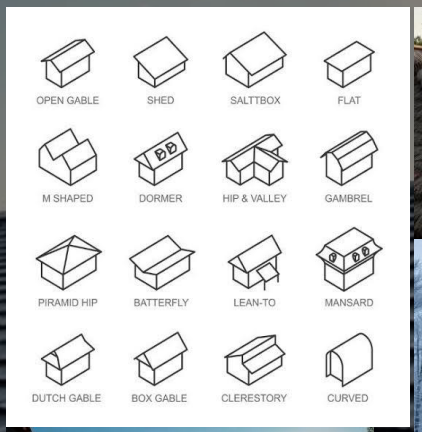
Roof Covering Material in India

Traditional and Modern Roofing Tiles

By: Rahul Sharma, B.Arch 2nd Year

Introduction to Roof Covering Materials

- - Definition and purpose of roof coverings
- - Protection against climate: rain, heat, snow
- - Enhances aesthetics, thermal insulation, durability
- - Depends on: Climate, slope, budget, material availability



Types of Roof Covering Materials (Overview)

- - Clay Tiles
- - Concrete Tiles
- - Metal Sheets / Tile Profile Metal
- - Asphalt Shingles
- - Fiber Cement Tiles
- - Composite / Synthetic Tiles
- - Polycarbonate Sheets
- - Thatch and Bamboo

COMPARISON						
FEATURES	**CONCRETE ROOF TILE**	**Asphalt Shingle**	**Clay Roof Tile**	**Wood Shake**	**Natural Slate Tile**	**Metal**
Material	Natural mixture of cement, sand, water and oxide	Petroleum-based fiberglass or a paper fiber mat	Molded from natural pulverized clay and water	Manufactured from red cedar, cypress, pine and redwood trees	Natural, fine-grained, metamorphic rock	Consists of either aluminum, steel or copper
Average Lifespan	75 years	20 years	75 years	30 years	50+ years	45 years
Recyclable	✓	✗	✓	✓	✓	✓
Design Versatility	✓	✗	✓	✗	✗	✗
Class A Fire Resistant	✓	✓	✓	✗	✓	✓
Hail/Impact Resistant	✓	✗*	✓	✓	✓	✓**
Resistant Beyond 150 MPH Sustained Winds	✓	✗	✓	✗	✗	✓
Freeze-Thaw Resistant	✓***	✓	✓	✓	✓	✓
Inherent Thermally Insulative Properties	✓	✓	✗	✗	✗	✗

*According to the Insurance Institute for Business & Home Safety, only 43 percent of 3-tab asphalt shingles possess a Class 1 hail/impact rating.

**Metal roofs are not recommended for hail zones due to the inevitable denting and scratching that occurs during inclement weather, such as hail storms.

***Excludes color bonded/slurry tiles.

Why Clay is Popular in India

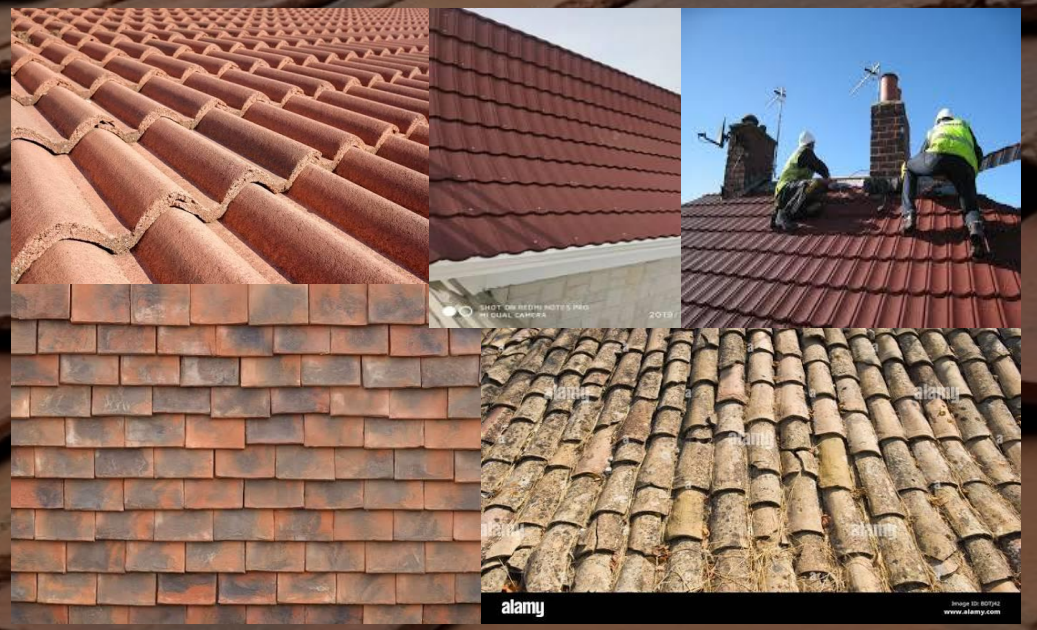
- - Naturally available, cost-effective
- - High thermal insulation
- - Suits traditional sloped roofing
- - Easy to produce using low-energy methods
- - Durable, breathable, and eco-friendly

