates this for the prospective customer — which could give the fixer enough of an edge over less prepared competitors to win the job.

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S

SQUEEGEE

A tool used for the rapid application of grout. The typical squeegee comprises a stiff, flat plastic blade with a more flexible rubber edge. It is used to push grout across tiles. The rubber edge ensures that grout is removed from the tile surfaces but forced into the joints between tiles.

BAL INSIGHT

This is another tool that can be used instead of a grout float, to apply grout to wall and floor areas, ideal when grouting isolated areas.

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S

STEAM ROOM

As the purpose of a steam room is to provide a hot, constantly highly humid atmosphere, it must always be treated as a wet area. Tiling should be carried out with the same planning and preparation as for a shower or swimming pool.

BAL INSIGHT

The ideal backgrounds for tiling to in steam rooms is cement;sand render or dense concrete. Additional protection can be given by selecting an impervious grout such as an epoxide resin.

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S

STRAIGHT EDGE

As the name suggests, this is a piece of material used to provide a straight edge for the correct alignment of tiles. A straight edge is traditionally made of wood, but steel and other materials are also used. It is not unusual for a straight edge to bear markings allowing it to be used for measuring length or to incorporate the necessary fittings for it to be used as a spirit level.

BAL INSIGHT

Ideal to be used when checking surface alinement for walls and floors (flat) and when installing tiles to provide a straight edge when fixing.

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STRESS RELIEVING JOINTS

Also known as movement joints or stress relieving profiles, these are manufactured joints designed to compensate for the movement of tiles and substrates. If such joints are not used, shear stress arising from movement can cause debonding, bulging and cracking. They work by splitting a large tiled area into discrete fields which can move independently of each other. The degree of relief offered will depend upon the joint's size and material, although a useful guide is to expect a joint to typically accommodate movement of up to one-fifth of its movement zone width.

BAL INSIGHT

The necessary distance between joints will also depend upon the individual application . For floors BS 5383; Part 3 recommends 10 x 10 metre bays for large floors. These bay sizes should be reduced for floors subjected to thermal movement i.e. sun rooms, atria and underfloor heating etc. or thermal and moisture expansion such as in external applications and suspended floors i.e. over supporting walls or beams. Different widths of pre-formed joint are available to suit differing applications and they can be made of a variety of materials. Brass and stainless steel are normally specified for heavy duty industrial applications, such as factories and warehouses, and in laboratories and similar locations subject to chemical spillages. Aluminium is more commonly seen in light commercial applications, while PVC is typically employed in residential applications.

Where there is a stress relieving joint in a substrate, the corresponding joint in the tiling must be positioned exactly above it. Offsetting the joint by just a few millimetres will render it useless.

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S

STUDWORK

The supporting frame within a wall or partition, typically comprising a lattice of horizontal, vertical and diagonal beams to which boards have been fixed.

BAL INSIGHT

When used to prepare the background for tiling, the studwork should be ideally fixed at a maximum of 300mm centres in order to provide a rigid and stable background when installing a board before tiling. For proprietary tile backing boards and plasterboard, seek additional advice from the board manufacturer.

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S

STYRENE BUTADIENE RUBBER (SBR)

A synthetic rubber comprising of combined styrene and butadiene monomers. SBR was developed as a man-made alternative to natural rubber latex and used in a wide variety of materials.

BAL INSIGHT

SBR is widely used in the construction industry as a polymer additives to improve the general physical and mechanical strength of cement mortars. For example as a polymer additive in cement: sand render and screed as well as for use as a slurry bonding and priming agent for t.

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SUBSTRATE

The underlying support for a tile installation; in other words, the background onto which tiles are to be fixed, such as timber flooring, concrete, plaster or plasterboard walls, brickwork and including existing tiles.

BAL INSIGHT

General term used for background/base, for internal and external walls and floors. The essential requirements for the type, application and preparation of substrates which are suitable for receiving a rigid tiled finish are described in BS 5385; Parts 1 to 5.

