

## TECHNICAL PROPERTIES

The major component of Marmox board is rigid extruded polystyrene foam with a closed cellular structure and a flame retardant additive. Marmox board has a 0.5mm coating on either side comprising a glass fibre mesh embedded in a polymer-cement mortar

### Properties of the Foam Component

Property	Assessed to	Rating
Density	DIN 53420	36.7 kg/m <sup>3</sup>
Thermal Conductivity (initial)	DIN 52612	0.027 Watt/mK
Thermal Conductivity (>5yrs)	ASTM C177-76	0.032 Watt/mK
Compressive Strength (10% deflections)	DIN 53421	0.3 N/mm <sup>2</sup> (>30.0 t / m <sup>2</sup> )
Flexural Strength	ASTM C203	2.05N
Shear Bond Strength	EN 1448	3.32kg/cm <sup>2</sup>
Water Absorption (2-day immersion)	ISO2896	0.2% by volume
Water Absorption (Capillary)	DIN 53428	Zero
Coefficient of linear expansion	N/A	30 x 10 <sup>-6</sup>
Water Vapour Diffusion Resistivity (μ)	DIN 52615	110 – 225 μ
Water Vapour Permeability	ASTM E-96	0.028 ng/Pa.m.s
Flammability	DIN 4102	B1
Quality Management system	ISO9001	Bureau Veritas/231739
EU controlled substances content	N/A	none

### Properties of the Marmox Board

Property	Assessed to	Rating
Thermal Conductivity (> 5yrs)	BS EN 13164	0.033 - 0.036 Watt/mK
Compressive Strength (10% deflection )	ASTM D 1621	371kN/m <sup>2</sup>
Bond Strength	BS EN 1384	0.3N/mm <sup>2</sup>
Maximum Tile Loading Weight	CERAM121107	62kg/m <sup>2</sup>
Water Vapour Permeability (Sd)	DIN EN 12086	3.2m
Resistance to body Impact	ETAG 003	3 x 120N/m
Bending Stiffness, EI (20mm / 30mm)	EN 12089	601KNmm <sup>2</sup> / 1285 kN/mm <sup>2</sup>
Fire Ignitability	BS 476, part 5	"P" not easily ignitable
Fire Propagation	BS 476, part 6	8.1, "class O"
Spread of Flame	BS 476 part 7	1, "class O"
Impact Sound Reduction	BS-ISO140-8	dLw = 21
Quality Management system	ISO9001	Bureau Veritas/231739
EU controlled substances content	N/A	none

\*Working temperature range: -50 to +80OC

**Technical Properties** continued

Board Weights and Dimensions				
Small: 600mm x 1250mm		Medium: 600mm x 2500mm		Large: 2400mm x 2400mm
Thickness	Density (kg/m <sup>3</sup> )	Weight (kg)	Weight (kg)	Weight (kg)
6mm	445	2.0	N/A	N/A
10mm	290	2.2	4.4	8.6
12.5mm	245	2.3	4.6	9.0
20mm	170	2.5	5.0	N/A
30mm	120	2.7	5.5	N/A
40mm	100	3.0	6.0	N/A
50mm	90	3.3	6.5	N/A
60mm	80	3.6	7.2	N/A

Dimensional tolerances for standard boards: Thickness +/- 1mm, Width +/- 2mm, Length +/- 5mm

The boards should be stored dry and flat. Slight bowing caused by incorrect storage or transport, for example, is not permanent and does not represent a technical defect. Slight curving can be rectified through storing the boards flat.

Thermal Specifications				
Nominal thickness in mm	Thickness of the foam in m	Thermal resistance R-value (m.K/W)	Thermal Transmittance (W/m <sup>2</sup> x K) 100C ambient temperature difference	Thermal Transmittance (W/m <sup>2</sup> x K) 350C ambient temperature difference
6	0.005	0.16	3.19	3.54
10	0.009	0.28	2.33	2.52
12.5	0.0115	0.36	2.69	2.06
20	0.019	0.59	1.40	1.46
30	0.029	0.91	0.99	1.03
40	0.039	1.22	0.75	0.80
50	0.049	1.53	0.62	0.65
60	0.059	1.84	0.53	0.54

Marmox Boards offer **thermal insulation** that in most constructions satisfies the U-value requirements of part L of the UK building regulations (*0.22 for floors, 0.28 for walls*). The non-conductive surface reduces condensation by masking any cold bridging from the substrate beneath.

The cementitious surface is resistant to **heat and the chemicals within the sheathing around electric underfloor heating elements** making it safe to use with these types of systems.