GUIDELINES FOR TILE FIXING

CONTENTS

More detailed information is contained in the documents referred to in Section 9

1 General

The choice of tiles, fixing and grouting methods and materials, is the responsibility of the Architect or Specifier, having regard to

a) the background construction (eg movement, stability etc.)
b) expected service conditions (eg temperature range, use, dry or wet condition, loading etc.)
c) safety requirements.

Manufacturers and tile fixers should be consulted at an early stage and their advice taken into account.

Installation of ceramic tiles should not be undertaken when the temperature of the air, backgrounds or materials are less than 5 degrees C, unless, in the case of resin based adhesives, it is specifically agreed by the manufacturers.

Where work is carried out in artificial light, ensure that the direction and intensity of the temporary lighting is similar to the final lighting.

Water for the mixing of adhesives, mortar or grout should be clean.

Tiles with acceptable shade variations should be thoroughly mixed before fixing.

The width of joint selected should be sufficient to accommodate the variation in the size of the tiles.
Joints should be a minimum of 2mm wide.

Tiling should be set out so as to avoid small or unequal cut courses. Cut tiles neatly and accurately to maintain specified joint width at cut edges.

After fixing, residues should be cleaned from the face of the tiles and all joint spaces cleared to the specified width and depth for filling.

2 Backgrounds

Backgrounds should be checked as being within the tolerances specified for the type of fixing method to be used.

They should be free from contamination or loose material and compatible with the fixing material selected.

Any falls required in floors should be provided in the backgrounds.

3 Fixing with adhesives

3.1 Mixing

Mixing of adhesives should be carried out strictly in accordance with the manufacturers instructions using clean tools and equipment.

3.2 Application

Work should be carried out strictly in accordance with the manufacturers instructions including any preparatory work required e.g. priming.

Tiles should be dry when fixed.

The choice of trowel for the application of adhesive beds depends on the type of installation, the tolerances in the background, the size of the tile and the type of adhesive. The type of trowel selected should ensure adequate thickness and contact between the tile and adhesive.

Only sufficient adhesive should be spread that can be covered by tiles within the open time of the adhesive being used.

The tiles should be placed onto the adhesive with sufficient pressure, beating action or sliding / twisting motion to ensure good contact.

With heavily keyed tiles it may be necessary to fill in with adhesive any recesses in the back of the tile, prior to placing them into the adhesive bed.

Occasionally during fixing, a tile should be lifted to check that the required contact is being achieved.

4 Fixing with cement mortar

4.1 Conditions

For walls and fully bonded floors, porous backgrounds should be well wetted with water to control excessive suction. Standing water on floors should be removed.

Porous tiles, after removal of all packaging, should be soaked in water and drained prior to fixing.

After fixing, the work should be protected from rapid drying out.

4.2 Mixing

Cement mortar for normal tile fixing should be between 1:3 and 1:5 cement/sand by volume (1:3.5 and 1:5.5 by weight) with sufficient water added to give the required consistency.

For semi-dry flooring beds the mix is 1:4 and 1:5 cement/sand by volume (1:4.5 and 1:5.5 by weight).

Batch materials should be batched by weight if possible. If batching by volume, suitable containers should be use for measuring the dry ingredients.

Use a mechanical mixer if possible. Semi-dry mortar should always be mixed using a forced action mixer.

Mix dry materials to a uniform colour before adding water.

4.3 Application to Walls

4.3.1 Buttering method

Mortar should be trowelled on to the back of the tile to fill any recesses and to provide at least 75% cover for internal work and as full as is practical for external work, once the tile is in position.

The tile should then be tapped back firmly onto the background, using several blows, with a finished bed thickness of between 10mm and 15mm.

Any adjustment to the position of the tile should be made immediately.

4.3.2 Floated bed method

Mortar should be applied to the background as a single coat, 10mm to 15mm thick. It is then finished with a float and allowed to stiffen slightly to enable it to support the weight of the tiles.

The back of the tile should then be buttered with a layer of 1:1 cement/sand, or a cement based adhesive, ensuring that any recesses are filled and the tiles tapped back firmly into position on to the floated bed with full contact as far as is practicable.

Adjustment to the position of the tile should be made within 5 minutes.

4.4 Application to Floors

4.4.1 Bonded Method

Keyed concrete bases should first be primed with a slurry of cement/water, modified cement mortar or cement polymer, well worked into the surface of the floor.

Whilst the slurry is still wet, the bedding mortar should be laid to a thickness of between 15mm and 25mm.

Smooth concrete should be keyed by hacking to 50% of the surface or by treating with a bonding product.

