THE TILE ASSOCIATION®

EXCELLENCE IN TILING




SETTING THE STANDARDS



TILING GUIDE

INTRODUCTION

Formed in January 2000, through the amalgamation of the NMTFA (National Master Tile Fixers' Association), the NTA (National Tile Association), the TPB (Tile Promotion Board) and British Ceramic Tile Council, The Tile Association represents the entire UK wall and floor tile industry and is committed to continuously promoting professionalism and raising standards in the tiling industry.

TTA operates as a Trade Association with TTA Board having overall responsibility for the work of the Association. Many members of TTA Board and Committees have contributed to the formation of British Standards for best tiling practice.

TTA operates a partnership with Trading Standards to form a Primary Authority for the tiling sector in England and Wales.

Opted-in members can access regulatory advice on trading standards, environmental health and fire safety legislation, enabling them to ensure their work is compliant at all times.

To learn more about TTA's work and services, and/or its membership benefits, go to www.tiles.org.uk.

BS 5385-1 states that "the application of ceramic or natural stone mosaic demands efficient supervision and the employment of properly trained operatives, skilled to an appropriate level of competence **certified by a recognised body, e.g. The Tile Association..."**

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EXCELLENCE IN TILING

T I L I N G G U I D E

This Tiling Guide from TTA has been produced to help support tilers in their day-to-day work. It contains practical information on key installation issues which most tilers will encounter in the course of their work.

Further information can be found in a range of TTA Technical Publications, free for download for members on www.tiles.org.uk, non-members can purchase copies by emailing technical@tile.org.uk.

TTA members can enjoy further benefits such as free access to technical advice in line with latest industry standards, training and business support services.

Join now* and quote **FIXNEW** to get £50 off the first year's subscription. Contact us by calling **0300 365 8453** or emailing **membership@tile.org.uk**.

*Subject to terms and conditions and meeting all joining criteria

1 TRAINING

The Tile Association is a Construction Industry Training Board (CITB) Approved Training Organisation (ATO). TTA is dedicated to developing training courses with the aim of increasing the understanding and competence of tiling installation. ATO status means that the training courses TTA provides are run to defined and industry-agreed standards.

TTA's Training Committee focuses on the training requirements and provision for the whole tiling industry.

TTA has worked with the industry and helped develop The Standard for Wall and Floor Tile Fixer qualification. This apprenticeship will play a major role in providing opportunities for young people who are interested in joining the industry and also in driving up skill levels of new entrants to the industry for the benefit of companies and employers.

TTA has CITB funding to train NVQ assessors for the industry. TTA aims to provide an assessor infrastructure for the wall and floor tiling sector across the UK which will support quality assured assessment of experienced operatives to NVQ L2. Funding is also available for NVQ EWPAR/OSAT training, which is designed to help fixers obtain their CSCS cards.

Having its own NVQ assessors helps TTA strengthen its training activities and also makes it easier for companies and independent fixers to access the training support they need. TTA supports a skilled and qualified workforce to stimulate the market by providing a route to qualification for experienced operatives via on-site assessment.

TTA gives full support to the assessors both during the training process and throughout the EWPAR/OSAT assessment of experienced operatives.

TTA also runs a variety of short courses and technical masterclasses. These may be linked to the publication of a new technical document or to a product trend in the market.

TTA's commitment to training can be seen also in the growing number of colleges in all parts of the UK which have signed up as TTA members. These colleges offer a variety of courses, including City & Guilds Level 1 and 2, as well as shorter Taster and Beginner courses.

For further information on TTA Training courses available please go to:
www.tiles.org.uk/tiling-courses

or contact us either by phone on:
0300 365 8453

or email: **training@tile.org.uk.**

2 TILE TYPES

There are many different types of tiles on the market and they have different properties such as porosity, density and durability, etc.

It is important to understand these differences and choose the right product for the job intended.

Glazed Porous Body Ceramic Tiles

Glazed porous body, e.g. BIII ceramic tiles consist of a porous bisque body with a decorative glazed surface.

Unglazed Tiles

Generally used in domestic and industrial installations, they are available with a slip resistant surface profile for floor tiling in wet areas.

Porcelain Tiles

Highly attractive and very hardwearing tiles that have extremely low water absorbency.

Available as wall or floor tiles, sometimes glazed often with good anti-slip properties, they can be used internally, and providing they are of sufficient slip resistance, externally, these tiles are, depending on thickness, suitable for domestic and commercial use.

They typically require the use of polymer enhanced cement based adhesive. The use of a ready-mixed adhesive is not recommended.

