

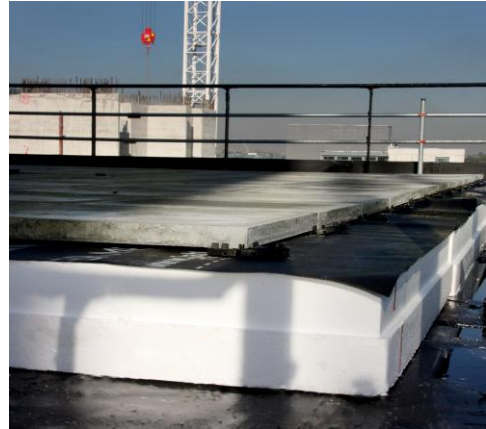


Jablite Inverted Roof Insulation

Flat Roof Insulation – Protected Membrane Roofs

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

- 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 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 1.44m ²
Thickness	Single thickness 50mm up to 240mm (in 1mm increments)

Jablite Filter Membrane is available as part of the system to reduce the cooling effect and improve overall thermal performance

Jablite UpStand Boards are available – Insulation boards laminated with impact resistant slate grey GRP

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

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



PROPERTIES :

	INVERTED ROOF 200	INVERTED ROOF 300	INVERTED ROOF 500	INVERTED ROOF 200 HP
Mechanical properties				
Design load at 10% nominal compression (kN/m ²)	200	300	500	200
Design load at 1% nominal compression (kN/m ²)	90	120	190	90
Bending Strength (kN/m ²)	250	450	750	250
Thermal Properties				
Declared Thermal Conductivity (W/mK)	0.033	0.033	0.033	0.031
Corrected Thermal Conductivity (W/mK)	0.038	0.038	0.038	0.035
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

Due to the high compressive strength capability of Jablite Inverted Roof Insulation there is a grade suitable for all flat roof applications.

General guidance on application, as noted within our BBA Certificates, is that Jablite Inverted Roof 200 and Inverted Roof 200 HP are suitable for roofs where normal maintenance traffic is expected. For roof terraces or balconies Jablite Inverted Roof 300 should be selected as a minimum. Jablite Inverted Roof 500 is available for roofs and decks where heavy planters or air handling units are imposing high point loads .

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 should be used when designing for roofs with pedestrian traffic or other temporary imposed loads.

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

The design load to use for Jablite Inverted roof insulation for this application is 30% of the 10% compressive strength figure. This will result in less than 2% compression in the insulation boards over 50 years.

Design Loads for Long Term Compressive Creep (kN/m²)	
INVERTED ROOF 200	60
INVERTED ROOF 300	90
INVERTED ROOF 500	150
INVERTED ROOF 200 HP	60

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 (0.075²) = 0.0176m²

Load on Jablite Inverted Roof through paving slab support =

1.157kN ÷ 0.0176m² = **65.74 kN/m²**

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



ACCESSORIES

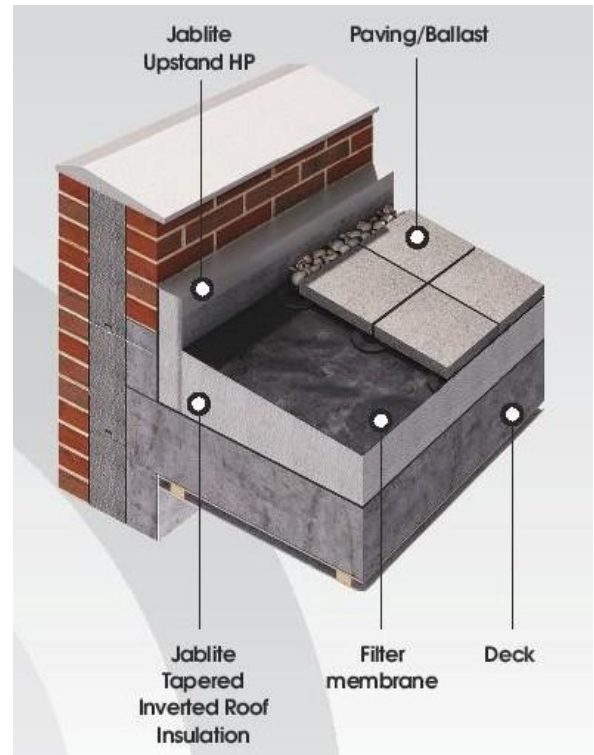
Jablite Filter Membrane

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

This improves thermal performance and reduces the flotation 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

Jablite UpStand Board is a laminated board of EPS 100 Insulation with a 1mm thick slate grey weather and impact resistant GRP facing. Designed for low level vertical installation at parapet wall junctions to reduce thermal bridging.

The Boards are available in 4 standard thicknesses in a sheet 1200 x 1200mm. (see table)

The boards should be adhered to the wall, where the boards are used to a level greater than 150mm above the roof insulation they should always be mechanically fixed. For full fixing instructions please refer to our Technical Note.

