



CERAMIC TILE INSTITUTE OF AMERICA, INC.

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CTIOA REPORT 2007-4-25

SUBJECT: METAL TILES

By: CTIOA Specialty Tile Products Committee:

Metal tile can be used to achieve decorative designs by combining different tile types such as glass, stone or ceramic tile. Metal tile may be used alone or as a highlight for wall, ceiling or floor installations. Stainless steel tile can be used on backsplashes to match kitchen appliances. Copper adds warmth to a kitchen installation. Brass compliments bathroom fittings. Some metal tiles are manufactured to standard thickness, therefore allowing different tiles to be used together.

MANUFACTURING / TYPES

Metal tile are generally manufactured by the following methods:

- Handmade (hammered) from solid metal stock.
- Stamped (punch-pressed) from thin metal sheets.
- Mold cast (forged)

The metal tile's surface is typically finished and/or textured to reflect light and color. Finishes can be electro-plated (anodized), oxidized (patina), stamped, burnished, and chemically etched on the tile. Metal tile may come protected with a clear coat finish to guard against oxidation. Finish coatings may consist of lacquers, epoxies or polyurethanes and may be available in matte, satin or gloss. Company logos can be marked or even embossed on some metal tile.

Metal tile are available in solid metal, metal plated over molded composite material, or thin metal attached to one of the following: ceramic base, cement/fiberboard, composite resin or adhesive tape.

Metal tile are available as field tile, medallions, borders, strips, mosaic panels and planks.

Aluminum Tile: Aluminum tile are typically anodized to provide corrosion resistance and protect the tile from atmospheric agents. The layer also provides light abrasion resistance and discoloration resistance.

Brass: Alloy of zinc and copper. Very soft and prone to scratching and premature wear. Susceptible to tarnishing and discoloration from fingerprints.

Bronze: Alloy of copper, tin, and zinc. Harder and more resistant to scratching and wearing when compared to brass. Susceptible to tarnishing and discoloration from fingerprints.

Copper: Damp air turns copper from a reddish-orange to a reddish-brown. Long term exposure results in a thin green film called patina. Patina protects against further corrosion rendering it resistant to deep corrosion. The patina look is considered by many to be favorable and adds to copper's aesthetic appeal.

Stainless steel: Chromium alloyed with iron, nickel, carbon, manganese, and silicon. Stainless resists corrosion and is hygienic. Stainless steel is commonly used in restaurant kitchens, hospitals, chemical industries, dairies, and food processing plants.

Zinc: Prevents rust and corrosion. Zinc is nonpoisonous and hygienic. It does not contain impurities that could be set free under atmospheric conditions or produce toxic fumes in case of fire.

Many metal tile products are made from recycled material sources and may in turn be recycled.

SPECIFICATIONS

Check with manufacturer for areas and suitability of use. Most manufacturer's will freely provide technical information regarding where and how a specific tile may be installed. Installation instructions should conform to both ANSI and the TCNA Handbook recommendations.

SUBSTRATES

Substrates, when properly prepared, include masonry, concrete, cured Portland cement mortar beds, gypsum board (interior dry areas only), exterior grade plywood (interior dry areas only), brick, ceramic tile, plastic laminates and cementitious backerboard units. Metal tile that does not match standard tile thickness may require additional floating of the substrate or adjustment of the adhesive setting bed thickness to compensate for differences in thickness.

MOVEMENT JOINTS

Expansion joints shall be installed and placed in accordance with EJ 171 in the TCNA Handbook. Expansion joints, control joints and cold joints shall not be bridged with setting mortar or tile. Perimeter joints shall be filled with suitable flexible sealant.

INSTALLATION TECHNIQUES

Due to the variety of metal tile backing materials available, refer to the tile manufacturer for specific adhesive recommendation.

Latex-Portland cement-based mortar: Where appropriate, use a premium, Latex-Portland cement-based mortar, preferably a two-part (high solids liquid additive & powder) system. Mortar must be spread with the flat side of trowel and keyed into the substrate. Additional adhesive should be applied in one direction to a depth sufficient to be notched with a suitable trowel to achieve 95% minimum contact to both tile and substrate. Press/twist the tile in and move perpendicular to the notched adhesive rows.