Natural Stone Tiles

Natural stone tiles include limestone, marble, granite, slate, travertine, quartzite and sandstone. Whilst some natural stone tiles are extremely hard wearing, the performance of these materials does vary, and you should seek guidance on their suitability for your project. Some natural stone tiles may require the use of adhesives and grouts specifically designed for the installation of natural stone tiles. Some natural stone tiles may need to be sealed before grouting to avoid staining.

Terrazzo

Either pre-manufactured or laid in-situ, terrazzo consists of granite and marble chips in a Portland cement, or sometimes resin binder. They can be polished to give a low absorbent and high strength surface.

Rectified Edge

Rectified or sharp edge tiles have been cut to near exact measurements with an almost perfect straight edge. Each of the four sides will be a 90° angle to the top and bottom faces of the tile meaning that the edges are perfectly symetrical, creating a more uniformed look.

Agglomerate

This type of tile is manufactured by mixing graded pieces of granite and marble with cement and resins to give a pre-formed tile. They generally have low water absorption. Refer to the manufacturer's advice for fixing instructions. Some agglomerated stone tiles are particularly sensitive to expansion with moisture and heat, leading to curling or lipping, and may require the use of a resin adhesive.

Mosaic Tiles

These are small pieces of ceramic, natural stone or glass usually sold in sheets on a mesh backing or paper facing for ease of fixing. Thin bed solid bed fixing is recommended.

Glass Tiles

Manufactured from glass, and available in many striking opaque colours. They can be manufactured in small sizes on mosaic backings and are available in much larger formats. They are very hard and offer extremely low porosity. Typically a minimum of a C2 classification cement-based adhesive is required but some decorative tiles may require resin-based adhesives. Extra care should be taken when grouting to prevent scratching.

3 SLIP RESISTANCE OF FLOOR TILES

When planning a tiling project, it is important to ensure that you choose a tile that is suitable for its intended use, and is safe and easy to maintain.

The slip resistance property of the tile should be considered for safety reasons. For instance, areas such as a swimming pool surround or shower area require a higher degree of wet slip resistance than areas that will remain predominantly dry.

The UK Health & Safety Executive (HSE) recommends the use of the Pendulum Test. The slip potential classification based on Pendulum Test Values (PTV) are as below:

PTV	
0-24	High slip potential
25-35	Moderate slip potential
>36	Low slip potential

The slip resistance of a floor in service is dependent upon the surface and its environment. It is important to recognise that this can change significantly with the introduction of a lubricant e.g. water and during the process of installation and finishing. For floors where its anticipated use is likely to involve wetting or lubricant contamination, slip resistant surface tiles should be used. Generally, dry floors are not slippery but the combination of very smooth floors and hard smooth heel or sole material can be slippery even when dry. Similarly, dry contaminants such as dust, fibres and lint can make any dry, smooth surfaced hard flooring slippery.

Once the tiles have been fixed, it is important to regularly clean the floor, rather than allow a build-up of dirt. Clients should be made aware of the importance of regular cleaning and maintenance for safety reasons.

For further advice consult TTA's Technical Publication 'Slip Resistance of Hard Flooring'.

4 CLASSIFICATION OF TILE ADHESIVES & GROUT

Adhesive Choice

Tile adhesives are now classified according to BS EN 12004-1 but due to issues with the harmonisation/designation process, CE and UKCA marking is currently still based on the withdrawn EN 12004:2012 standard, and likely to remain so for the foreseeable future. EN and BS EN are equally acceptable in the UK. Products are defined as follows:

EN 12004-1 Types of Adhesives	
C	Cementitious Adhesives (mix to use)
D	Dispersion Adhesives (ready to use)
R	Reaction Resin Adhesives (chemically reacting)

Classes of Adhesives	
1	Normal
2	Improved: High Strength (C) Water and Heat Resistant (D) Thermal Shock Resistant (R)
F	Fast Setting (C)
T	Reduced Slip
E	Extended Open Time (C & D Only)
S1	Deformable Cementitious (C)
S2	Highly Deformable Cementitious (C)

Before purchasing an adhesive product, a user should check the label on the container/packaging. Good quality products will carry a performance classification (e.g. C1TE), and CE Marking or UKCA marking to EN 12004:2012, with substantiated data on the label. Low performance adhesives will have absent data, not allowing a full classification.

Grout Choice

Grout choice is based on tile type, location of tiling, service condition of the installation and colour preference.

