



**CERAMIC TILE INSTITUTE OF AMERICA, INC.**  
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## **CTI FIELD REPORT 73-7-2**

### **SUBJECT: Grout Joints Color Width Texture Strength For Ceramic Tile Floors**

#### **A. Introduction**

1. This field report is to discuss several items in regard to the portland cement-sand grout joints that will have a definite effect on the appearance of the finished tile installation.
2. Such items are the color of the grout; the width of the joints; the texture of the finish on the joints as to a smooth or a sandy finish; the density or curing of the grout joints; the cleaning of the grout joints by the tile contractor after installation; the continued cleaning of the tile by the owner.
3. Owners usually have visual ideas of how the finished ceramic tile installation is going to look and these expectations should be realized when the installation is complete and turned over to them. They may have obtained their ideas from seeing an existing floor or from manufacturers' brochures.
4. Ninety percent or more of floors are quite satisfactory to owners but the complaints of those not satisfied is often because of the grout. The most common complaints are listed in the following discussions.

#### **B. Discussion**

1. The color is wrong!
  - a. Most complaints on the wrong color are the result of grout that has been colored and made at the jobsite. It is best to use factory-mixed grout with the color selection made from chips furnished by the manufacturer.
  - b. Acid should not be used on colored grouts. Even the acid in vinegar will be detrimental on dark or black grout. The acid can make a whitish haze over the grout joints. It does little good to have a colored grout when the color is hidden by a whitish film. Acid will often cause irregular shades of light and dark in colored grout.
  - c. Irregular colors of light and dark can also be caused by not making all of the joints the same depth. If part of the grout joints are 1/2 inch deep and part of the grout joints are only 3/4 inch deep they cannot be expected to be the same shade.

It has been observed that rubber spacers, left in an installation, and even the spacer lugs on tile, can cause light and dark shades in the grout.

- d. Tile joints that are uniform in size and depth, and damp cured, will be the most uniform in color. This requires wetting and cover curing with 40 pound craft paper.
2. The dark colored grout stained the light tile!
  - a. Question!! Is the requested color reasonable? Is it in accordance with recommendations of the tile manufacturer and tile industry?

- b. Many manufacturers provide matching grout colors for each color of tile. It is believed that they do this to prevent the staining of light tile with dark grout.
  - c. Many glazed tile will not be stained regardless of the color of the grout used. Many glazed tile do have a type of glaze that will be stained by the grout. Compatible colored tile (subject to staining) and matching colored grout will usually not show as much as dark grout. This prone-to-stain kind of tile can be kept clean, and grouted with dark colored grout, if the glazed surface is treated first. This can be done by treatment with a filler, which leaves no film on the tile, or with paraffin wax that must be removed after grouting.
3. The grout joints are too wide!
- a. It has been found that most complaints on this are justified.
  - b. Although some manufacturers do not seem to understand the proper width of the joint, most of them do. Many installations, found to be too wide, are not as recommended by the manufacturer who has required a proper width of the grout joint.
  - c. One large manufacturer of quarry tile did recommend 1/2 inch wide grout joint for 6 x 6 quarry tile. It is believed that 1/4 inch wide is the proper width for 6 x 6 quarry tile. The quarry tile, recommended to be set with 372 Grouts, Grouting, Aggregates the %s inch wide joints, has had the sides ground to size but the 1/4 inch wide grout joint is needed to compensate for the facial warpage which is allowable by the standards.
  - d. Some manufacturers of geometric patterned tile will show narrow colored grout joints, which match the color of the tile, in their brochures. If they are shown that way, the owner will expect it installed that way. This should be cleared before the tile are installed.
  - e. Layout is important but there are too many times when the grout joints have been made too wide to accept. The joints are made wide in order to stretch out to full tile and avoid cuts.
4. The grout joints have a too sandy texture!
- a. Some of the complaints on the rough sandy finish is because plasterers sand was used without screening out the coarse grits. Such complaints are justified as this does not provide an acceptable finish.
  - b. We must have good graded sand in these grout joints to control the shrinkage. The wider the joint the more sand that must be used. This should be fine graded sand similar to Crystal Silica Sand Company's Tile 70 sand.
  - c. Some manufacturers of hand crafted tile recommended grout joints 3/4 to 1 inch wide and such floors have their own beauty and charm. Such wide joints need 2 to 3 parts of sand to one part of cement. The amount of sand should be cut down as the joint narrows. For A inch wide joints half graded sand and half cement is used. For joints from 1/4 inch wide, down to 1/2 inch wide, some fine graded sand is needed. This can be only one part of sand to three parts of portland cement.
  - d. Most manufactured grouts do have fine graded sand in them, but on occasions we have received complaints that such finishes are too sandy. We are currently working through our thin set and Grout Committee to see if changes are needed.
5. The grout joints cannot be cleaned!
- a. Most such complaints are found to be justified and are made because of substandard grout joints. Most complaints are because of rough joints, with low spots and high spots, or because the grout is soft and not cured hard.
  - b. We find the joints are easy to clean if they comply with our Standards of the Tile Trade which requires:
    - 1. Uniform color.
    - 2. None of the pure coat or setting material showing.
    - 3. Dense and cured to maximum hardness. Resists penetration or removal with pocket knife blade.
    - 4. Smooth, without voids, pin holes or low spots.
    - 5. Finished flush to the top of square edged tile.
    - 6. Tooled or struck to the depth of the cushion on cushion edged tile.

### C. Conclusion

- 1. If in addition to the requirements of the Standards of the Tile Trade, which are listed above, we use the proper width grout joint to go with the tile being installed, we will stop many complaints.