

Why We Get Colour Variations In Grout

Variations in grout surface colour

Darker grout colour	Lighter grout colour
Absorptive tile (non-vitreous)	Non-absorptive tile (vitreous / porcelain)
Low humidity	High humidity
Dry mix / clean up	Wet mix / wet clean up
Deep grout joints	Shallow grout joints

Portland cement grout has three basic requirements: appearance, application characteristics and physical performance. Appearance includes accurate, consistent colour and smooth consistent texture. Variations in Portland cement and other raw materials, in application techniques, type of tile, substrate and environmental conditions can all limit colour consistency.

Properly maintaining grout will help prevent discolouration; but the surface is porous and therefore can stain and harbour contaminants.

Only Epoxy grouts are impermeable and resistant to chemical, thermal and corrosive attack.

All Portland cement grouts react with water to form calcium silicate and calcium aluminate hydrates. These hydrates are hard and crystalline in nature giving cement its strength. However the reaction is very complex and unpredictable, yielding several main reaction products and potentially hundreds of minor products.

The basic components of grout consist of cement hydration products, pigments, fillers and additives which when combined give its resulting colour. Grout formula, quality, application technique and cleaning off are the primary factors affecting colour. There is nothing that can be done within the manufacture of the grouting material that can either cause or prevent this happening.

The surface effect can be affected by variations in: absorbency of the tile, in turn affected by the substrate, the time between mixing the grout and applying to the joints, and the time between applying the grout to the tile and finishing off, the amount of water used in finishing off,

contamination from cleaning material and foodstuffs amongst others.

If a grout is left far too long and has started to stiffen considerably or indeed started to set, the finishing off of the joint will produce a rougher surface texture. This texture can make the material appear darker than surrounding areas. Alternatively if the joint is finished off to produce a smooth surface whilst still wet, the fines (usually cement) otherwise known as laitance will be brought to the surface where they dry with a characteristic light colour.

As this is only a surface effect, it can be removed to expose the true colour of the grout. Often the best treatment to bring the grout back to the desired colour is to remove the surface effect through the application of a mild hydrochloric acid wash.

Raking out and re-grouting could be undertaken, but as stated earlier there is nothing in the grout that can cause or prevent this occurrence and hence re-grouting will not necessarily solve the problem.

How do we maintain a grout colour consistency?

The only way to prevent laitance from occurring on the grout surface is to finish the grout joint at the same time i.e. when the grout is hard enough to resist the pressure of a thumb. This is easy to say but can be difficult to undertake, as this time will be affected by:

- Absorption of the tile
- Moisture content of the grout
- Time between mixing of the grout and the application to tiles
- Time between application of the tiles and the finishing off of the grout

- Absorption of the adhesive and the substrate
- Tooling method

Watch water levels. Adding water to grout or providing moisture through environmental conditions will result in a lighter grout colour. Any factor that affects the rate of evaporation of water from the grout surface will also affect the grout colour.

Be aware that excessively high humidity levels will also cause a lighter colour.

Maintain consistent water and latex dilution ratios.

Practice consistent grout clean up procedures. Wait until grout achieves an initial set, avoid excess water, and use sponge for a smoother grout joint.

Remember that very late clean ups can result in a lighter grout colour.

Be aware that using cut tiles or tiles with inconsistent glazing and an absorptive body can cause variations. Tiles that vary in absorption will yield variable grout colour. Use a polymer modified grout to reduce the problem.

Prevent efflorescence by keeping the grout surface free of standing water or dampness. Do not over water grout during mixing or clean up, and prevent whenever possible. Treat efflorescence with commercially available cleaners, and be sure to follow the manufacturers directions while using these hazardous products.