The following are descriptions of the product classifications in accordance with the current European Standard EN 13888-1:

Type	
CG1	Normal Setting Grout
CG1F	Fast Setting Grout
CG2	Normal Setting Grout with Additional Characteristics
CG2F	Fast Setting Grout with Additional Characteristics
RG	Reaction Resin Grout

Additional Properties	
A	High Abrasion Resistance
W	Reduced Water Absorption

For further advice, consult TTA's Technical Publication 'Adhesives and Grouts in Internal Tiling'.

5 TROWEL CHOICE

It is important to select the right type of trowel to ensure the correct bed depth and adhesive coverage is achieved.

Round Notch Trowels

Universal

- Edge Profile: 20mm round notches, 10mm deep at 28mm centres.
- Coverage: 100% achievable at 3 to 4mm bed depth. For solid bed fixing; suitable for most wall/floor tiles with lightly keyed backs.

Large format tiles

- Edge Profile: 20mm round notches, 13mm deep at 28mm centres.
- Coverage: Approximately 100%, suitable for large format tiles.

Square Notch Trowels

Thin bed

- Edge Profile: 10mm tapering notches, 5mm deep, at 12.5mm centres.
- Coverage: Approximately 100% at 2 to 3mm depth, suitable for solid bed fixing for most ceramic wall tiles up to 300 x 300mm.

Solid bed

- Edge Profile: 5mm notches at 6mm centres with 3mm protruding tips above notches to ensure 4mm solid bed.
- Coverage: Approximately 100%, for most tiles.

Mosaics

- Edge Profile: 4mm square notches at 8mm centres.
- Coverage: Approximately 90% to 100%. For thin bed fixing mosaics and wall/floor tiles up to 100 x 100mm.

BS 5385 recommends that —

- For wall tiling in internal normal conditions, the finished adhesive bed thickness should be no greater than that recommended by the tile and the adhesive manufacturer and that maximum practical contact between tile and adhesive should be achieved. Tiles with a surface area of 0.1m² or above should be solidly bedded. Tiles with a surface area of less than 0.1m² but which weigh more per m² than 70% of the background capacity to carry the weight should be solidly bedded.
- For floor tiling, solid bedding should be achieved.
- For wall and floor tiling in frequent wetting areas, tiles should be solidly bedded so that voids behind them are eliminated.
- Tiles should not be fixed using dot and dab technique.

6 WEIGHT LIMITS FOR WALL TILING

The following table offers general guidance for common types of backgrounds and the maximum recommended weights for tiling.

Wall substrate	Maximum weight of tiling per m²
Gypsum plaster	20kg
Gypsum plasterboard Skimmed (12.5mm thickness)	20kg
Unskimmed (12.5mm thickness)	32kg
Cement:sand rendering	Generally no restriction*
Lightweight foam-cored tile backer boards	60kg**
Glass reinforced cement-based boards	50kg**
Gypsum fibreboards	40kg**
Other rigid tile backer boards	Consult manufacturer

NOTE

Where multiple substrates are installed using only adhesives, e.g. tile backer board bonded to plaster, the substrate with the lowest value will determine the recommended maximum weight of tiling. Tiling is defined as a tile plus its bedding and grouting material.

* Provided the rendering has sufficient composition and has been installed correctly to achieve high strength.

** Guide figures only. Certain boards may be capable of carrying greater weights - consult with the board manufacturer.

7 SETTING OUT

For Wall Tiling

Take a long length of timber (batten), mark the tile widths to help you identify where the tile will start and finish, remembering to leave space for the joints. The width of which are determined by the size of the tiles (BS 5385-1).

Set out horizontal position of the tiles so that the same size cuts are made either side of the windows, etc. Avoid small difficult cuts as they can spoil the appearance. Plan each wall carefully, remembering that any patterns/designs will need to be matched in the corners of the room. For plain tiles each wall should be centralised avoiding any small cuts.

1. Find the lowest point of the base you are working to (skirting, bath top, work surface, etc.).
2. Place a tile against the lowest point and draw a line on the wall along the top of the tile. The start point of the line will depend on the setting out of the tiles, as the tile against the floor may be a cut tile.
3. Nail the batten along the wall to this line. Use the spirit level to ensure it is level. The first line of tiles will rest on this batten.
4. Draw a vertical (plumb) line at the centre of the wall. Use this to check that the tiles are in line vertically.
5. Spread the wall tile adhesive using a suitable tile adhesive trowel onto the wall. Work in small areas a metre at a time, so that tiles are fixed before the surface of the adhesive forms a skin. Press and twist the wall tiles into the adhesive starting at the bottom and working upwards, one row of whole tiles at a time, using spacers (if required) to ensure a uniform joint. Check the horizontal and vertical lines with a spirit level every few rows.
6. Remove surplus adhesive and spacers from the joints prior to grouting.
7. If the tile does not have a glazed edge, a neat finish on external edges and corners can be achieved with the use of tile trim incorporated at the time of tiling.
8. To prevent the seepage of water around baths, basins and plumbing equipment such as shower taps, a plastic sealing strip or silicone sealant should be used.

