

TILE STANDARDS EXPLANATIONS *(courtesy of Interceramic)*

Abrasion Resistance: ASTM C-1027-84 describes the standard test method for determining visible abrasion resistance of glazed ceramic tile.

Breaking Strength: ASTM C-648 describes the standard test method for determining structural strength of ceramic tile as related to its ability to withstand installation procedures, such as the beating in process to develop proper bond, when installed in accordance with published ANSI A108 series of installation standards. Minimum breaking strength for glazed wall tile is 90 pounds and 250 pounds for all floor tiles. Interceramic products exceed these minimum breaking strengths. Tiles with higher breaking strengths can usually be expected to withstand impact and breakage better when installed on floors with adhesives.

Coefficient of Friction: ASTM C-1028-84 describes the standard test method for evaluating the static coefficient of friction of ceramic tile and other like surfaces by the horizontal dynamometer pull meter method. Coefficient of friction is a mathematical term used to describe the effect of dragging one substance (i.e.: shoe sole material) over another substance (i.e.: flooring surface). This coefficient is a measure of the relative ability of various surfaces to resist the sliding or slipping of the selected materials. Please note that any tile or other hard surface flooring can become slippery when wet or improperly maintained. Slip resistance varies with the many types of footwear. Judgment should be used when any hard surface flooring is installed in areas where dampness, water, or inadequate maintenance is likely to be encountered.

Craze Resistance: ASTM C-424 describes the standard test method for determining the ability of ceramic tile glazes to withstand exposure to high pressure steam without cracking or "crazing". This determines the glaze's ability to withstand thermal shock such as steam cleaning, or placement of a hot pan on a tile counter top. Glazes that resist crazing by this test usually will not craze.

Glaze Hardness: Scratch resistance of glazes is measured by scratching the glaze with a mineral of known hardness. Hardness of minerals is classified by Moh's Scale, which lists 10 minerals according to their hardness. Each mineral in this scale will scratch those with lower numbers in the scale, but will not scratch mineral with higher numbers. Talc is classified as a number one on the Mohs scale and diamond ten. Resilient flooring materials, such as vinyl and asphalt tile, are relatively soft and can be scratched by talc, number one on the scale. Polished marble can be scratched by calcite, which is number three. Black marble rates a four and can be scratched by fluorite. Most glazes used on ceramic tile fall in the five to six range, which is also slightly harder than steels. Case hardened steel, such as what is used in drill bits used for drilling holes in steel, is approximately six and will scratch most glazes. Some glazes used on ceramic tiles, designed for floor use, cannot be scratched by a case hardened drill bit. Quartz, number 7 on Moh's Scale, will scratch most glazes and all but the hardest unglazed ceramic tile. Sand is a common example of natural quartz.

Frost Resistance: ASTM C-1026-84 describes the standard test method for determining ceramic tile's ability to withstand repeated cycles of freezing and thawing. Ability of tile to resist damage or deterioration when tested in freezing and thawing situations such as those found in central and northern sections of the United States.

Thermal Shock: ASTM C-484 describes the standard test method for determining ceramic tile's ability to withstand exposure to high temperature and rapid cooling without glazes showing failure, or the body of the tile showing evidence of disintegration. This determines the tile's ability to withstand such things as a hot pan on a counter top; hot water applied to a cold floor or cold water applied to hot tile, such as a sudden summer shower on a 100 degree day.

Water Absorption: The percentage of water absorption by the tile body determines whether ceramic tile is impervious, vitreous, semi-vitreous, or non-vitreous. ASTM C-373 describes the standard test method for determining the percentage of water absorbed by the body of a ceramic tile. Results are expressed as a percent of the weight of water absorbed to the weight of dry tile. Impervious tile has a water absorption of 0.5 percent or less; vitreous tile more than 0.5 percent, but not more than 3.0 percent; semi-vitreous: more than 3.0 percent but not more than 7.0 percent; and non-vitreous tile has water absorption of more than 7.0 percent. The body of glazed wall tile is normally non-vitreous with water absorption often exceeding 15 percent. The body of glazed floor tile is normally vitreous or semi-vitreous with water absorption between 2.0 and 6.0 percent. Generally, unglazed ceramic tile with lower absorption rates are easier to maintain because they are more resistant to staining. They do not readily absorb grease, food/beverage spills and other staining agents.