Physical Properties : Jablite UpStand Board HP

Board Size (mm)	1200 x 1200
Thicknesses (mm)	60, 80, 90, 110
Declared Thermal Conductivity (W/mK)	0.036



Accreditation :

BBA	<p>Jablite Flat Roof Inverted Boards have been tested and approved for use in inverted un-trafficked roofs, balconies and terraced roof constructions with zero pitch or slopes between 1:80 and 1:6 by the British Board of Agrément (BBA)</p> <p>Inverted Roof Insulation 200 and 300 - Certificate number 01/3812 Product Sheet 5</p> <p>Inverted Roof Insulation 200 HP - Certificate number 01/3812 Product Sheet 6</p>
ETAG	<p>Jablite Inverted Roof Insulation meets the technical standards laid out in ETAG 031 – Inverted Roof Insulations Kits</p>
NHBC	<p>NHBC accepts the use of Jablite Flat Roof Inverted Boards, provided they are installed, used and maintained in accordance with the BBA Certificate, in relation to NHBC Standards, Chapter 7.1 Flat Roofs and Balconies</p>
CE marking	<p>Jablite have taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13163 : 2012.</p> <p>Declaration of Performance is available on Request.</p>
Quality	<p>All Jablite products are manufactured in production facilities which are certified to ISO 9001 Quality Management</p>
Environmental Responsibility	<p>All Jablite manufacturing facilities are ISO 14001 certified.</p> <p>We operate an Environmental Management System which includes our supply chain (see BREEAM section for more information)</p>
Compliance	<p>Jablite Inverted Roof Insulation conforms to the required properties as defined in BS EN 13163:2012 – Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification. This includes compliance with BS 3837 Part 1</p>





Environment and Sustainability :

**B R E E A M International New Construction 2016
and Non-Domestic Refurbishment 2015**

Mat 01 : Life Cycle Impacts	<p>Credits available: 2 – Industrial Buildings 5 – All other Building Types</p> <p>Points may be gained where at least 5 products specified at Design Stage are covered by a verified Environmental Product Declaration (EPD)</p> <p>EPD's produced by EUMEPS on behalf of a group of European EPS Manufacturers including Jablite are available on the website below within the Construction section under Documents http://www.eumeps.org/</p>
Mat 03 : Responsible Sourcing of Construction Products	<p>Credits available : 4</p> <p>BREEAM Summary Score – 2 for EMS (Certified) Key process and Supply Chain for EPS Insulation</p> <p>Jablite insulation products are manufactured using low energy processes in factories which are ISO 14001 and ISO 9001 certified. Jablite only purchases raw material from suppliers who are ISO 14001 certified. The ISO certificates are in the Technical Resource Centre on the Jablite website www.Jablite.co.uk</p> <p>Key Process (Insulation Manufacture) ISO 14001: Certificate Number EMS 559414</p> <p>Key Supply Chain Process (Main Polymer Production) ISO 14001: Certificate Number 80130-2010-AE-FRA-COFRAC Rev. 4</p>
Mat 04 : Insulation	<p>Insulation products are now covered within Mat : 01 and Mat : 03 (see above) included within the construction elements into which they are installed</p>

	FLAT ROOF INVERTED 200	FLAT ROOF INVERTED 300	FLAT ROOF INVERTED 200 HP
BRE Green Guide Rating	A+ Element number 815320025	A Element number 1315320001	A+ Element number 1315320017
Climate Change	Ozone Depletion Potential (ODP) = zero Global Warming Potential (GWP) < 5		
100%	Jablite Inverted Roof Insulation is 100% recyclable		





APPLICATION

Deck

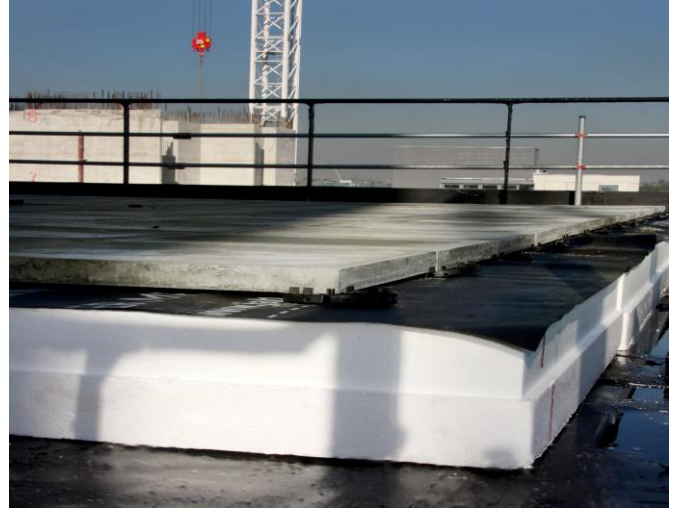
The roof deck must be level and even and as dry as is practically possible. Ensuring a dry deck reduces the risk of high levels of condensation once the insulation and weatherproofing is installed.