For Floor Tiling

1. Check the overall flatness of the floor. If required, use a levelling compound.
2. Mark a chalk line on the floor down the centre of the room parallel to the most suitable wall (normally this is achieved by viewing the room from the doorway).
3. Lay the tiles down this line and then work towards the wall you think is best, leaving a joint between the tiles of at least 3mm. Tile spacers can be used to achieve a uniform size joint, however they should be removed before grouting. Avoid small cuts, as they can be difficult and do not look professional.

8 SUBSTRATE PREPARATION

Correct substrate preparation is essential for successful tiling installation.

Always ensure that substrates are:

- Clean and dry, free from debris.
- Dimensionally stable and able to support the tiling for the intended duty and traffic. The use of sheets or boards that are subject to movement from changes in moisture content should be avoided. Plywood or other wood-based sheets or boards should not be used for direct wall tiling.
- Suitably level for the fixing method intended. **NOTE**: ready-mixed adhesives usually have **a maximum bed depth of 3mm**, and are not suitable for floors or for certain wall applications.
- Priming may be required to improve the bond to some surfaces. Always consult manufacturer's datasheets.
- In wet areas such as showers and wet rooms, a waterproofing system may be required as part of the substrate preparation.

9 GENERAL FIXING TECHNIQUES

For best practice, tiling should be carried out in accordance with BS 5385, the British Standard for wall and floor tiling.

- Adhesives should be spread evenly with a suitable notched trowel.
- Dot and Dab is not an acceptable method of fixing tiles on either walls or floors.
- Tiles should be positioned on the adhesive bed within the adhesive open time.
- Hold the spreading trowel at an angle of greater than 45 degrees. Tiles should be gently pressed into the adhesive bed with a slight twisting action to achieve sufficient contact.
- It is important to trowel out the adhesive ribs in one (straight) direction, which helps to prevent air becoming trapped between the tiles.
- In exterior locations, internal wet areas or floors, 100% adhesive coverage of the tile should be achieved with no voids.
- Ready mixed adhesives should only be used on walls and where thin bed application is appropriate (i.e. max bed depth = 3mm). Ready mixed adhesive is not suitable for fixing porcelain tiles.
- Where limited movement or vibration is expected, a suitable deformable adhesive should be used. Consult the adhesive manufacturer for guidance.
- Tiles larger than 0.1m² to be fixed above 3m from floor level should be secured by mechanical fixings.
- It is advisable to use tile spacers, however they should always be removed prior to grouting.
- There is currently no British Standard covering the use of levelling clips.

Bedded with glass tiles

Straight

Allows air to escape and good compression of tile

Swirl

Traps air which can hinder compression

Dot and Dab

Creates weak points in tile

Large Format Tiles and Panels

With the increasing popularity of large format tiles, it is important to make sure the background is flat, plumb and true before tiling begins. It is also worth bearing in mind that the manufacturing tolerances for the tile are based on a proportion of the size of the tile. Please ensure that the back of the tiles are free of dust or contamination prior to adhesive application. When fixing large format tiles or panels, it is essential to use the correct adhesive (i.e. Class 2 plus, F, T, E, S1 or S2 where applicable). Always consult the adhesive manufacturer and ensure as near as possible 100% coverage of tile adhesive.

For large format tiles and panels, and tiles with ribbed or deep keyed back profiles, the tile adhesive should be applied using the floating and buttering method, i.e. a thin coat of adhesive buttered over the tile backs and should fill any deep keys before placing the tiles in position on the combed adhesive bed. Large format tiles may not be suitable for fixing in a brick bond pattern.

Thin Tiles

Advances in technology in the tile industry have allowed for the introduction of thin tiles, which can vary from 3mm to 5.5mm in thickness. It is important that you seek advice from the tile manufacturer and the tile adhesive manufacturer before fixing thin tiles.

For further advice, consult TTA's Technical Publication 'Large Format Tiles in Internal Tiling'.

10 MOVEMENT JOINTS

Movement joints help absorb the movement in the floor or wall tiling from moderate background shrinkage, heat expansion, contraction or vibration, thus preventing tiles or grout from cracking, and in some cases prevents the tiles from becoming debonded from the substrate.

