

SLOPING METAL ROOF INSULATION

BY

RELIABLE BUILDING SOLUTIONS



LIKELY PROBLEMS WITHOUT INSULATION

- No Thermal Insulation
- Annual Loss Of Energy up to Rs. 2,500/- per m²
- No Sound Insulation
- Very High impact sound of raindrops & hail
- Life of roof reduced due to diurnal thermal expansion and contraction
- Undulations on roof likely rain water collection points and hence potential leakage points

UNDERDECK INSULATION



**SELF EXTINGUISHING EPS
INSULATION SHEETS FIXED
USING PU FOAM ADHESIVE**



**POLYMERIZED CEMENTITIOUS
COATING REINFORCED WITH
FIBER GLASS MESH**



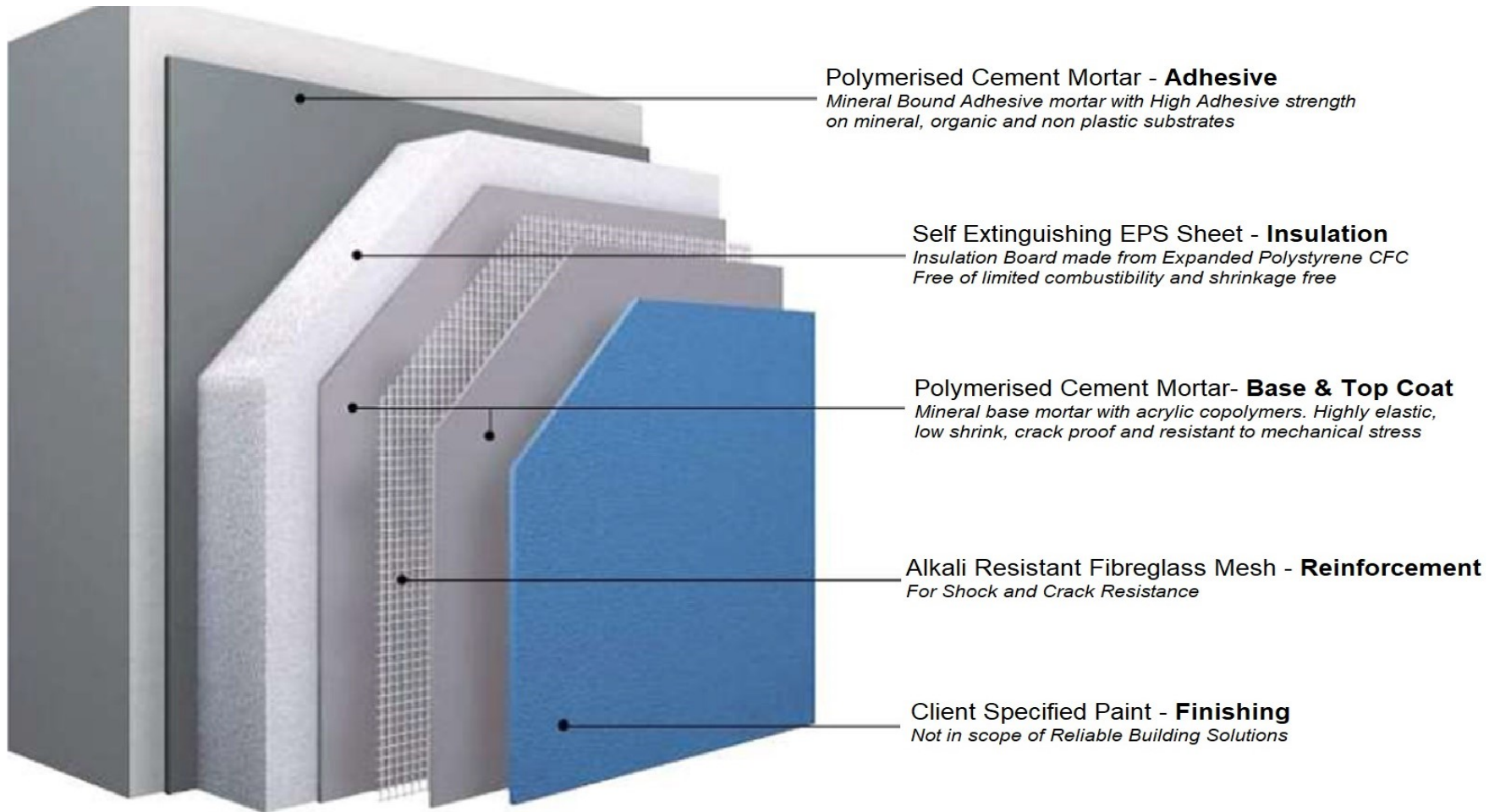
PAINTED SURFACE

EPS INSULATION USED IS OF SELF EXTINGUISHING QUALITY WHICH DOES NOT SHOW ANY FLAME DURING FIRE THESE SHEETS ARE FIXED UNDER ROOFING SHEETS EMBEDDING THE TRUSS STEEL WITH PU FOAM ADHESIVE THE EPS SHEETS ARE OVERCOATED WITH POLYMERIZED CEMENT IN TWO COATS WITH FIBER GLASS REINFORCEMENT EMBEDDED IN BETWEEN

OVERDECK INSULATION



LAYERS OF TREATMENT




THE AFTER TREATMENT EFFECTS OF OVERDECK

- Layer of Thermal Insulation added to roof improving the thermal resistance by ~ 7 times
- Potential to save air conditioning energy up to Rs.2000/m² per annum
- Excellent impact sound insulation layer on roof.
- Sound of hail/rain drops absorbed by insulation layer
- Stable roof temperature under insulation
- Rigid Surface on roof top painted with high Solar reflectance index, water proof, dust resistant paint which ensures excellent disposal of rain water
- Roof surface is walkable and long life
- Working simpler and faster as compared to underdeck