Never hit or tap the tile into place as this may damage the tile. Back-buttering is recommended for tile with recessed back.

100% Silicone Adhesive: Use only 100% silicone, not “siliconized” acrylic type products. For wall installations only, over smooth surfaces. Surfaces to receive 100% silicone should be cleaned with a suitable solvent. Detergent or soap are not recommended. Follow the solvent manufacturer’s safety procedures when using solvents. 100% Silicone adhesive may be applied from dispenser tube or cartridge (use caulking gun). Tile should be set in the fresh silicone within 20 minutes of application.

Urethane Adhesive: Urethane Adhesives are moisture-cured and contain no water. They cure to a flexible film and may provide a good option for metal plank flooring. Urethanes offer high bond strengths and durability for floor installations. Urethane Adhesive is trowel-applied to the substrate. Immediately place tile into “wet” adhesive. As you work, immediately clean any adhesive from tile with a soft cloth and solvent. Follow the solvent manufacturer’s safety procedures when using solvents.

Double-Stick Tape: Two-sided or double-stick may be considered only for wall installations over smooth substrates where high bond strengths are not a major consideration. Use industrial or commercial grade tape for best bond. Substrate must be clean, dry and smooth. Use only for wall installations. Cover the entire tile back (95-100%) with the tape. Pre-locate/fit the tile prior to exposing the tape. Tile adjustment may not be possible after placing onto substrate. Use firm hand pressure to place the tile after exposing the tape. Be careful not to bend or damage the tile.

GROUTING

Consult with manufacturer. Typically, non-sanded latex-Portland grout is recommended. Joint size shall not exceed 1/8” for Non-sanded grout. High gloss tile or tile with a delicate finish may require the use of 2" masking tape on the edges of the tiles to protect the surface from scratching from grouting materials. Grout and finish small areas to allow for easy removal of residue from surface finish. Use a 4” long bristle paint brush cut down to 2” for clean up of difficult textured surfaces.

Epoxy based grout is not recommended for metal tile.

SPECIAL CONSIDERATIONS

Tile Cutting: Metal tiles can be cut with saw blades designed to cut metal. Most manufacturers will strongly caution against using mechanical or rotating saw blades. Hand saws are generally recommended. A hack saw fitted with high-speed steel (HSS) blade (32 TPI Minimum) or tungsten carbide (fine grit) will cut most metal tile.

Consult with tile manufacturer before using a tile saw with diamond impregnated circular wet saw blade. Cut the tile with the top surface or face up to protect from scratching. De-burr the sharp cut edge using a fine steel file or oil stone. Use caution with sharp edges. Minor fraying of metal on underside (or hidden areas) can be lightly sanded with 180 grit wet/dry sandpaper. Never use fiberglass reinforced abrasive cutting blades for cutting metal tile.

Maintenance and cleaning: General Maintenance: Light: Dusting / sweeping / vacuuming. Moderate: Clean with warm soapy water (liquid dish-washing soap). Heavy: Use manufacturer approved non-abrasive, neutral cleaner. Never use steel wool or abrasive compounds or acidic materials (such as

vinegar) on metal tile. Wipe up cola, citrus and wine spills immediately as they can be very acidic. Un-coated tiles such as brass and copper will tarnish and discolor and may require regular cleaning with a manufacturer approved metal polish. Electroplated, “coated” or anodized metal tile will eventually show wear in high traffic/use areas. Some metal tile can be resurfaced if they are marred or scratched, check with manufacturer.

Do not remove the protective vinyl covering from the tiles until installation is complete (including grouting and sealing). Some grout sealers may not be suitable for use with certain metal tile. Consult the tile manufacturer. The maximum continuous operating temperature for most metal tile is 120°C. Some metal tile with etched or imprinted grout lines may not require grouting. Check with manufacturer. Metal finishes are susceptible to staining and fingerprinting. Gloves are recommended for handling