For Walls

Movement joints should be used as follows:

- Continuous with any existing structural movement joints.
- Where tiling abuts other materials.
- At junctions between substrates.
- At vertical corners and at 3m to 4.5m centres, both horizontally and vertically, in large areas.
- In areas where stresses are likely to be concentrated such as at changes of alignment.

An example of movement joint good practice

- An increase in the frequency of movement joints should be considered if large degrees of thermal movement or vibration are expected within an installation.

For Floors

Movement joints should be used as follows:

- Movement joints should extend through the tiling and its bed and coincide with any structural movement joints.
- Around the perimeter of the tiled installation (including door thresholds) with intermediate movement joints being provided in larger areas at 8m to 10m intervals.
- At junctions between different substrates, door thresholds and between existing substrates and new heated screeds.
- On suspended floors stress-relieving joints should be provided over supporting walls or beams where there is a risk of flexing.
- See page 21 for movement joint requirements for tiling with underfloor heating.
- British Standard recommended minimum width for an intermediate or perimeter movement joint is 6mm.

For further advice, consult TTA's Technical Publication 'Movement Joints in Internal Tiling'.

11 GROUTING

Before grouting commences, ensure that the adhesive is fully hardened to avoid disturbing the tiles before they have bonded completely with the adhesive. Check the setting time of the adhesive used.

Where limited movement or vibration is expected, use a suitable flexible grout (check with the manufacturer for suitability).

When mixing a powder grout with water, always use the correct and consistent amount of water to avoid shade variation.

Apply the grout into the joints using a squeegee. Once in the joint, the grout should be left to firm before cleaning down. This is to ensure it remains in the joint and does not absorb significant levels of extra moisture when the area is cleaned. Cleaning off too early can affect the colour consistency, creating a patchy colour appearance and can also affect the grout strength, leaving a weak, dusty surface layer.

BS 5385-1 recommends that for internal wall tiling in normal conditions —

1. For tiles with a facial area <0.1m² with no side over 600mm long, joints should not be less than 2mm wide;
2. Tiles with a facial area 0.1m² to 1m² with no side over 1,200mm long, joints should not be less than 3mm wide; and
3. Joints between tile panels should be increased pro-rata to panel size (e.g. for 3m long panels the recommended minimum joint width between 3m panels is 5mm).

BS 5385-3: relates to the installation of internal and external ceramic and mosaic floor tiling in normal conditions and recommends that as a general rule, the width of joints in ceramic tiling should not exceed the tile thickness. The width should not be less than 3mm. Wider joints, for example 10mm wide, might be required to accommodate dimensional irregularities in the tiles, to maintain modular discipline or to provide a decorative effect. Wherever practicable, the depth of the joints should be at least 6mm.

12 CLEANING & MAINTENANCE

It is important to remove all material residue immediately after installation. To ensure a long lasting and functional tile finish is achieved, an appropriate cleaning and maintenance programme should be scheduled. The cleaning and maintenance schedule should be fit for purpose and restore the surface finish of the tile back to its original installed state on a regular basis. The frequency of the cleaning programme is determined by the in-service conditions and type of contamination. Information regarding the cleaning and maintenance requirements of the tiles installed should be sought from the relevant tile supplier/ manufacturer.

Natural stone materials are quite varied in their composition, density and surface texture. Problems can occur when the particular stone product is treated in a way that does not suit its particular chemical composition or surface finish. This can be avoided by securing expert advice from the relevant supplier. The tiled surface should be checked on a regular basis. Any signs of deterioration in the appearance should be addressed, and the cleaning and maintenance programme adjusted to restore inherent qualities of the tiled finish.

For futher advice, consult TTA's Technical Publication 'Cleaning of Ceramic Tiles'.

13 SPECIAL INSTALLATION CONSIDERATIONS

For members a full range of technical documents is available for free download. Technical documents are available to purchase for non-members.

Tiling Technical Publications

Installation & Fixing of Natural Stone Tiles & Slabs to Internal Walls and Floors
Uncoupling Membranes
Tiling To Raised Flooring Systems Supported By Pedestals
Tiling With Resin Agglomerated Tiles
Internal Ceramic Tiling To Sheet And Board Substrates
Tiling To Heated Floors
Tiling To Calcium Sulfate Based Screeds
Ceramic And Natural Stone Floor Tiling To Acoustic Systems
Tiling In Wet Rooms
The Cleaning Of Ceramic Tiles
Slip Resistance Of Hard Flooring
Movement Joints In Internal Tiling
Large Format Tiles In Internal Tiling
Design And Construction Process For Swimming Pools
Adhesives And Grouts In Internal Tiling
External Floor Tiling to Balconies, Terraces and Patios

