

Grouting 1

Grouting of Quarry tile installations

Before grouting, it is essential to ensure that the edges of the tiles are dry, free from dust, grease, cement, mortar, or other contaminants. If necessary the joints should be cleaned with a suitable cement remover such as HG Extra.

Grouting should not commence until at least 24 hours after fixing to allow adequate hardening. If a rapid-set adhesive has been used grouting can normally commence after 2 hours. Where the semi-dry bedding method has been used grouting is normally carried out after 4 hours. It is generally advisable not to delay the grouting operation unduly as open joints may collect general building dust and other debris.

In most situations a proprietary cement-based grout is suitable. These offer the advantages of low shrinkage, good adhesion with high compressive strength and ease of application. Proprietary grouts are formulated to give a harder joint and lower porosity than an ordinary sand/cement mortar and offer the additional advantages of higher abrasion resistance and better resistance to water and dirt penetration.

There should be no cracking of the widest joint and they may normally be used for internal and external applications at joint widths from 6mm up to 16mm, depending on the manufacturer's specification.

In certain situations a traditional cement/sand mortar may be suitable. Such mixes consist of Portland cement and fine sharp sand.

The proportions of cement and sand should be 1:2 for joints between 3 and 6mm wide and 1:3 for joints wider than 6mm.

The grout material should have sufficient water added to make the mix a paste-like consistency. The amount of water added to achieve the desired consistency should be kept to a minimum. The grouting mix should be worked well into all the joints and brought as flush with the tile surface

as is practicable. This is normally achieved using a hard rubber float, where the entire surface of joints and tiles is covered and then drawn flush with the surface. When using sand/cement mixes it is advisable to wet the joints prior to grouting to promote adhesion. This is not necessary with a proprietary grout.



Excess grout should be removed from tile surfaces during grouting using a damp sponge drawn diagonally across the top of the joints. Cleaning off should be undertaken once the grout has hardened sufficiently using a damp cloth or sponge. On no account should sawdust be used for cleaning off as this may enter the joint and reduce its strength. On larger areas rotary scrubbing machines may be used to compact the grout into the joints and facilitate cleaning off.

When grout has fully hardened the entire surface of the tiled installation should be thoroughly cleaned with a recommended cement residue remover such as HG Extra. It is critical that rinsing with copious amounts of clean water is carried out during this operation to ensure no cement residues are re-deposited on the floor.



Flexible Installations:

Where a flexible fixing method and adhesive have been employed, such as onto timber bases, asphalt, or with under-floor heating, a suitable flexible grout must also be used. These are normally one part flexible grouts or two parts where water addition is replaced by a liquid polymer additive. Grouting should be carried out as described earlier closely following the manufacturer's instructions.

Water & Chemical Resistant Installations:

When set, all cement based grouts, including proprietary grouts tend to be slightly porous and may allow the passage of some moisture. They are also susceptible to attack by certain chemicals and may not comply with applicable food & hygiene regulations. In installations subject to these factors a suitable Epoxy-based grouting compound should be used.

These are formulated to provide an impermeable joint, which is highly resistant to chemical attack and may be used where there is a requirement for chemical or corrosion resistance.

The two-part formulation hardens by chemical reaction and when mixed can be applied by trowel, spatula, squeegee or mastic gun. Joints should be completely filled and immediately cleaned as the work proceeds and before the epoxy material hardens. Most modern epoxy grouts are now formulated to be water emulsifiable. As work progresses a hard rubber float will remove the majority of the resin. Water should be sprinkled onto the residues and a suitable abrasive pad used to emulsify the residues. Drawing a damp grouting sponge diagonally across the joints will then remove all traces of grout.

An application of a temporary protector such as HG Golvpolish can also be applied to the tile surface prior to grouting. This can then be removed following grouting to ease the removal of any stubborn residues.

