



Epoxy Grout: A High-Tech Solution for Demanding Environments

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Supporting customers with quality results is always important, so even the smallest detail in a tile or stone installation can mean the difference between success and failure. One of the most common reasons for call-backs and customer complaints are grout imperfections. Many of these concerns, especially color variation in the installation and efflorescence on the grout, can be prevented by using epoxy grouts. However tile contractors often shy away from epoxy grout because of the perception that it is unforgiving and difficult to install.

There's good news, though. With the correct techniques and new technologically-advanced formulas, epoxy grout can be installed much more easily and with the same technical benefits and colorfast performance that epoxy grouts are known for.



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EPOXY BASICS

An epoxy is a hard thermoplastic that is generally supplied in two parts: a resin and a hardener. When the two parts are combined, a chemical reaction occurs to polymerize the plastic. In the case of epoxy grout, the resins are combined with a filler powder and pigments, yielding an extremely durable and long-lasting grout that resists staining and most chemicals. Epoxy was first used as an additive for standard cement grout more than 25 years ago to fill a need for a more chemical-resistant grout. At that time, it was recognized that ceramic tile was more durable than other flooring materials; however, the grout and setting materials based on Portland cement were more sensitive to chemical attack by acidic materials. Furan grouts which, like epoxy, were reactive thermoset plastic, required specialized installation skills and were only available in dark colors. 100% epoxy grout offered chemical resistance like Furan but with the available color choices and water clean-up of traditional cement-based grout.

There are two basic categories of epoxy grout: 100% solids epoxy (meeting ANSI A118.3) and modified, water-based epoxy (ANSI A118.8). One hundred percent solids epoxy is, as the name implies, 100% solid epoxy and fillers with no volatile components. Modified epoxies contain water and are mixed with traditional Portland cement / silica sand based grout. The water and components in these modified epoxy grouts are intended to make them easier to apply. However, the water that is added to modified epoxies does not become part of the grout — it evaporates as the grout cures, potentially leaving microscopic pockets that can trap and collect staining agents. While modified epoxy has the same chemical resistance as 100% solids epoxy, it can be vulnerable to staining and the voids reduce the strength of the grout. Because modified epoxy contains Portland cement that cures by a reaction with water, it can also be susceptible to shading and uneven coloration in the grout joints from uneven hydration.

Use of epoxy grout has remained somewhat limited due to higher price points and the common belief that it is more difficult to install than cement grouts. But, thanks to recent technical innovations, epoxy is revolutionizing the way grout is used today. Companies such as Custom Building Products are working hard to develop a new generation of epoxy grouts that have the same user-friendly working characteristics of traditional Portland cement grouts without their inherent technical limitations. The flagship of this new generation, CEG-Lite™ 100% Solids Commercial Epoxy Grout, is proving itself in the field as practical and user-friendly solution for installations where the stain and chemical resistance is needed and the installers can enjoy comfort, convenience and ease of use. CEG-Lite is formulated to have the strength and durability of an epoxy with the handling and installation ease of traditional grouts. Its lightweight properties reduce the drag of filling the joints between tiles and its non-sag technology keeps it in the joints on vertical surfaces. This non-slump technology also helps to maintain full joints during the clean up process, where many other epoxy grouts will tend to wash out and leave concaved grout joints. CEG-Lite is formulated to leave less haze on the face of the tile; eliminating the need for additional clean-up. Once cured, CEG-Lite fills the joints with a stain and chemical resistant grout for years to come.

Epoxy grout is very resistant to acidic and alkaline products, as well as solvents, while offering maximum protection against staining and corrosion caused by foods, beverages, chemicals and cleaning agents.

100% solids epoxy grout is an ideal choice for many commercial installations that are exposed to harsh chemicals.

AN IDEAL CHOICE FOR COMMERCIAL INSTALLATIONS

Because cement grout may break down when exposed to the acidic material found in many foods and cleaning products, epoxy grout is ideal for these commercial installations; i.e. commercial kitchens. Epoxy grout is very resistant to acidic and alkaline products, as well as grease and solvents, while offering maximum protection against staining and corrosion caused by foods, beverages, chemicals and cleaning agents. Therefore, epoxy grout is an ideal solution for industrial plants — particularly chemical and food processing plants such as dairies, breweries, bottling plants, and textile and metal finishing plants. .

