Jablite Inverted Roof Insulation

Flat Roof Insulation – Protected Membrane Roofs

Jablite Inverted Roof Insulation is a unique innovative closed cell expanded polystyrene (EPS) with low water absorption properties

Key Benefits

- BBA Certified – 01/3812 Product Sheets 5 and 6
- Conforms to ETAG 031
- Suitable for use on flat roofs with zero pitch and slopes between 1:80 and 1:6
- Resistant to the effects of freeze/thaw
- High compressive strengths available – 200, 300, 500, 600 and 200 HP to suit all applications
- Global Warming Potential <5
- Ozone Depletion Potential = Zero

The insulation boards are loose laid over the weatherproofing, there is no requirement to adhere or mechanically fix the boards. Jablite Filter Membrane and gravel ballast and/or paving slabs are used to secure the insulation to the deck.

EPS is compatible with and can be laid directly onto hot melt and bitumen based weathering membranes. See installation details for advice on other membrane types.

Jablite Inverted Roof Insulation is manufactured in accordance with BS EN ISO 13163 under a Quality Assurance System approved to BS EN ISO 9001 and Environmental Management System to ISO 14001.

Jablite Flat Roof Inverted is lightweight and easy to install. There are no requirements for special PPE when installing or cutting the insulation panels.

Dimensions :

Size	1200 x 1200mm (with 15mm rebated edges) Board coverage 1.44m²
Thickness	Single thickness 50mm up to 240mm (in 1mm increments)

Accessories :

Jablite Filter Membrane is a required part of the system which reduces the cooling effect and improves overall thermal performance

Jablite UpStand Board Plus provide vertical Insulation on parapet walls (see page 3)

Application : This information is provided as guidance only, please refer to the compressive strengths table (shown later)

	INVERTED ROOF 200	INVERTED ROOF 200 HP	INVERTED ROOF 300	INVERTED ROOF 500 & 600
Roofs with access for maintenance	✓	✓	✓	✓
Roof Terraces and Balconies	✓*	✓*	✓	✓
Green Roofs			✓	✓
Tapered	✓	✓	✓	✓

* Pedestrian foot traffic

PROPERTIES :

	INVERTED ROOF 200	INVERTED ROOF 200 HP	INVERTED ROOF 300	INVERTED ROOF 500	INVERTED ROOF 600
Mechanical properties					
Design load at 10% nominal compression (kN/m²)	200	200	300	500	600
Design Loads for Long Term Compressive Creep (kN/m²)	60	60	90	150	180
Design load at 1% nominal compression (kN/m²)	90	90	120	190	190
Bending Strength (kN/m²)	250	250	450	750	750
Therm0.031al Properties					
Declared Thermal Conductivity (W/mK)	0.033	0.031	0.033	0.033	0.034
Corrected Thermal Conductivity (W/mK)	0.038	0.035	0.038	0.038	0.039
Moisture Properties					
Long term water absorption by immersion to BS EN 12087	≤ 1%				
Long term water absorption by diffusion to BS EN 12088	≤ 1%				
Fire Performance					
Classification to BS EN 13501-1	Euroclass E (BS EN 13501-1)				
Designation to BS 476-3	Designated AA (low vulnerability in Scotland) when used within a ballasted inverted roof construction				

Compressive Strength

There is a grade suitable for all flat roof applications.

Jablite Inverted Roof 200, 200 HP and 300 have adequate resistance to the loads associated with light maintenance traffic on roofs, and to pedestrian foot traffic on balconies and roof terraces. Jablite inverted roof 500 and 600 is available for higher loading requirements.

Where paving slabs are to be placed over the insulation on spacer pads the point loads should be calculated to an equivalent uniformly distributed load (See example calculation below).

Designing for Long Term Compressive Creep

The 1% compressive strength value can be used when designing for roofs with pedestrian traffic or other temporary imposed loads.

On a roof where air handling units, water tanks or similar heavy items are to be permanently installed imposing extra load on the insulation the calculation should allow for compressive creep.

Example Point Load Calculation

Roof Load on Paving Slabs – 1.0 kN

Paving Slabs – 450 x 450 x 40mm

Weight of one Paving Slab – 16kg

Circular Corner Support for Paving Slabs
- 150mm diameter (one per corner)

Convert paving slab weight to kN = 16 x 0.00981 = 0.157kN

Roof load on one slab = 1.157kN

Area of one support pad = 3.142 x (0.075^2) = $0.0176m^2$

Load on Jablite Inverted Roof through paving slab support = 1.157kN ÷ $0.0176m^2$ = **65.74 kN/m²**

Therefore Jablite Inverted Roof 200 would be specified having a design load of 90kN/m² at 1% nominal compression.

ACCESSORIES

Jablite Filter Membrane

The Jablite Filter Membrane is a non-woven polypropylene flexible membrane is integral to the Inverted Roof Insulation System to minimise water flow below the insulation.

This improves thermal performance and reduces the floatation effect reducing the weight of ballast required.