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SURFACE QUALITY

The most commonly seen defects on tile surfaces include optical hazing, grinding marks, shade or colour variations, curvature or warpage and dimensional faults. Very little variation is necessary for a fault to be noticeable. Warpage of as little as 0.5% over the length of a tile can mean surface warping of up to 3 mm for a 600 mm x 600 mm tile. BS EN 14411: 2006 lays out standards for the surface quality of ceramic tiles.

BAL INSIGHT

Expressed as a percentage of defect free tiles, and tested in accordance with the method described in EN ISO 10545; Part 2, “a minimum of 95% of the tiles shall be free from visible defects”.

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SWIMMING POOL

Tiling a swimming pool requires the same skills, techniques and, generally, product types as tiling any other surface, with the exception that waterproofing is of fundamental importance. Correct preparation is vital. Before tiling begins, the concrete shell must be watertight, i.e. Over a seven day test period, the water level, after allowing for evaporation should not drop below 1/500 of the average water depth of the full tank or 20 mm or as specified by SPATA The Swimming Pool and Allied Trades Association).

If the concrete shell is cast to a high degree of accuracy, it may be possible to fix tiles directly to the watertight concrete in a solid bed of tile adhesive. However, in the majority of cases, cement: sand renders and screeds are normally applied to the concrete shell to achieve the required accuracy for tiling.

The concrete surface will need to be mechanically keyed and thoroughly clear of contaminants, which could include laitance or concrete curing compounds. In such cases, removal may require pressure washing or shot blasting

Timings will be critical, to avoid the effects of drying shrinkage movement that occurs as concrete and render and screed dries out.. For swimming pools the recommended drying times in BS 5385; Part 4: 2015 are:

- Between curing of the concrete shell and applying renders and screeds – 6 weeks
- Curing and drying of renders and screeds before tiling – 3 weeks
- Completion of tiling and commencement of grouting – 3 days
- Completion of grouting and movement joints before filling the pool – 3 weeks

BAL INSIGHT

In choosing the correct adhesive and grout, seek further professional advice from the manufacturer.

In selecting the grout, further consideration should be given to the pool water and any cleaners that may be used during the pool's lifetime. The pool water should be maintained in a balanced condition.

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S SWIMMING POOL (CONT…)

BAL INSIGHT

If the water supplied to the pool is hard or the pool water can be maintained at a Calcium level of at least 250mg/l and a Total Alkalinity of at least 80mg/l expressed as CaCO3), a polymer-modified cementitious-based grout may be used.

Where the water supply is soft (low Calcium levels), consideration should be given to the use of a reaction resin grout e.g. epoxide.

The use of sulfate containing chemicals, e.g. sodium bisulfate (dry acid), should be discouraged due to the need to keep sulfate levels as low as practicable. This is in order to reduce the risk of sulfate attack on cementitious based grouts, tile beds, screeds, rendering and concrete.

The use of aggressive acidic or strong alkaline based cleaners can also affect cementitious based grouts.

Movement joints, in accordance with BS 5385: Part 4:2015 should be fitted, with their location finalised before tiling begins.

The pool filling and emptying rate should be undertaken slowly. This is to minimises stresses arising from loading and thermal changes.

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A-Z OF TILING

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T

TANKING (WATERPROOF)

A waterproof tanking system is designed to be applied directly to wall and floor surfaces in order to create a barrier to prevent water ingress and thus protect backgrounds from water damage,. Proprietary waterproof tanking for use beneath tile adhesives can be either liquid applied i.e. one part waterproof coatings or two part i.e. powder and liquid additive or flexible sheet applied systems.

BAL INSIGHT

When in a wet environment, such as wet rooms, shower or if required bathrooms, the underlying substrates will need to be waterproofed before the tiling commences. This is normally affected by placing a barrier between wet and the wall or floor surface.. For domestic applications, a product such as the BAL WP1 Tanking Kit is highly convenient, as a single box contains everything necessary: a light grey, flexible, seamless tanking system comprising an acrylic-based primer, an acrylic-based coating, polyester tape and matting. Whichever tanking system is used, the manufacturer’s instructions should be followed explicitly.