Other applications well-suited to epoxy grout include hospitals, restaurants, food preparation areas and other facilities where clinical sanitation is maintained by harsh cleaning methods. Epoxy grout is also recommended for residential countertops, backsplashes, tubs, shower areas, tiled sunken tubs and swimming pools to minimize maintenance in these wet areas. Epoxy grout also eliminates the issue of color variation in large expanses of tile, which can occur with cement-based grout, typical in commercial applications. Many factors can affect cement based grout as it cures, including heat, minerals in the mixing water, and the hydration process itself, during which cement absorbs water, leading to inconsistent chemical reaction of the cement and the ultimate performance of the grout. If the cement reacts with the water at an uneven rate, it can result in shading and uneven color in the finished grout — a leading cause for call-backs with cement grout. Because 100% solids epoxy grout is a thermal plastic material it cures equally throughout, it is not subject to the color variations found in unevenly cured hydraulic cement grouts.

Many new commercial projects are being built to “Green Standards” using environmentally sustainable materials. While epoxy resin is not classified as a “Green Product”, the latest advance in epoxy grout technology from Custom Building Products does incorporate available recycled materials. CEG-Lite meets the LEED® requirements of the U.S.G.B.C. for recycled content and helps the developer gain LEED certification. This is accomplished without affecting the easy working characteristic or performance of the grout.

TIPS FOR SUCCESSFUL EPOXY GROUT INSTALLATION

Epoxy grout is typically considered a challenge to install, but many of the most common difficulties can be avoided by following guidelines developed specifically for epoxy grout installations, instead of attempting to apply the same techniques used for cement-based grout. For example, installers often mix part of a bag at a time. This will not work with epoxy grout, which comes in pre-measured units that must be mixed all at one time. Unlike cement grout, which requires water for mixing, 100% solids epoxy does not require any water or other additives; everything needed for the mix is included by the manufacturer.

One of the common problems with many epoxy grouts is epoxy haze, which occurs when epoxy residue sticks to the face of the tiles during the grouting and cleaning process. To minimize epoxy haze, wipe the tile down with a solution of water and a few drops of Dawn® dish soap prior to grouting. This solution acts as a grout release to help prevent resin from sticking to dry tile, thereby making it easier to fill the grout joints and minimizing the residue on the face of the tile. The use of a microfiber towel to remove the final grout film during the clean-up will greatly reduce the amount of haze.



Kindred Hospital, Sacramento, CA
Tile Contractor: Performance Tile & Stone, Folsom, CA

Epoxy grout typically has a shorter working time, and therefore should be applied to smaller areas at a time than cement grout. Once epoxy grout has been applied, it should not be overworked, so care must be taken to apply it correctly the first time. Epoxies generate heat chemically, so epoxy left in the bucket after mixing generates heat which accelerates the curing sequence prematurely and reduces the pot life of the mixed grout. To prevent this, pour the entire contents of the bucket onto the floor or a cool surface after mixing. One common method for extending the working time of epoxy grout is to place it in a freezer, which slows the curing process. Another is to spread the epoxy into small, usable clumps on the floor, which also prevents the epoxy from curing prematurely by dissipating the heat that is created when epoxy is left in concentrated amounts.

Because epoxy grout can be stickier than cement grout, a special epoxy grout float, made of hard rubber instead of soft foam, is needed to help force the epoxy into the joints. When applying the grout into the joints, be sure to apply enough pressure to fill the joints completely and cut off excess flush with the surface of the tile. When cleaning the grouted floor, be sure to use plenty of cold water mixed with a few drops of Dawn dish soap; it is critical to remove all haze immediately. Dawn works well because it contains surfactants that have an affinity to the epoxy resins contained in the epoxy haze as well as the water used to clean up the haze. This affinity allows the haze to bind with the water and be washed away easily with a sponge and microfiber towel. It's extremely difficult to remove haze once the grout has cured. Fortunately, unlike cement grout, which can be adversely affected by using too much water, you cannot use too much water when cleaning epoxy grout. If there is any haze left after drying, cleaners or strippers that contain solvent such as TileLab® Heavy-Duty Grout & Tile Cleaner or Aqua Mix® NanoScrub® will soften the haze. The softened haze can then be abraded away with a scrubbing pad or brush.

By using the latest, technology advances in epoxy grout, like CEG-Lite and following these simple guidelines when installing epoxy grout, installation difficulties can be minimized, resulting in a beautiful and long-lasting installation.

While epoxy grout is not universally recommended for all types of installations, 100% solids epoxy grouts like CEG-Lite are an ideal choice for most commercial and residential installations. Its benefits include: high strength, resistance to staining, color uniformity, and lack of shrinkage — all key advantages that will help guarantee a successful installation.

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ABOUT THE AUTHOR

Steve Taylor is Director of Architecture and Technical Marketing for Custom Building Products and has more than 30 years of experience developing products for the construction industry. Steve is a member of the Tile Council of North America (TCNA), helping to determine proper tile installation methods and standards; including the simplification of tile installation processes which enables tile professionals to save time and money.

