

## GROUT JOINT WIDTH: WHAT IS THE RIGHT SIZE?

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All ceramic and natural stone tiles are installed with a gap or space between each tile in the assembly. This is generally referred to as the grout joint. However, the required width of a grout joint is not always understood. ANSI defines the requirement for grout joints in ceramic and natural stone tile installations in A108.02 Section 4.3.8. This section states that under no circumstances should the grout joint be less than 1/16" (1.6 mm).

Due to the amount of size variation in the tile, the actual grout joint width may need to vary from what is requested or specified. The actual grout joint size should be equal to three times the variance in actual tile facial dimensions. This means that if the variance in facial dimensions of the tile is 1/8", the actual grout joint will need to be 3/16". The wider spacing will help to accommodate placement of tile and maintaining straight lines.

TCNA recommends a minimum 1/8" grout joint for rectified tile and minimum 3/16" grout joint for calibrated tile. They also suggest adding to this width the amount of edge warping on the longest edge. For example, if the edge warping of a rectified tile is 1/32", the minimum grout joint is  $1/8" + 1/32" = 5/32"$ .

To minimize lippage, TCNA also recommends no more than a 33% offset for tile greater than 18". Large format tiles (those with one or more sides longer than 15") should be installed in a running bond or brick pattern, especially if the tile is plank-shaped.

Where is the right place to measure the width of the grout joint? With cushion edge and beveled edge tiles, some will argue that the measurement is at the surface of the tile or the widest point of the bevel. This may minimize the grout joint appearance, but the joint between the tiles is now too narrow to accommodate proper filling and curing of the grout. The grout joint width measurement should be taken at the base of the bevel or at the body of the tile. ANSI states in A108.10 Section 5.3 that grout joints between cushion edge (beveled) tiles should be finished evenly at the depth of the cushion (bevel). This implies that the minimum 1/16" joint width is measured at the base of the cushion or bevel.

Some tiles have lugs or tabs built into the edge of the tile to assist in even spacing. If these lugs do not produce a grout joint in compliance with TCNA recommendation, additional separation may be needed. Also, the space between the lugs and over the lugs may not be sufficient for proper curing of the grout and can result in powdery or discolored grout. Extra care must be exercised when installing tiles with spacing lugs on the edge.

Why is adequate grout joint width so important? First and foremost, it will prevent tripping and breaking the edge of the tile. By increasing the spacing between the tiles, it reduces the slope of the transition from one tile to the next tile. The wheels of carts roll freely over the tile surface and shoes are less likely to catch on a tile edge. Wider grout joints allow the installer to force the grout deeper into the joint between tiles, completely filling the grout joint. The larger mass of grout will cure more completely and result in a harder grout joint. Grout that is placed in joints that are too narrow will be powdery and generally discolored.

Before the tiles are set, the required grout joints should be discussed with the customer and agreed upon. Properly spacing the tiles and selecting the correct grouting material will assure an attractive, safe tile installation that will last for years.

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## TILE INSTALLATIONS WITH GROUT JOINTS LESS THAN 1/8-INCH

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Traditionally, tile or stone grout joints measuring more than 1/8" wide were filled with a grout including an aggregate – sand. Grout joints less than 1/8" were filled with a "non-sanded" grout and 1/16" was the smallest joint recommended for tile installations.

Today's advanced grout formulations grouts such as Fusion Pro® Single Component® Grout, Prism® Color Consistent Grout and CEG-Lite™ 100% Solids Commercial Epoxy Grout provide additional options for small grout joints. This is due to their finer and more variably-sized aggregates such as glass, limestone or sand. Now, most grout joints greater than 1/16" can also be filled with one of these products containing aggregates.

There are exceptions and limitations and a mockup of the tile installation will confirm suitability of the grout for the project. Here are some types of tiles that may still require use of a grout without aggregates, such as CUSTOM's PolyBlend® Non-Sanded Grout.

### **Polished stone, bisque, metal and other soft tile types**

Sand and other aggregates may scratch and permanently damage the tile surface during the grout installation. This may be a consideration in hot weather when grout can dry prematurely during cleanup and aggressive scrubbing can increase the force of the sand abrasion. Always perform tests prior to grouting to determine if the grout will scratch the tile.

### **Lugged or self-spaced tile types**

Tiles with preset spacing or lugs on their edges, such as commonly available subway tiles, may have 1/16" spacing when stacked in straight patterns. However, the joint is reduced to 1/32" when stacking these tiles in a broken joint/brick pattern. This is due to the rounded edges and lugs not lining up; the joint width is actually smaller or has very little depth where the spacing lug and tile edges make contact. Grouts with sand or glass will only fill the top 1/32" or less of the joint and it will be difficult or impossible to place the grout and finish it correctly. Grout strength and durability is also compromised as very little grout is actually placed in the joint. Aesthetically, the appearance of these joints is unacceptable and often referred to as a "fuzzy joint" due to the exposed sand and aggregate particles.

### **Chamfered edged stone or tile**

Stone and other tiles that have a slight chamfer are at times placed with a 1/16" spacing, the minimum joint width requirement. As in the case of lugged tiles, the chamfered areas may not support a grout with aggregates and cracks will occur. The grout will have to be finished to the top of the joint only and cleaned away from the chamfer in the installation process. Rectified and square-cut edges should be selected when flush filled joints are the desired look for the installation.

For questions about grouts and grout joints, contact Custom Building Products Technical Services Department at (800) 272-8786 or email [technicalservicedepartment@cbpmail.net](mailto:technicalservicedepartment@cbpmail.net).

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