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TENSILE ADHESION STRENGTH

Testing for the tensile adhesion strength of tiling adhesives is defined in the standard BS EN 1348 Adhesives for Tiles - Determination of Tensile Adhesion Strength for Cementitious Adhesives. In simple terms, it measures of the force required to.de-bond a standard tile from a standard concrete substrate when fixed with the adhesive under test.

BAL INSIGHT

When tested under various test conditions as described in BS EN 12004, a cementitious C1 (normal setting) tile adhesive should have a minimum tensile adhesion strength of ≥ 0.5Nmm² and for C2 (improved cementitious based adhesives), the tensile adhesion strength should be ≥ 1.0Nmm². A fast setting cementitious tile adhesive, C1F or improved fast setting cementitious tile adhesive C2F should have an early tensile adhesion strength of ≥ 0.5Nmm² after not more than 6 hours.

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TERRACOTTA

A natural tile made from clay, typically used for interior flooring. Terracotta is seen in a variety of colours, ranging across reds, browns and oranges. Such tiles are highly absorbent and should normally be sealed for protection from soiling and staining. usually in a red-brown-orange colour. Terracotta tiles are typically unglazed and, being highly absorbent, should be sealed to protect them from dirt and stains.

BAL INSIGHT

Traditionally terracotta tiles were sealed using Boiled linseed Oil and an application a wax polish prior to the commencement of grouting.

There are now a number of synthetic sealers available on the market.

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THROUGH - BODIED

There are two types of porcelain tile: glazed and through-bodied. A through-bodied tile comprises a mixture of clay, sand and other natural materials, pressed and fired at a high temperature. The term refers to consistency of composition throughout the body of the tile, with the colour and texture running through a tile's full dimensional thickness.

BAL INSIGHT

Such tiles are highly resistant to chips and scratches and extremely dense, with water absorption less than 0.5%, and strong enough for extreme surface traffic. Through-bodied porcelain tiles are suitable for applications ranging from domestic to heavy commercial installations.

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T

TILE NIPPER

Purpose-designed pliers which ‘nip’ away small little bites of ceramic tile to create small, irregular or curved cuts.

BAL INSIGHT

Hand tool used for shaping tiles for ceramic tiles/ porcelain and mosaics. Different nippers are available for the different tiles/mosaics used.

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TILES

Anything fixed to a wall or floor by a tiler. More formally, a tile is a natural stone or ceramic surfacing unit, usually relatively thin in relation to its surface area,. It can be glazed or unglazed and, if ceramic, is fired at a high temperature to create specific characteristics and properties.

BAL INSIGHT

Tile is a term used for most materials, when materials of 3m in size the term is called a panel and not a tile.

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TIMBER

Tiling onto timber requires that the boards are dry and conditioned to the environment in which they are situated. They must be fixed rigidly in place with ventilation behind the boards and without barriers to adhesion. Plywood and chipboard should have backs and edges sealed against moisture and atmospheric humidity and the tiling surface primed. Such boards should be at least 18 mm thick and screwed or nailed to joists at intervals of no more than 300 mm. If necessary, as defined in BS5385-3:2014, extra noggins should be used to between the joists for stiffening.

BAL INSIGHT

Timber is used in many locations before tiling, check the correct timber is used and follow adhesive manufacture on products/ systems used. Note: Within the last 18 months, timber is not recommended to be used has a background for tiling to internal walls (BS 5385: Part 1: 2018).

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TOLERANCES

The differences in manufacturing processes and materials for different types of tiles mean that allowances have to be made for dimensional accuracy, particularly with regard to vitrified tiles.

The tolerances for tile fixing are set down within British Standard e.g. BS5385 Part 3, for example, regarding tolerances on finished floor level.

BAL INSIGHT

It's always a good idea to mix all boxes of tiles before you start to help with tolerances of tiles and including colour shade.