SPECIAL INSTALLATION CONSIDERATIONS

Tiling to Calcium Sulfate (Anhydrite) Screeds

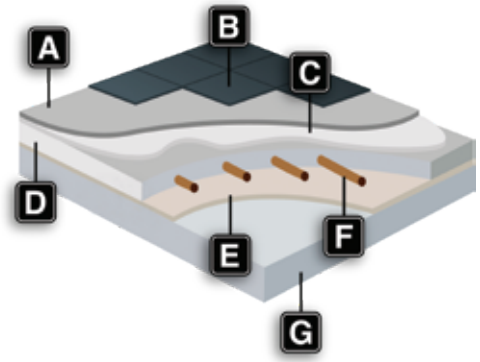
Preparation is particularly important when it comes to calcium sulfate screeds and good practice at this early stage cannot be overstated. Tilers must be aware of a number of potential problems as below:

- The formation of ettringite, resulting from the cement and water in the tile adhesive reacting with the gypsum in the screed, which could cause tile debonding.
- As calcium sulfate cures, a weak layer of laitance is formed on the surface. This layer, which must be removed, is too weak to tile onto and also slows the drying time of the screed.
- Calcium sulfate screeds may be difficult to identify. They can look very similar to sand:cement screed. If a screed is suspected to be calcium sulfate based, the screed should be thoroughly sealed as a precaution.
- When underfloor heating is incorporated, heating pipes or elements should be covered by at least 25mm bed depth.

The screed must be allowed to dry out and prepared as per the screed manufacturer's recommendations. Generally anhydrite screeds should be allowed to dry at a rate of 1 day per mm of screed thickness for screeds up to 40mm thickness, and 2 days per mm for any additional thickness over 40mm to achieve a moisture content of no greater than 1% w/w or 75% Relative Humidity (RH).

The surface should be mechanically sanded and vacuumed to remove all contamination, dust and laitance.

Seal the floor with an appropriate primer repeatedly until no more is absorbed and allow the primer to dry before tiling commences. Always consult the manufacturer for full details.



A - S1/ S2 Tile Adhesive
B - Tiles
C - Primer
D - Calcium Sulfate Screed
E - Insulation
F - Heating Pipes
G - Concrete Substrate

For further advice consult TTA's Technical Publication 'Tiling to Calcium Sulfate Based Screeds'.

SPECIAL INSTALLATION CONSIDERATIONS

Tiling with Uncoupling Systems

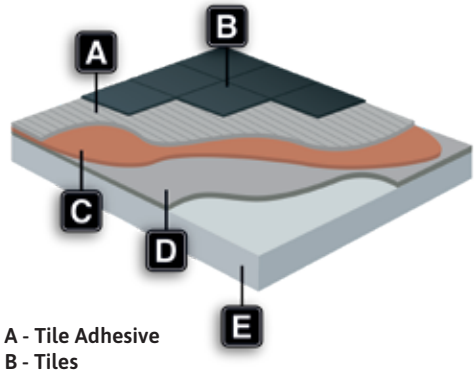
Uncoupling systems are designed to accommodate moderate lateral stresses that can develop between the substrate and the tiles, protecting the floor from damage that could be caused by the substrate movement, e.g. drying, shrinkage.

An uncoupling system is placed beneath the tiling layer. Uncoupling membranes can be used over a number of substrates including timber, new screeds and concrete. Refer to the manufacturer's instructions for suitability.

Some uncoupling systems may also be used for waterproofing/tanking purposes i.e. in a wet room. They are also suitable for use with electric underfloor heating systems.

Generally tiles can be fitted once the adhesive for the uncoupling system installation has set. Construction movement joints should be carried through the system and the tiling installation.

Perimeter and intermediate movement joints should always be installed.



A - Tile Adhesive
B - Tiles
C - Uncoupling
D - Levelling Screed
E - Concrete Substrate

For further advice consult TTA's Technical Publication 'Uncoupling Membranes'.

SPECIAL INSTALLATION CONSIDERATIONS

Tiling in Showers and Wet Rooms

In wet situations, such as wet rooms and showers, it is essential to tile onto a waterproof background, using a minimum C2 tile adhesive. Without proper waterproofing protection, water penetration behind the tiled finish can cause serious damage.

- Cement:sand render is the preferred background for tiling onto.
- Alternatively, choose a suitable tile backer board - timber or plywood substrates are not recommended.
- Use a suitable waterproofing system and ensure corners are taped and adequately sealed.
- Solid bed fixing is essential on walls and floors.
- Choose a suitable water resistant adhesive and grout.

