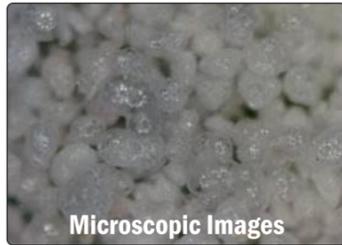


## PERLCON GLAZED ISOBALL (GIB) :



Microscopic Images

GIB is a light weight material produced by special process. The material is in the form of glass like bubbles. These are closed cell particles with high mechanical strength, very low water absorption & very high fire resistance characteristic. GIB being chemically inert has excellent heat & acoustic insulation characteristics & once mixed with cement, very high thermal resistance value can be achieved.



Microscopic Images

GIB is widely used in Building Construction Industry as a light weight aggregate, when combined with Portland cement and water it produces an ultra light weight concrete. GIB is a very unique insulating material especially when studied in comparison with other conventional insulating materials having R Value 2.78.

GIB can also be used in other areas where making a product lighter will be beneficial & a variety of permanent insulating applications.

Perlcon GIB : Physical Properties	
Colour	White
Refractive Index	1.5
Free Moisture, Max.	0.5%
pH	6.5-7.5
Specific Gravity	0.32
Bulk Density	100-250 kg/m <sup>3</sup>
Grain Size	0 - 2 mm
Softening Point	871-1093 °C
Fusion Point	1260-1343 °C
Specific Heat	837 J/ kg k
Thermal Conductivity at (24° C)	0.04 -0.06 W/mk



GIB can be mixed with cement, minerals gypsum, fly ash etc. to make variety of finished products. Due to low water absorption property, if GIB is used where water is used to mix the different materials, it will help in reducing water consumption, drying cost and increase productivity etc. More over because of the its low water

absorption property the volume of mass remains same after addition of water in the concrete / mix.

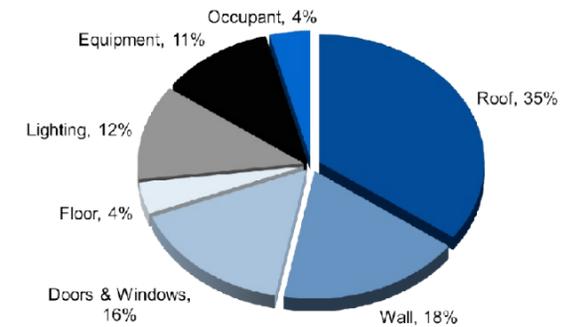
**GIB Concrete insulation is the ideal base for built up and single ply roofing system.**

## Roof Insulation :

The roof emits significant solar radiation and plays an important role in heat gain/losses, day lighting and ventilation. In this system a thermal barrier or insulation is provided over the RCC, so that the heat of the sun is restricted to reach the RCC slab of the roof. In this way we can preserve the RCC from getting heated up. Once the RCC is heated up there is no other way for the heat to escape other than inside the building.

## Heat Gain in Building

Source : BEE Website



**Conventional Roof Insulation with high reflective material like china mosaic / U.V. Reflective Coatings / any insulation material based on Solar Reflective Index (SRI) etc. is not an effective method of insulation as the Solar Reflection gets reduced over a period of time due to accumulation of dust / dirty patches etc.**

