

Tile Grout Installation Instructions

Tile grout is a mixture of Portland cement, Fillers, Pigments and additives which when mixed with water is used to fill in the gaps between tiles on walls and floors. Portland cement grouts react with water to produce complex calcium silicate and calcium aluminate hydrates which are hard and crystalline and are primarily responsible for giving the grout its strength. However, due to the very nature of the Portland cement, the reaction products are numerous and varied, but all contribute to the overall performance and appearance of the finished product.

There are three basic requirements for a tile grout.

- To provide an attractive finish and colour
- To have a good physical performance
- To be easily applied

4 STEPS TO SUCCESSFUL GROUTING

1. Allow the adhesive bed to set firmly before commencing grouting. Uncured adhesive may bleed through the joints and discolour the grout. Also, there is a risk of destroying the bond by moving tiles. Allow as much time between setting and grouting as possible. Allow at least 24 hours for a normal setting adhesive. Fast setting adhesives can be grouted sooner (according to the manufacturer's instructions), but even with these the longest possible interval should be allowed. Always be consistent with the period between fixing and grouting.

2. Control the job conditions. When grout cures at different rates, shade variations will result. If various areas of an installation are exposed to heat (e.g. direct sunlight, radiators), or ventilation (e.g. draughts, air conditioning) in different amounts, grouts will cure unevenly. For example, cooler temperatures make grouts dry slower and darker whilst warmer temperatures cause faster curing and consequently lighter joints. High humidity levels will also produce a lighter colour.

3. Properly mix the grout. The amount of water used to mix the grout is very important. The right amount of water produces a firm mix. An overly wet dilutes the grout, causing shade variations and leads to reduced strength. Do not add extra water to a mix that has started to go off as this will also lead to shade variation. Always maintain consistent water : powder ratios for every batch. Try to maintain the same mixing time with every batch. A slow speed electric drill with a whisk will give more consistent results than mixing by hand.

If the grout is left too long after mixing and starts to stiffen in the bucket, the finished application of grout in the joint will produce a rougher surface. This texture can appear as a discolouration on the surface and it may appear darker than grout in surrounding areas.

4. Application and cleaning of the grout. Prior to grouting joints between the tiles must be clean, dry and free of loose material. Apply the grout with a Nicobond rubber float grouter, forcing it into joints to fill them completely. Remove surplus grout from the surface of the grout at once, using the float like a scraper. Wait until the grout achieves

an initial set and then, avoiding excessive water, wipe the complete area thoroughly with a damp sponge to obtain a smoother joint. Rinse the grout sponge often. This will prevent build up on the tile that will be hard to clean later. Also the paste deposit on a dirty sponge will collect in the voids of the grout joints leaving a rough residue that will make the joints vary in colour. Polish the tiles with a clean, dry cloth when the film of grout on the surface has only just dried.

If the grout is finished off to produce a smooth surface whilst still wet, the fines (usually cement), commonly known as laitance will be brought to the surface where they dry with a characteristic light colour. This may be removed to expose the true colour of the grout by washing with a proprietary grout cleaner (usually a mild hydrochloric acid wash). Try a test area before carrying out this procedure. Laitance may be minimised by always finishing off the grout at the same point, i.e. when it has just begun to harden in the joint. This point may be difficult to determine as it depends on a number of factors such as the absorption of the tile, the moisture content of the grout and the time between mixing, application and finishing.

Factors affecting the colour

There is nothing within the manufacturing process of the grout that can either cause or prevent colour variation within the grout. The primary factors affecting colour are:-

- The grout formulation
- Mixing the grout
- The application technique
- The cleaning off procedure

Factors affecting the appearance/texture

- Absorbency of the tile and substrate
- Water content of the grout
- Time between mixing of the grout and application to the joints
- Time between application of the grout and finishing
- Method of tooling and cleaning.

Why does grout discolour?

Grout discolours because of poor installation techniques, improper cleaning methods, laitance, and improperly cured setting beds. Colour differences can occur in different parts of an installation because the grout is allowed to cure at different rates. Uneven curing causes uneven colour. Inconsistent mixing and installation techniques also cause uneven colour.

Efflorescence

Efflorescence is the movement of moisture upward through Portland cement beds and concrete slabs, resulting in a white deposit of salts on the surface. Efflorescence causes grout discolouration. Prevent efflorescence by keeping the grout surface free from standing water or dampness. It may be treated with commercially available cleaners but care should be exercised and the manufacturer's instructions followed.

In severe cases of discolouration, the grout may be raked out and re-done, but as stated previously there is nothing in the grout itself that can cause the discolouration so this may not solve the problem.

Common causes of grout discolouration

<i>Darker colour</i>	<i>Lighter Colour</i>
Absorptive tile	Non-Absorptive tile (fully vitrified/porcelain)
Low humidity	High humidity
Dry grout mix	Wet grout mix
Late finishing process	Early (wet) finishing process
Deep joints	Shallow joints