Three options are generally available for waterproofing:

- A waterproof tanking kit usually comprising a water-based liquid applied membrane, a self-adhesive flexible sealing strip and a bottle of primer.
- A waterproof tanking mat.
- Waterproof tile backer board.

Take extra care that all joints and corners are properly taped without creases to ensure a watertight seal.

An example of tile backer board installation

A - Movement Joint Sealant
B - Tile
C - Tile Adhesive
D - Tile Backer Board
E - Jointing Tape
F - Board Fixings

For further advice consult TTA's Technical Publication 'Tiling in Wet Rooms'.

SPECIAL INSTALLATION CONSIDERATIONS

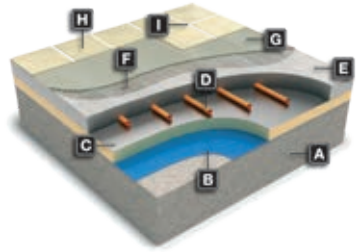
Tiling with Underfloor Heating

There are two common types of underfloor heating: electric wire systems and piped water systems.

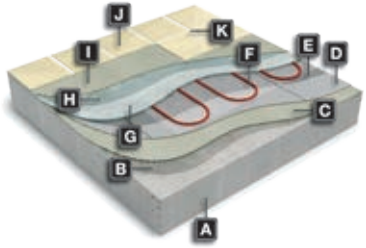
To minimise drying shrinkage, underfloor heating systems should be fully commissioned in controlled stages, before and after tiling. Manufacturer's recommendations on drying times, screed thicknesses, adhesives or grouts should be followed when such systems are installed.

With underfloor heating, floors are subjected to significant thermal changes. The correct placement of movement joints is critical. Floors should be divided up into bays of size no greater than **40m²** (25m² for resin agglomerate tiles) with an edge length no greater than **8m**. Movement joints must be formed around the perimeter (min 6mm).

The use of a minimum C2 solid tile adhesive bed with a minimum CG2 grout is recommended. Products with higher flexibility/deformability provide better accommodation for movement and vibration. Consult the adhesive manufacturer for guidance.



A - Concrete Substrate
B - Polythene
C - Insulation
D - Heating Pipe
E - Screed
F - Primer
G - Tile Adhesive
H - Tile
I - Grout



A - Concrete Substrate
B - Primer
C - Tile Adhesive
D - Tile Backer Board
E - Primer
F - Heating Cable
G - Levelling Compound
H - Primer
I - Tile Adhesive
J - Tile
K - Grout

For further advice consult TTA's Technical Publication 'Tiling to Heated Floors'.

SPECIAL INSTALLATION CONSIDERATIONS

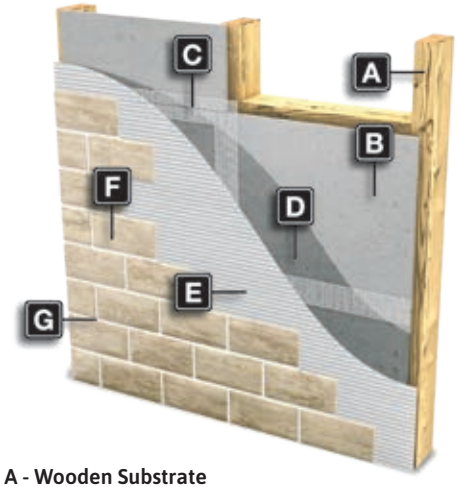
Tiling onto Backer Boards

Proprietary tile backer boards are available in a variety of materials, thicknesses and weight. They provide a suitably rigid substrate to receive direct tiling and should be selected for the relevant conditions based on their properties.

BS 5385 states that plywood and other wood-based sheet or boards should not be used for direct tiling to walls. Gypsum and gypsum plasterboards should not be used for direct fixing in wet areas.

Typical types of tile backer boards include:

- Foam-cored boards with glass fibre-reinforced polymer modified cement coating or a covering of reinforced fleece webbing.
- Glass reinforced cement boards/fibre cement boards.
- Magnesium oxide boards.
- Extruded polystyrene (XPS) boards.



A - Wooden Substrate
B - Tile Backer Board
C - Joint Tape
D - Primer
E - Tile Adhesive
F - Tile
G - Grout

NOTE

Always consult board manufacturer for guidance on installation.

For further advice consult TTA's Technical Publication 'Internal Ceramic Tiling to Sheet & Board Substrates'.