The membrane is laid with 300mm unsealed laps, overlapping in the downward direction of the flat roof slope (see installation details later).

Jablite Filter Membrane is breathable, therefore will not create a condensation trap within the construction.

Physical Properties : Jablite Filter Membrane	
Roll Length (m)	100
Roll Width (m)	3.0
Water Vapour Resistance to BS EN ISO 12572 (MNs/g)	0.011

Jablite UpStand Board Plus

Jablite UpStand Board Plus is a laminated board of Jablite EPS HP Insulation with a 1.15mm thick slate grey weather and impact resistant GRP facing. Designed for vertical installation on parapet walls to reduce thermal bridging.

For full fixing instructions please refer to our Installation guide.

Physical Properties : Jablite UpStand Board HP	
Board Size (mm)	1200 x 1200
Thicknesses (mm)	60
Declared Thermal Conductivity (W/mK)	0.032

TAPERED ROOF

Jablite Inverted Roof Insulation is available as a tapered insulation to create the falls on the roof required to provide adequate water flow to the drainage outlets.

Using the insulation layer to create the roof falls helps reduce the overall weight of the roof structure and speeds up construction.

Our Tapered design includes:

- Bespoke design to suit each individual project
- Layout drawings to assist installation
- Taper over 1200mm to create 1:80 fall
- Panel thickness 70 – 205mm
- Boards arrive on site marked with reference letters A - J

Installation guide

Deck

The roof deck must be level and even and as dry as is practically possible. Ensuring a dry deck reduces the risk of high levels of condensation once the insulation and weatherproofing is installed.

Further information on condensation control and vapour control layers can be found in BS 6229 : 2003.

Existing decks must be free of loose chippings and any defects made good prior to laying the weatherproofing in accordance with the manufacturers instructions.

The weatherproofing may be hot melt, bitumen felt, mastic asphalt, single ply (PVC, TPO, EPDM) or liquid applied polyurethane.

Note that where a PVC single ply membrane is used an isolating layer such as polyester fleece or fiberglass fabric sheet must be installed between the insulation and the membrane.

Insulation

Jablite Inverted Roof Insulation is installed loose laid over the weatherproofing, ensuring all overlap joints are tightly butted together.

Boards are laid in a staggered pattern starting from the point of access to the roof.

Filter Membrane

Jablite Filter Membrane is loose laid over the insulation running across the fall of the roof with 300mm overlaps. The membrane is turned up at all roof penetrations and upstands to a height to ensure it finishes above the level of the ballast or paving.

Using Jablite Filter Membrane reduces the flow of rainwater below the insulation and the cooling effect on the deck. It also reduces the flotation effect the water flow would create, leading to reduced weight of ballast required. The membrane is breathable allowing water vapour from below to permeate.

UpStand Board Plus

Jablite UpStand Board Plus can be mechanically fixed or adhered vertically to parapet walls to reduce the risk of condensation caused by cold bridging. See Jablite installation guide for details.

The panels are pre-finished with a grey rigid fiberglass sheet. Joint strips are provided to join panels. A suitable flashing must be dressed over the UpStand Boards to prevent weathering.

Note: Jablite EPS products are compatible with all common building materials. Direct contact with hydrocarbons and strong solvents should be avoided. A suitable membrane such as polythene sheet may be used to separate Jablite EPS from these substances.

U values :

The U value calculation of an inverted roof shall always take into account the short term cooling effect of cold rainwater reaching the waterproof layer by adding the correction factor ΔU_r . The correction factor and roof U value are calculated in accordance with Section 7 and Annex D.4. of BS EN ISO 6946.

A useful guide to calculating the U value and correction factor is given in BBA Technical Note "BBA General No 4" available on their website.

Typical U values :

The table below shows thickness of Jablite Inverted Roof Insulation range required to achieve U values from 0.25 W/m²K down to 0.10 W/m²K. The calculation takes into account the correction factor and is based on an inverted roof construction of 150mm reinforced concrete deck, hot melt waterproofing, Jablite Inverted Roof Insulation, Jablite Filter Membrane, drainage factor f_x = 0.001 and average rate of precipitation (**P**) ≤ 3.000 (mm/day)

U Value	THICKNESS (mm)				
	INVERTED ROOF 200	INVERTED ROOF 200 HP	INVERTED ROOF 300	INVERTED ROOF 500	INVERTED ROOF 600
0.25	145	130	145	145	150
0.24	150	140	150	150	155
0.23	155	145	155	155	160
0.22	165	150	165	165	170
0.21	170	160	170	170	175
0.20	180	165	180	180	185
0.19	190	175	190	190	195
0.18	200	185	200	200	205
0.17	210	195	210	210	215
0.16	225	205	225	225	230
0.15	240	220	240	240	245
0.14	260	235	260	260	265
0.13	275	255	275	275	285
0.12	300	275	300	300	305
0.11	325	300	325	325	335
0.10	355	330	355	355	365