In terms of surface tolerance, for floor tiling using a tile adhesive the accuracy of the sub-floor should be such that any gap under a 2 m straightedge does not exceed 3mm, defined as SR1. If this is not the case, consideration should be given to the use of a suitable smoothing and levelling compound in order to achieve SR1.

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TRAFFICKING

Where floors are likely to experience heavy trafficking, as in commercial installations, with high density pedestrian traffic and heavy dynamic or static loading a heavy duty, unglazed porcelain tiles are ideal. The suitability of any tile for use in heavily trafficked areas should always be first checked with the tile manufacturer or supplier.

BAL INSIGHT

Always install a solid bed of adhesive and products used are recommended for the type of installation. Use of a thicker floor tile with increased impact resistance will have better resistance to loading.

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TRAINING

With commercial and domestic customers increasingly demanding value, tilers need to show their expertise both through references and qualifications. In addition, by next year, a fixer wanting to work on a construction site will need to hold a Construction Skills Certification Scheme (CSCS) card, which will require the achievement of NVQ Level 2 in Wall and Floor Tiling. This almost certainly means undergoing training and will definitely mean being assessed.

The fastest route to a Level 2 tiling NVQ is through Experienced Worker Practical Assessment (EWPA), in which fixers with at least five years of checkable experience can be assessed on-site during two to three days. Others could qualify through the On-Site Assessment and Training (OSAT) route, probably involving either refresher training or short courses in particular areas. Even the most experienced of fixers could be in need of training to meet NVQ standards if they have specialised in a particular area. A fixer who has mainly or entirely worked on floors, for example, would probably benefit from reviewing wall fixing skills.

BAL INSIGHT

Less experienced fixers will certainly need some degree of training before reaching NVQ levels of ability. Before undertaking any tiling training, a fixer should check the credentials of the prospective trainer. The best training centres will be those which are also accredited to carry out NVQ assessments.

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TRANSVERSE DEFORMATION

The degree of flexibility in an adhesive matters when there is likely to be lateral movement from pulling, pushing, bending or twisting during the tiling's lifetime. This can happen to some degree almost anywhere, with many possible causes including vibrations, drying shrinkage, ambient humidity or temperature fluctuations, the amount of static and dynamic loading on the floor and deflection stresses. The most common substrate providing movement in tiling are timber floors. BS EN 12004: defines optional, additional classifications for cementitious adhesives including how an adhesive will deform in order to accommodate a limited amount of movement after tile fixing – known as transverse deformation and measures the deformation at which failure occurs.

BAL INSIGHT

Polymer modification of cementitious based tile adhesives is used to achieve S1 or S2 transverse deformation. A tile adhesive allowing transverse deformation of less than 2.5 mm in the specified test is not regarded as deformable. Those permitting deformation above 2.5mm, but less than 5mm are classified as S1. Adhesives that are highly deformable and allow transverse deformation of 5mm or more are classified as S2. It is possible to modify cementitious adhesives that are not S1 classified with a suitable liquid or powder polymer additive to improve the formulation to that of an S1 adhesive, but achieving S2 typically requires a higher level of polymer addition.

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TRAVERTINE

A form of marble that is characterised by the small cavities within it. These cavities may be pre-filled with a suitable resin to improve durability and surface or left open, to be filled with a grout finish. It can be effectively polished to a smooth, shiny finish and comes in a variety of colours from grey to coral-red.

BAL INSIGHT

Check with the manufacture of the stone, it may be required to seal the tiles before grouting, including what environments is can be used in (example wet areas and trafficking). Always cover the whole tile to ensure the holes are filled with grout. Certain travertine can be pre-filled with an epoxy resin material.

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T

TROWEL

A flat-bladed tool with a handle used to apply, level or shape cement;sand mortars Trowels can also be designed with ‘notched” in order to apply tile adhesive and are available in a variety of sizes and with square and curved notches in a range of sizes.