Grouting 2

The types of grout to use in different applications are fully detailed in *Technical Data Sheet No 12 - Quarry Tile Fixing Guide*. In general there are 3 types of grout to cover most situations:

• Cement Based Grouts

Wide joint grouts suitable for internal and external applications for grouting floors and walls in quarry tiles with joint widths from 6 – 16mm.

Generally a mixture of cement, special fine-graded aggregates, synthetic resins, water repelling additives and colouring pigments which are unaffected by light.

Mixed with water at a specified ratio the grout becomes an easily trowellable grouting mortar for tiles and can be cleaned off very easily. It hardens without noticeable shrinkage and achieves a high degree of mechanical resistance.

When tiles are fixed in a sand/cement mortar bed they should only be grouted when the mortar is sufficiently dry (min. 10 days). Otherwise whitish efflorescence or colour changes may appear due to soluble salts being brought to the surface by the residual moisture. The same phenomenon can occur when floors are not isolated from the ground below as this is a potential continuous source of these soluble salts.

When used together with Flexible Additives the flexural and water resistant properties of cement based grouts is greatly enhanced and is recommended for use whenever a flexible fixing method is employed, or where there is a greater requirement for water resistance.



• Flexible Grouts

A single or two-part grout for joints subject to movement and vibration. Flexible grouts are used in conjunction with flexible floor adhesives for tiling areas subject to high levels of movement, such as timber floors. The grout powder is added to the liquid to form a smooth, slightly stiff consistency and compacted into the joints in the normal manner. Surplus grout should be removed from the surface of the tiles as soon as possible using a firm, damp sponge.

• Epoxy Grouts

A two component, epoxy-resin based product suitable for both horizontal and vertical applications and easily trowellable.

These should be used for specific applications as detailed below:

- Acid and chemical-resistant grouting of floors, laboratory benches etc.
- Grouting of floors and walls in commercial kitchens and food processing industries
- Swimming pools, pool surrounds, and spa-baths

- Wherever chemically resistant, impervious, or totally hygienic surfaces are required

Full details of chemical resistance to all common chemical products is contained in *Technical Data Sheet No. 11 - Chemical Resistance*.

Epoxy Grout hardens by chemical reaction without shrinkage. It has excellent bond, mechanical strength and chemical resistance.

It should not be used for grouting tiles with wet edges or where they are contaminated with cement, dust, oils, grease, etc.

Modern epoxy grouts have been formulated to be easily cleaned off by scraping with a hard rubber float and then emulsifying the remaining film using clean water and a Scotchbrite pad. Any dried or stubborn residues can be removed using a suitable Epoxy Grout Remover.

Attention is drawn to the fact that epoxide-based materials may cause allergic reaction to people with sensitive skin. It is therefore advisable to avoid direct skin contact with uncured material and to use protective gloves and barrier creams.

Approximate grout coverages

The table below illustrates typical coverages on a small selection of our tile formats. For specific sizes and applications an excellent online grout calculator can be found at <http://www.ardex.co.uk/calculator.asp>

Tile size	Joint size		Cement-based	Flexible	Epoxy
	Width	Depth	kg/m ²	kg/m ²	kg/m ²
150 x 150 x 14	6	14	1.90	1.96	1.68
300 x 300 x 15	12	15	2.04	2.10	1.80
200 x 200 x 25					
400 x 400 x 14					

Alternatively grout coverage can be estimated using the following calculation:

$$\frac{L + B}{L \times B} \times W \times D \times GT = \text{Grout requirement (kg/m}^2\text{)}$$

Where: Typical cement based grout GT = 1.50 Flexible = 1.83 Epoxy = 1.55

Figures are for guidance only. Please consult your supplier for detailed information

L & B are the facial dimensions of the tile in mm.

W is the width of the joint in mm.

D is the depth of the joint in mm.

In all cases it is essential that 5 – 10% is added for wastage.

Our Technical Support Department is happy to recommend grout requirements for any particular project