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 Boards

Jablite UpStand Boards are mechanically fixed vertically to all parapet walls to reduce the risk of condensation caused by cold bridging. The top of the UpStand Boards must be at least 150mm above the level of the Inverted Roof Insulation.

The panels are pre-finished with a grey rigid fiberglass sheet. Edge cover strips are provided and must be fixed to all vertical edges of the panels. A suitable flashing is 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.



TAPERED ROOF SCHEME

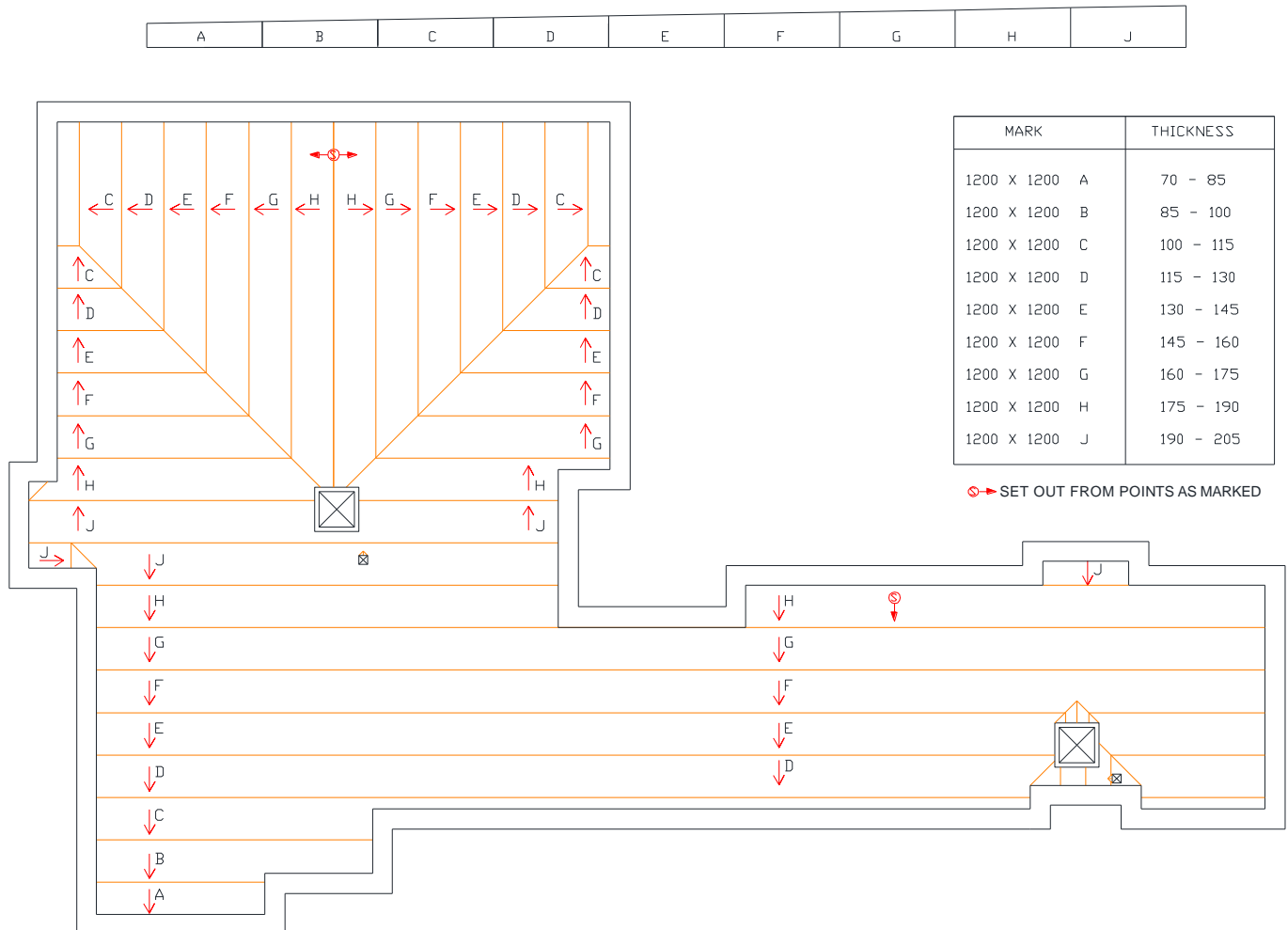
Jablite Inverted Roof Insulation is available as a tapered insulation to create the falls on the roof required to provide adequate water flow to the drainage outlets.

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

Example Layout:





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 mentioned above 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 300	INVERTED ROOF 500	INVERTED ROOF 200 HP
0.25	145	145	145	130
0.24	150	150	150	140
0.23	155	155	155	145
0.22	165	165	165	150
0.21	170	170	170	160
0.20	180	180	180	165
0.19	190	190	190	175
0.18	200	200	200	185
0.17	210	210	210	195
0.16	225	225	225	205
0.15	240	240	240	220
0.14	260	260	260	235
0.13	275	275	275	255
0.12	300	300	300	275
0.11	325	325	325	300
0.10	355	355	355	330