

Rafters are according to the shape and size of the roof. The purlins are welded at a distance of 40 cm from each other.

MCR tiles are secured by tying them to the purlins with G.I. wire. The angle of roof slope should be at least 22°. Greater inclination of upto 30° is preferred for more aesthetic appeal and high rainfall area.

Standard architectural details for gable and hipped roof ridges, eaves, side over-hang and valleys can be used for MCR roofs.

MCR tiles are also an excellent cladding material for sloping RCC slabs. They act as an effective damp proofing layer and enhance the aesthetic appeal of the buildings. The tiles can be fixed to the slabs with cement mortar.

Design Data for MCR Roofs

Tiles per m ²	13 nos. 32kg
Wt. per sq.m.	32 kg
Tiles needed for	
10m of roof length	50 nos.
10m of roof width	25 nos.

Unique Features

MCR tiles offer many advantages over other sloping roof materials such as G.I. sheets, Mangalore tiles, wooden shingles, slate and asbestos. MCR tiles:

- offer more value for money
- are highly durable-they have the life of concrete
- are lighter than other roofing tiles -they require less understructure
- can be easily installed
- can be coloured to user's preference
- reduce heat gain
- do not make noise during rains

- do not contain asbestos fibres

Technology Validation


MCR technology has been validated and certified by :

Building Materials & Technology Promotion Council, Ministry of Urban Development. Govt. of India




The Micro Concrete Roofing Technology Package has been developed and disseminated in India by Development Alternatives with the technical co-operation of SKAT and financial support from the Swiss Agency for Development & Cooperation.





For more information contact :
Eco Building Advisory Unit
Development Alternatives
 B-32, Tara Crescent, Qutab Inst. Area
 New Delhi 110 016
 Phone : (011) 696-7938, 685-1158
 Fax : 686-6031, Email : tara@sdalt.ernet.in

Branch office:
 1077, Civil Lines
 Station Road, Jhansi 284 001
 Phone : 0517-444-102
 Fax : 0517-440-557

Aesthetic, durable and cost effective sloping roof with latest concrete technology



Technology

Micro Concrete Roofing (MCR) tiles are a cost effective, aesthetic and durable alternative sloping roof technology.

MCR Technology is a result of global research and development effort. The tiles are being marketed extensively in Latin America, East and West Africa and South East Asia. Each year, over forty million tiles are installed.



TARA MCR Tile Making Machine - Roman Type Business

Business

MCR is highly profitable for micro & small scale building material producers. A capital investment of about Rs. 3 lakh yields upto 40% profits in the first year of operations. It can be easily adapted to both urban as well as rural markets. TARA, a leading sustainable technology marketing organisation, supplies the equipment. To make 12,000 tiles per month, 160 cement bags, 10 cu.m of sand and 5 cu.m of aggregate are required along with two skilled staff and five workers.



Product

MGR tiles are made by vibrating an optimum mix of cement, sand, fine stone aggregate and water on a vibrating table. They are put through rigorous tests for water tightness, shape, size etc. MCR tiles can be made in two distinctive profiles; Pan and Roman and an infinite range of colours. MCR tiles are being marketed under different brand names such as TARAcrete, Duracrete, Swisscrete. MYCON tiles in different regions of the country by leading product promoters.



Comparitive Costs for roofing materials*

Cladding Material	Uunderstructure per Sq.m	Cost *(Rs)
MCR tiles	Steel Trustees	300-360
Primary Wood		320-400
Secondary Wood		200-250
Mangalore Tiles	Primary Wood	320-450
Local Clay Tiles	Secondary Wood	220-275
ACC	Steel	340-400
CGI	Steel	350-450

- cost of roof varies according to span and roof form
- Based on material and labour rates in Deihi, March 2000.

Technical Data

MGR Tile	
Clear Length of tile	500 mm
Lengths after overlap	400 mm
Clear width of tile	240 mm
Width after overlap	200 mm
Thickness	8/10 mm
Nominal Weight	2.30/2.80 kgs
Load bearing capacity of tile	60/ 80 kgs

Production Process

The mix of cement, sand, aggregate and water is vibrated for about 45 seconds and then transferred on to a High Impact Polystyrene mould to give MCR tiles their unique profile. After initial setting for 24 hours, they are water cured for 7 days. This results in the great strength and durability of MCR tiles.



Stack of MCR Tiles

Applications

A variety of roof designs for farm and country houses, bungalows, verandahs and pavilions are possible with MCR tiles. They have also been used on industrial sheds, workshops and restaurants. MCR tiles allow total creative freedom to designers, architects and engineers to create a variety of roof forms.



Fine examples of Micro-Concrete Roofs

Building with MCR Tiles

MCR roofs are constructed in a conventional manner using rafters and purlins made from wood or steel.