- Aesthetics of colored roofing sheeting compromised

ENERGY CALCULATION OF ROOF

U VALUE CALCULATOR FOR ROOF ASSEMBLY CREATED BY RELIABLE BUILDING SOLUTIONS

Material	Thickness(d) [m]	k [W/mk]	μ	$\mu.d$ [m]	R [m ² K/W]	Delta T	T[°C]		Dew point [°C]
							Inner Bdry	Outer Bdry	
Inside Air					0.1300	1.3510	22.0		7.8
Vapor Barrier/Paint etc	Paint - Emulsion			0.1	0.0000	0.0000	23.4	23.4	7.8
Inner render/plaster	Gypsum Plasterboard	0.015	0.21	10	0.15	0.0714	23.4	24.1	7.9
Inner insulation	None	0			0	0.0000	24.1	24.1	7.9
roof structure	Steel	0.002	0.72	50	0.1	0.0028	24.1	24.1	7.9
Waterproofing layer	APP membrane	0.001	0.17	80000	80	0.0059	39.5	39.6	34.5
Overdeck insulation	EPS 24Kgs/m3 Cut Shee	0.05	0.034	60	3	1.4706	24.1	39.4	8.8
Protective Layer	Polymeric Cementitious	0.006	0.72	150	108	0.0083	39.4	39.5	27.3
Gradient Layer	None	0	0	0	0	0.0000	39.5	39.5	27.3
Final Layer	None	0	0	0	0	0.0000	39.5	39.5	27.3
Vapor Barrier/Paint etc	Paint - High SRI	0.002	0	0	3	0.0000	39.5	39.5	27.6
Outside Air					0.0430	0.4469	39.6	40.0	34.7
					194.35	1.7320	18.0000	40.0	
Temperature inside		Relative Humidity	22	40.00%	U VALUE	0.58	POWER COST (RS./KWHR)	7.50	 ... Greener ... Safer ...Faster <i>For queries</i> 9810258899
Temperature outside				R VALUE (SI)	1.73	HEAT VALUE REMOVED BY AC (MJ/KWHR)	3.60		
SAVINGS IN ENERGY COSTS/M2 PER YEAR (WITH INSULATION USAGE)				R VALUE US	9.84	EFFICIENCY OF AC IN REMOVING HEAT	80%		
						DEGREE DAYS (AVG. TEMP DIFF. X NO. OF DAYS)	2700		
						AVG. TEMP DIFF. (TEMP OUT - TEMP IN)	18		
						DAYS/YEAR OF AC RUN	150		

86.4 X DU X (DT X DAYS) X ENERGY COSTS
1000X EFFICIENCY X HEAT VALUE

Count: 8