

# Tiles

A good Tiles should be square in shape or variable depending on product, surfaces must be level, straight edges constant thickness and rectangular in section. They shall be free from cracks and flows and pitting or scaling. Tiles divided into two types' ordinary tiles and terrazzo tiles.

## 1- Ordinary tiles:-

Ordinary tiles mainly composed of aggregates, cement, and pigments made from two different layers in composition firstly, **the face layer** consists of fine aggregate (natural sand), ordinary cement or white cement, and added to that pigment and secondly, the **base layer** (back) and contains concentrations of coarse aggregate and sand and ordinary cement.

Pigment: - A pigment is natural or artificial coloring used in production of tiles with fixed colors and does not contain harmful matter for concrete. The pigment initially mixed with cement the purpose of that to obtaining a homogeneous color.

## 2- Terrazzo tiles:-

Terrazzo is a word derived from the Italian to designate any mosaic flooring made by embedding small pieces of marble or colored stone in mortar followed by polishing the surface, mainly composed of aggregates, cement, and pigment and marble chips. “Terrazzo consists of marble, granite, onyx or glass chips in Portland cement or resinous matrix. The terrazzo is poured, cured, ground and polished. Typically used as a finish for floors, stairs or walls. Terrazzo can be poured in place or pre-cast”.

Terrazzo tiles as “composed of two bonded layers, the upper one **face layer** having a smooth surface and constituted of cement, usually white cement, mixed with prearranged amounts of marble chips or other hard stone, and of powdered stone or marble. The lower layer **base layer** (back) shall be constituted of ordinary Portland cement, sand, and aggregate mostly between 0.1mm and 2.0mm in size as in Figure 1.

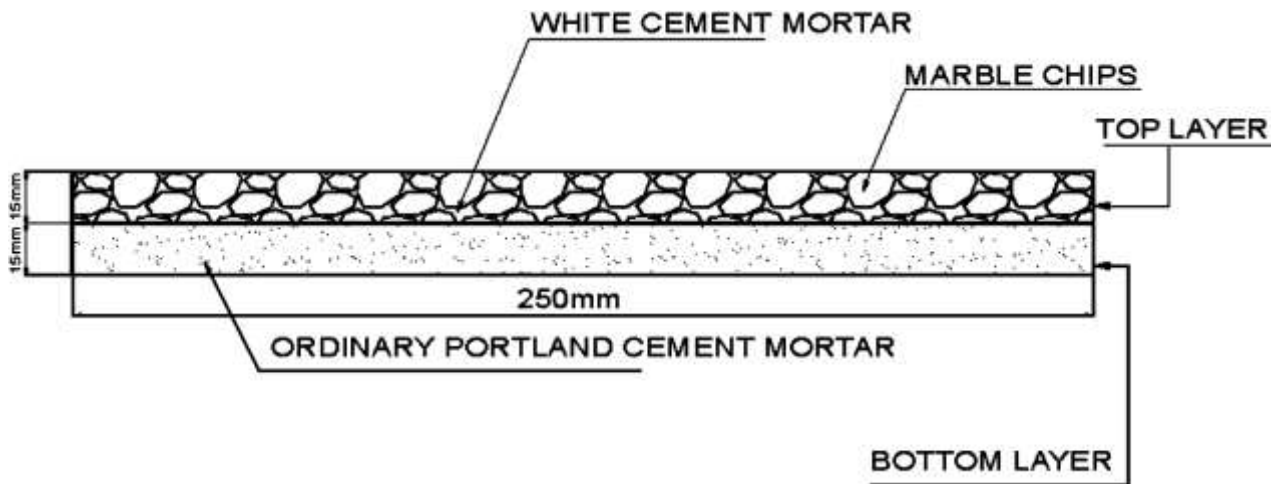


Figure 1: Pre-cast terrazzo tile cross-section.

Pre-cast terrazzo tiles are widely used as floorings in the housing, commercial, and institutional buildings. Tiles are manufactured in square sizes varying typically from 10 cm x 10 cm up to 40 cm x 40 cm, mechanically vibrated in the mold, hydraulically pressed, water or air cured, then grit polished before being shipped to site. Final polish is performed in situ after setting and leveling the pre-cast tiles on a sand bed.

### **Manufacture of terrazzo tiles**

Tiles are filled manually or automatically with the marble chips, then sufficient amounts of white cement grout are poured to fully enclose the marble chips followed by a backing layer of Portland cement mortar in measured quantities. The molds are then vibrated and the mix is hydraulically pressed to the required pressure for a few seconds before being released.

The tile is then de-molded and stored for curing. Automatic or manually operated equipment can be used. The large variations in the quality of the pre-cast terrazzo tile available on the Middle Eastern market are mainly due to the lack of clear and well-designed specifications as well as the absence of strict quality control procedures in manufacturing.

### **Standard specification:-**

- ❖ Iraqi Standard specification (IQS No. 1043) for ordinary tiles.
- ❖ Iraqi Standard specification (IQS No. 1042) for terrazzo tiles.