BAL INSIGHT

Providing a even bed of adhesive, the notched size will depend on the thickness of adhesive used. Ensure the trowel is the required depth for the installation and not to exceed the bed thickness of the adhesive used.

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U

UNBONDED SCREED

A screed which is not laid directly onto the substrate, but onto a separating layer acting as a damp proof membrane.. This layer could be as simple as a dense polyethene sheet. As there is no bonding of the screed, it could theoretically be lifted clear of the substrate.

BAL INSIGHT

Typical thickness is a minimum 50mm, and used on concrete to provide a damp proof membrane and when the concrete is contaminated.

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U

UNCOUPLING

Uncoupling principles have actually existed for centuries with the Romans being the first documented users of the building process which incorporated an “uncoupling” method. These early practices used a mud bed to separate the substrate (a two-inch thick layer of packed and flattened sand and cement) and the tiles. Both systems use the separating later to provide an uncoupling buffer between the tile and the substrate, enabling the substrate to move independently to the tiles. Modern uncoupling system methods have dramatically improved, but the same basic principles still apply for today’s uncoupling mat systems which are now in common use on floor tiling installations onto a variety of different substrates.

BAL INSIGHT

Idea to be used in areas with lateral movement such has timber floors, when underfloor heating systems are used beneath. Follow manufactures recommendations on installation because certain mats do not need to be stuck down and the size of tile used.

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U

UNCOUPLING MEMBRANE

A sheet of impervious material used as a separating layer between a substrate and screed.

BAL INSIGHT

Uncoupling membranes are designed to be an intermediary substrate between the load bearing substrates on the tile. Their purpose is to neutralize lateral stress movement and thus helping to prevent these stresses from transferring through to the tile finish resulting in possible reflective cracking or debonding of tiles.

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U

UNEVEN

Not level or smooth e.g. the floors were cracked and uneven.

BAL INSIGHT

Best practice is to always provide a flat surface before tiling, in small isolated areas a thicker bed of adhesive can be used depending of the product. When fixing any large format tiles, the background must be flat to provide a sold bed i..e SR1 or better. NOTE: Tiles must NOT be spot fixed to help overcome any uneven surface.

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U

UNGLAZED TILES

A hard, dense through-bodied tile which derives its colour from the materials of which it is made. Being unglazed means that it will normally require sealing before use.

BAL INSIGHT

Depending on the tile, a temporary sealer can be used when grouting using a dark pigments grout, this will stop the tiles from staining.

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A-Z OF TILING

Every week as part of our “Stay Positive, Back Stronger” campaign we will be providing you with our A-Z of Tiling Terms. Get in-depth description of many of the common tiling terms, plus some expert insight or top tips from our team.

V

VITRIFIED

A highly compressed porcelain tile which is highly impervious to water penetration.

BAL INSIGHT

The process of vitrification makes vitrified tiles much stronger and more durable than ceramic tiles. This means they will be harder to cut and work with during installation but more resistant to damage once installed.

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W

WALL TILING WEIGHTS

All wall substrates have a maximum weight that they can support. This figure includes the tile, adhesive & grout. As an example, plasterboard can support 32kg, plaster skim can only support 20kg/m² and tile backer boards can support up to 100kg/m²+.

BAL INSIGHT

Old paint, dust and other contaminants can reduce the weight capacity of any substrate so the correct preparation to remove any barriers to adhesion is important. The approximate weight contribution per m² of a cementitious tile adhesive is 4.5 to 5.5 kg/m² e.g. for gypsum plaster an 8mm ceramic tile plus cement-based tile adhesive would weigh approximately 14kg/m² + 5.5kg/m² = 19.5kg/m². An 8mm thick porcelain tile plus tile adhesive may be too heavy for the plaster to support.

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W WARPAGE

Any curvature of a tile, whether concave or convex, which results in the tile surface not being perfectly flat. The maximum permissible deviation from flatness for centre curvature, edge curvature and warpage are measured as part of the BS EN 14411 requirements for ceramic tiles. This relates to manufacturing tolerances.

