

Technical Specifications for Mangalore Clay Tiles

1. Material

- The tiles shall be made of **burnt clay**, manufactured from suitable clay or shale, free from saline deposits, stones, pebbles, organic matter, or deleterious salts.
- Tiles shall conform to **IS: 654 – 1992** (Clay Roofing Tiles, Mangalore Pattern – Specification) or its latest revision.

2. Type & Pattern

- The tiles shall be of **Mangalore pattern**, semi-cylindrical in shape, machine-pressed, and well-burnt.
- They shall have a **double interlocking arrangement** (on both sides and top/bottom) to prevent water penetration.

3. Dimensions & Tolerances

- Standard nominal size: **400 mm (length) × 230 mm (width) × 15 mm (thickness)**.
- Tolerances: $\pm 3\%$ in length and width; ± 2 mm in thickness.
- Average weight per tile: **2.5 to 3.0 kg**.

4. Physical Properties

- **Water Absorption:** Not more than **15% by weight** after immersion in water for 24 hours (as per IS 654).
- **Breaking Load:** Minimum **120 kg** when tested on support span of 300 mm.
- **Flexural Strength:** Shall not be less than **1.8 N/mm²**.
- **Weather Resistance:** Tiles shall show no signs of disintegration, cracking, or spalling after 50 cycles of wetting and drying.

5. Finish

- Tiles shall be uniform in shape, size, and color (terracotta red/burnt clay finish).
- Surface shall be smooth without cracks, warpage, or blisters.

6. Laying & Fixing

- Tiles shall be laid on properly prepared battens/purlins or over a RCC/wooden framework at the recommended slope (**minimum 26°–30°**).
- Overlap shall be minimum **75 mm** lengthwise and **40 mm** crosswise.
- Each tile shall be securely fixed with **galvanized iron/aluminium nails or binding wires**.
- Mortar bedding (1:4 cement-sand) shall be used at ridges, hips, and valleys.

7. Accessories

- Ridge tiles, hip tiles, and valley tiles shall be of matching clay and conform to IS standards.
- Eave tiles and gable end tiles shall be provided where required.

8. Sampling & Testing

- Random samples shall be tested for water absorption, breaking load, and dimensions before bulk supply.
- Manufacturer's test certificates shall be submitted.

9. Approved Makes

- Tiles shall be procured from reputed and IS-marked manufacturers such as **Mangalore Tile Co., Calicut Tile Co., Bharat Clay Works**, or equivalent approved by the Engineer-in-Charge.