Classification of Clay Roofing Tiles

- - Country Tiles (Elebath)
- - Mangalore Tiles
- - Khaprail Tiles
- - Pantiles
- - Spanish / Roman Tiles
- - Terracotta Decorative Tiles

Country Tiles / Elebath Tiles

- - Handmade / semi-mechanized flat tiles
- - Laid on timber battens with lime/mud
- - Common in South India, rural homes
- - Inexpensive, good insulation
- - Needs regular maintenance



Mangalore Tiles

- - Origin: Basel Mission, 1860s (Mangalore, Karnataka)
- - Interlocking machine-made tiles
- - Laid on sloped roofs with timber/metal battens
- - Durable (50–100 years), aesthetic
- - Popular in coastal and heritage buildings

Khaprail Tiles (Flat Clay Tiles)

- - Common in North India (e.g., UP, Bihar)
- - Flat rectangular tiles laid with mortar
- - Used for centuries in temples, old houses
- - Cost-effective, easy to lay, less durable

Other Clay Tiles

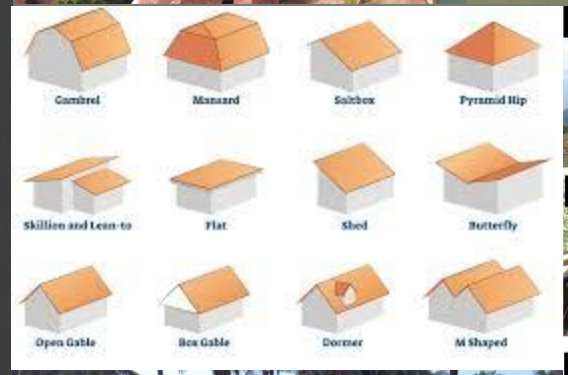
- - Pantiles (European interlocking)
- - Spanish/Roman curved tiles
- - Terracotta decorative tiles
- - Clay shingles
- - Chinese/Mughal glazed tiles

Production Regions in India

- Mangalore (Karnataka) – Red clay, mechanized units
- Trichur, Kodungallur (Kerala) – River clay, traditional methods
- Cuddalore, Karaikal (TN) – Alluvial clay, local traditions
- Goa & Sindhudurg – Portuguese-style clay roofs
- Meerut, Varanasi (UP) – Khaprail manufacturing

Why These Regions?

- - Availability of red/alluvial clay
- - Traditional craft and skills
- - Historical and colonial influence
- - Local climate favors sloped roofing
- - Low transportation cost to rural demand zones



Construction Procedure (Overview)

1. Design slope: 25°–45°
2. Prepare timber/metal rafter frame
3. Fix horizontal battens at spacing (250–350mm)
4. Lay tiles bottom-up with proper overlap
5. Use mortar or nails depending on tile type
6. Fix ridge, barge tiles, and flashing