BAL INSIGHT

A simple way to check for curvature of a tile is to place two tiles face to face, they will rock or sometimes even spin against each other.
Modern adhesives can help to ensure full contact coverage is still obtained.

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W

WATER ABSORPTION

The ability of a material to take up and retain water.

BAL INSIGHT

Water absorption can cause problems to arise when background substrates are exposed in wet duty areas such as in shower enclosures and external tile installations (See also water resistance and waterproof below). Best practice is to use a waterproof tanking systems. Ceramic tiles are also categorised by their water absorption i.e. by definition porcelain tile will have a low water absorption of ≤0.5%.

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W WATER RATIO

The water–cement ratio is the ratio of the weight of water to the weight of cement used in a concrete mix. A lower ratio leads to higher strength and durability but may make the mix difficult to work with and form.

BAL INSIGHT

All our adhesives & grouts have the ratios printed on the packaging. It is important to follow these guidelines as using too much or too little water can have a detrimental effect on the final strength and durability of the product.

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W

WATER RESISTANT

The ability of a material to resist penetration by water or remain structurally sound once wet.

BAL INSIGHT

It's a pretty common misconception that waterproof and water-resistant mean basically the same thing. For instance, most tile backer boards are water resistant. This means that while they themselves will not breakdown once wet, they will allow water to pass through to the background structures to some extent causing damage to timber studwork and potentially ceilings and other parts of the building.

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W

WATERPROOF

Totally impervious to water i.e. does not let water pass through it.

BAL INSIGHT

Tanking systems and DPM's help to provide a waterproof layer within tile installations. This is particularly important in modern shower systems and wetrooms. The tanking systems must be used correctly and are designed to direct water to a drain.

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W

WET AREAS

Areas subject to constant or periodic wetting, such as showers, pools, roof terraces exterior walls and exterior paving.

BAL INSIGHT

British Standards recommends using a minimum 8mm trowel for applying adhesive in wet areas. Some tanking systems can be used in water features.

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W

WIDE JOINTS

Generally, any joint between tiles of more than 3 mm width.

BAL INSIGHT

As tiles become larger, the minimum grout joint sizes need to increase to allow for thermal expansion / contraction and for thin tile panels, taking into account also factors such as thickness, size and dimensional tolerances. For a 3 m tile panel the minimum recommended joint width is 5mm.

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X

X-RAY DIFFRACTION (TEST FOR TILES)

A test used to identify a material’s crystalline components by comparing the diffraction spectra with those of known materials. Not applicable to glass, which has a non-crystalline nature.

BAL INSIGHT

X-Ray Diffraction can be used to measure the physical properties, chemical composition and crystalline structures in ceramics.

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Y

YELLOWING

Some white grouts can turn “yellow” particularly if the adhesive underneath wasn’t dry when the tiling installation was grouted. This is common with ready-mixed products which dry through evaporation and typically cure in 24 hours.

BAL INSIGHT

If yellowing in grout occurs due to the adhesive not being fully set it usually becomes evident firstly towards the top of the wall or around window reveals. This is because these are commonly either the last places to be tiled or with regards to window reveals the adhesive is sometimes used at a deeper bed than recommended and therefore takes longer to cure.

Y

YOUNG'S MODULAS

Young's modulus is a measure of the ability of a material to withstand changes in length when under lengthwise tension or compression.

BAL INSIGHT

The Young's Modulus of ceramic tile or natural stone is high. Therefore, when subjected to even a small amount of thermal expansion and contraction, this can exert a higher stress on any material restraining the tile or stone e.g. the tile adhesive. For this reason, the coefficient of thermal expansion of the tiles should not differ too much from the heated sub floor otherwise problems may occur.

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Z

ZIRCON (ZIRCONIUM SILLICATE)

A vitreous ceramic whiteware.

BAL INSIGHT

Zirconium Silicate can be incorporated into a porcelain tile body and is mainly used as a whitening agent, but may also be used to improve other physical properties.