WHITE PAPER

How Imagery Is Applied To Glazed Tile And Pavers

creative materials corporation

Recent advances in digital printing technology have made it such that virtually any aesthetic can be achieved via digital printing on porcelain tiles and pavers. But, we are often asked, how is this achieved? And, is glazed porcelain durable enough for commercial applications?

Larry Hanson, Post-Sales Service Manager with 16 years of experience working for Florim USA, weighs in to answer these questions.

BY:
Larry Hanson,
Florim USA

CONTRIBUTOR:
Jennifer Barbic,
Creative Materials Corporation

For glazed porcelain tile and pavers, the body of the paver is produced with a finely ground mixture of ball clays, metallic sands, and silica sand. The clay content is common to all ceramics, and the metallic sands melt at firing temperatures to increase the body density to porcelain grade.

After the body mixture is pressed into individual tiles and prior to firing, it is cooked at a relatively low temperature to increase the strength of the unfired (green) tiles. Because most of the glazing materials are water-based, the hot tiles can fully dry during each separate application which helps avoid having a watercolor-like print.

The first glaze application is an engobe (clay slip) applied evenly over the entire tile. This allows for a consistently colored base regardless as to whether the body materials come from lighter or darker mined materials. The engobe also acts as a primer for the image, so that the decorative glazes bind well with the body materials.

A digital image of the pattern to be applied is read by printing software and applied over the engobe via a multi-bar, oversized “ink-jet” printer. Each bar in the printer sprays electronically controlled pulses of colored “inks” as the tiles pass through the printer. The sprayed on “inks” distribute a frit, which is comprised of very small particles of colored metals and glass, and other materials. (Any typical petrochemical based ink, or anything else combustible would simply be consumed by the heat of the firing process).

Once the image is in place, the paver has a wet glaze applied to it. This glaze fires clear and is harder than the decorative glazing, engobe and body materials. The topcoat glaze controls the “feel” and the matte/shiny finish of any design. Sometimes a surface with an especially high slip resistance is needed – exterior porcelain pavers and grip finish tiles are good examples. In those cases, a dry glaze can be added to the topcoat glaze layer to enhance the texture.

The green (yet to be fired) tile is then fired in a continuous kiln so that all the layers fuse together to make glazed porcelain tiles and pavers.

Because they are fired at extremely high temperatures, glazed porcelain tile and pavers are highly durable, suitable for commercial spaces, resistant to staining, and easy to clean.