## PERLITE LIGHTWEIGHT CONCRETE MIX DESIGNS, TECHNICAL PROPERTIES AND CONSUMPTIONS

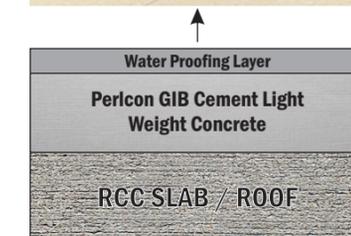
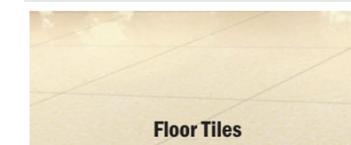
PERLITE LIGHTWEIGHT CONCRETE FOR ROOF FILLS														
Mix designs					Technical properties				Max. Consumption of Perlite for 1 m <sup>2</sup> of Perlite fill (m <sup>3</sup> ) width (mm)					
Cement to Aggregate Ratio (by vol.)	Cement (Kgs)	Perlite (m <sup>3</sup> )	Water (m <sup>3</sup> )	Air Entraining Agent (l)	Wet Density Range (Kg/m <sup>3</sup> )	Dry Density Range (Kg/m <sup>3</sup> )	Compressive Strength Range (MPa)	Thermal Conductivity (W/mK)	40	50	60	80	100	150
1/4	375	1	0.30	2	808 +/- 48	544-640	2.413-3.447	0.10-0.12	0.048	0.060	0.072	0.096	0.120	0.180
1/5	300	1	0.29	2	728 +/- 48	448-544	1.585-2.344	0.09-.010						
1/6	250	1	0.27	2	648 +/- 48	384-448	0.965-1.378	0.08-0.09						
1/8	190	1	0.27	2	584 +/- 48	320-384	0.552-0.861	0.07-0.08						

PERLITE LIGHTWEIGHT CONCRETE FOR FLOOR FILLS																
Mix designs					Technical properties				Max. Consumption of Perlite for 1 m <sup>2</sup> of Perlite screed (m <sup>3</sup> ) width (mm)							
Cement to Aggregate Ratio (by vol.)	Cement (Kgs)	Perlite (m <sup>3</sup> )	0-5mm SAND (m <sup>3</sup> )	Water (m <sup>3</sup> )	Bentonite (Kgs)	Air Entraining Agent (l)	Wet Density Range (Kg/m <sup>3</sup> )	Dry Density Range (Kg/m <sup>3</sup> )	Compressive Strength Range (MPa)	Thermal Conductivity (W/mK)	40	50	60	80	100	150
1/4.5	330	0.5	0.5	0.30	4	2	1,800+/-100	1,750+/-100	13.00-14.00	0.60	0.022	0.028	0.033	0.044	0.055	0.083
1/5	300	0.5	0.5	0.30	4	2	1,700+/-100	1,650+/-100	11.00-13.00	0.55						
1/6	250	0.5	0.5	0.30	4	2	1,600+/-100	1,550+/-100	8.50-10.00	0.50						
1/4.5	330	0.75	0.25	0.30	4	2	1,300+/-100	1,250+/-100	7.50-10.00	0.35						
1/5	300	0.75	0.25	0.30	4	2	1,200+/-100	1,150+/-100	7.00-9.00	0.28	0.033	0.041	0.050	0.066	0.083	0.124
1/6	250	0.75	0.25	0.30	4	2	1,100+/-100	1,050+/-100	5.00-8.00	0.20						

Air entraining agent; Neutralized vinsol resin or other entrainment agent. Follow manufacturer's recommendations.

## PERLITE LIGHTWEIGHT CONCRETE FLOOR FILLS AND ROOF FILLS CONSTRUCTION:

### Application Procedure :



- Clean the dust from floor or roof surface then spray the surface with water.
- Apply a 5mm (floors) or a 20-25mm (roofs) expansion joint in the perimeter.
- Mark the levels using laser level and install with aluminum straight edges similar to applying the Cement Mortar.
- First mix Cement with water and mix till a slurry is formed then add GIB and mix manually or using a mixer for 3-4 minutes.
- Apply GIB lightweight screed in a continuous operation until a section is completed, exactly like applying the cement screed.
- Level the GIB lightweight screed by using an aluminum straight edge.
- For large surfaces use construction joints in both directions to avoid expansion cracks.
- The next day scratch the GIB concrete surface with an aluminum line scratcher to clean and level it. Use a small scratcher for the corners. Spray the surface with water.
- After 3-4 days, when the GIB lightweight concrete surface is dry, spray it with water and apply mortar then glue directly the floor tiles or apply water proofing solution or material.



Roof Insulation on RCC Slab



Roof Insulation on SS Roofing

## Popular applications of GIB :-

- Insulating roof decks
- Lightweight floor fills / screeds
- Insulating structural roof decks
- Curtain wall systems
- Lightweight pre-cast panels for partitions
- Lightweight insulating blocks
- Roof / Ceiling tiles
- Hollow / Cavity walls