A bonding layer of cement slurry or cement based adhesive, may be necessary between the tiles and the bed. The tiles should then be firmly tapped into position..

Adjustment to the position of the tile should be made within 20 minutes.

4.4.2 Un-bonded Method

Separation of the tiling from the background (to prevent stresses or provide sound or thermal insulation) can be provided by using the semi-dry bedding method or by the use of a separate layer.

With both methods, a thickness of 40mm to 70mm of bed is necessary to maintain the integrity of the tiling. Where heavy traffic or excessive movement (e.g. over under floor heating) is anticipated, metal mesh reinforcement should be incorporated in the bed at approximately half the depth of the bed.

The mortar should be mixed so that no free water comes to the surface when it is compacted. Spread to a thickness 10% to 15% greater than the finished thickness and compact by tamping down to the required level.

A slurry of cement, cement/sand 1:1 or cement based adhesive should be trowelled over the bed in an even layer approx. 2 mm thick and the tiles, immediately and firmly, tapped into position, either by hand or using a mechanical beating machine.

With heavily keyed tiles it may be necessary to fill in any recesses in the back of the tile, with cement/sand 1:1 or cement based adhesive, prior to placing them on to the mortar bed.

5 Tolerances

Finished work should be within the following maximum tolerances.

5.1 Flatness and variation from plumb

Plus or minus 3mm under a 2m straightedge.

5.2 Variation across Joints

1mm for joints less than 6mm wide
2mm for joint 6mm or more wide

5.3 Variation in joint width

Any tolerance in the specified tiles.

6 Grouting

6.1 Conditions

Choice of grouting materials will depend on the width of the joints and the service conditions of the floor or wall. Ensure that the grouting operations will not scratch or stain the tiles, if necessary by preparing a sample.

The joints should be clean and free from loose material before grouting.

Sufficient time should elapse after fixing so as not to disturb the security of the tiles during grouting. If the tiling is very dry, the joints should be wetted to control the suction.

6.2 Mixing

Cement grout should be pure cement and water(for narrow joints) or cement/sand 1:1 to 1:3 by volume with water added(for wider joints).

Only use sufficient water to provide a workable mix.

Propriety grouts are either mixed ready for use or, if not, should be mixed strictly in accordance with the manufacturers instructions.

6.3 Application

The grout should be applied over an area that can be worked within the open time of the material used, working the grout into the joints with a rubber squeegee or grouting trowel, ensuring that the joints are completely filled.

Remove the surplus grout from the face of the tiles and allow to commence setting.

Clean off tile surface with a damp cloth or sponge.

Wide joints may require tooling to provide a dense surface to the joint.

Polish tiles with a dry cloth once the grout has set.

Joints in floor tiling should be finished as near as is practicable flush with the tile whereas joints in wall tiling can be slightly recessed.

7 Movement Joints

At the positions specified by the designer, open joints should be provided through tile and bedding, leaving them clean and clear of debris, for filling with the specified sealant.

Alternatively, build into the tile and bed for the full thickness, preformed strips as specified.

8 Protection

The finished work must be protected against premature loading and adverse climatic conditions.

Work in cement mortar should be left undisturbed for 4 days, with heavy traffic prevented for a further 10 days.

The adhesive and grout manufacturers instructions should be strictly followed for work using proprietary materials

9 Information

Further information can be obtained in the following documents:-

British and European Standards:

BS5385 Parts 1-5, The code of practice for fixing wall and floor tiles
BS6431 Ceramic Tiles
BS8000 Part 11, Section 11.1 and 11.2, Workmanship on Site
BS800 Part 9, Workmanship on site

BS EN 12002 Adhesives for tiles
BS EN 12004 Adhesives for tiles
BS EN 13888 Grouts for tiles

British, European and International Standards are available from British Standards Institution www.bsi.org.uk

Technical Publications from the Tile Association:

The Cleaning of Ceramic Tiles
Design & Construction Process for Swimming Pools
Tiling to Calcium Sulfate based screeds
Slip Resistance of Hard Flooring
Tiling to Timber
Sheets & Boards, Timber substrates & Alternative Products
Tiling in Wet Rooms
Tiling to Headed Floors
Large Format Tiles

The above-mentioned documents are available to purchase from The Tile Association,
The Mount, 43 Stafford Road, Stone, Staffordshire, ST15 0HG
Tel 0300 365 8453
Website www.tiles.org.uk
Email info@tile.org.uk

The Tile Association also publishes Technical advice notes which can be freely downloaded from the website.