SPECIAL INSTALLATION CONSIDERATIONS

External Floor Tiling

- Ensure all substrates are rigid, adequately fixed and correctly installed. Substrates should be suitable for the location where tiling is to be applied.
- Ensure that adequate drainage is in place and appropriate falls in the substrate should be provided for drainage of water. A lack of suitable drainage can cause a number of issues including cracked tiles, efflorescence and stained or patchy tiles.
- Tiles, adhesives and grouts should be suitable for external installations. Refer to the manufacturer for suitability and full application instructions.

Tiles should be installed with minimum 3mm wide joints and have an enhanced slip resistance for external locations. Where large format tiles are being used, consideration should be given to using wider joint widths. Stone tiles should not be resin or mesh backed. Resin agglomerated stone tiles are not suitable for external floor applications.

These are several fixing methods for external floor tiling:

Solid bed fixing is essential. The tile finish should follow the falls in the substrate and should not be created with the adhesive.

- Direct fixing with adhesives.
- Fixing with cement:sand mortar.
- Pedestals.

In general the ideal temperature range for tiling to be satisfactorily carried out with normal methods and materials is between 5-25°C. Loose laying is not a recommended method of fixing ceramic or stone floor tiles according to BS 5385.

Grout joints should be kept free from dust and contaminants prior to grouting. After completion of grouting, all tiling should be protected with plastic sheeting or similar materials until the grout sets.

Intermediate movement joints should be incorporated within the tile assembly at intervals not exceeding **3m** and, depending on the anticipated movement in the background, the size and format of the tile and the width of the tile joint, further reductions in the distances between movement joints might be necessary.

For further advice consult TTA's Technical Publication 'External Floor Tiling to Balconies, Terraces and Patios'.

14 TTA MANUFACTURER MEMBERS

Alfix A/S - alfix.com/gb

Anhydritec Ltd - anhydritec.com

Aquacut Ltd - aquacut.co.uk

ARDEX UK Ltd - ardex.co.uk

Armatile - armatile.com

Bellota Tools - bellota.com

BIHUI - bihuitools.com

Carter Dal - carter-dal.co.uk

Coram UK Holding Ltd - coram.uk

Cosentino UK Ltd - cosentino.com/en-gb

Craven Dunnill Jackfield Ltd - cravendunnill-jackfield.co.uk

Dural UK Ltd - dural.de/en

Fila Industria Chimica SpA - filachim.com

Fix-A-Floor UK Ltd - fixafloor.co.uk

Gebruder Jaeger GmbH - jaeger-ttc.com/wissenstests

Genesis Global Systems Limited - genesis-gs.com

Grespania UK Ltd - grespania.com

James Hardie Building Products Ltd - jameshardie.co.uk

Kerakoll UK Ltd - kerakoll.com/en/home

Lithofin UK t/a Casdron Enterprises Ltd - casdron.co.uk

Marcrist International Ltd - marcrist.co.uk

Marmox (UK) Ltd - marmox.co.uk

RAK Ceramics UK Ltd - rakceramics.com/uk/en

Rubi UK & Ireland - rubi.com/en

Saint-Gobain Weber - uk.weber

Sigma UK Distribution Ltd - sigmauk.co.uk

Tayg - tayg.com

Tilemaster Adhesives Ltd - tilemasteradhesives.co.uk

Victorian Ceramics - victorianceramics.com

VitrA UK Ltd - vitra.co.uk

Warmup Plc. - warmup.co.uk

Wunda Group PLC t/a Wunda Trade - wundatrade.co.uk

Member list is correct at time of printing.

Tiling Technical Publications

For members a full range of technical documents is available for free download.
Technical documents are available to purchase for non-members.

Installation & Fixing of Natural Stone Tiles & Slabs to Internal Walls and Floors

Uncoupling Membranes

Tiling To Raised Flooring Systems Supported By Pedestals

Tiling With Resin Agglomerated Tiles

Internal Ceramic Tiling To Sheet & Board Substrates

Tiling To Heated Floors

Tiling To Calcium Sulfate Based Screeds

Ceramic And Natural Stone Floor Tiling To Acoustic Systems

Tiling In Wet Rooms

The Cleaning Of Ceramic Tiles

Slip Resistance Of Hard Flooring

Movement Joints In Internal Tiling

Large Format Tiles In Internal Tiling

Design And Construction Process For Swimming Pools

Adhesives And Grouts In Internal Tiling

External Floor Tiling to Balconies, Terraces and Patios

(Constantly being added to and updated)

THE TILE ASSOCIATION

EXCELLENCE IN TILING

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