

BEWI Premium Green Roof Insulation

Technical Datasheet

Flat Roof Insulation – Protected Membrane Roofs

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

- KIWA Certified (BAR-19-098-S-A-UK)
- Suitable for use on flat roofs with zero pitch and slopes up to 10°
- Resistant to the effects of freeze/thaw
- High compressive strengths available – 200 and 300 grade and 200 Premium+ to suit the green roof specification
- 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. BEWI Filter Membrane and selected build up of the green roof 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.

BEWI 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.



The system is a lightweight and easy to install solution. 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 5mm increments)

Application

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

Access	Product Selector	Inverted Roof 200 Premium	Inverted Roof 200 Premium+	Inverted Roof 300 Premium
Pedestrian	Non-trafficked Roofs	✓*	✓*	✓*
	Roof Terraces	✓*	✓*	✓*
	Green Roofs	✓*	✓*	✓*
	Tapered	✓*	✓*	✓*

* For details please refer to KIWA certificate number BAR-19-098-S-A-UK

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Properties

Inverted roof	200 Premium	200 Premium+	300 Premium
Mechanical properties			
Design load at 10% nominal compression (kN /m ²)	200	200	300
Design load at 1% nominal compression (kN /m ²)	90	90	120
Design load for long term compression (creep) kN/m ² **	60	60	90
Bending Strength (kN/m ²)	250	250	450
Thermal Properties			
Corrected Thermal Conductivity (mK)	0.035*	0.033*	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)		

* For details please refer to KIWA certificate number BAR-19-098-S-A-UK

** See page 3 "Designing for Long Term Compressive Creep"

Compressive Strength

BEWI supplies insulation boards in a range of grades suitable for all flat roof applications.

BEWI Premium Green Inverted Roof 200 and 300 Premium and 200 Premium+ have adequate resistance to the loads associated with light maintenance traffic on roofs, and to pedestrian foot traffic on roof terraces. BEWI Premium 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).

Example Point Load Calculation

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

Roof Load on Paving Slabs – 1.0 kN
 Paving Slabs – 450 × 450 × 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 × 0.00981 = 0.157kN
 Roof load on one slab = 1.157kN
 Area of one support pad = 3.142 × (0.075²) = 0.0176m²
 Load on BEWI Inverted Roof through paving slab support
 = 1.157kN ÷ 0.0176m² = **65.74 kN /m²**
 Therefore BEWI Inverted Roof 200 would be specified having a design load of **90 kN/m²** at 1% nominal compression.

Note: No allowance has been made for long term creep in the above example calculation.

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Designing for Long Term Compressive Creep

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.

The design load to use for BEWI 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.

Accessories

BEWI Filter Membrane

The BEWI Filter Membrane is a breathable, non-woven polypropylene flexible membrane supplied as part of the Inverted Roof Insulation System to minimise cold rainwater flow below the insulation which might lead to potential heat loss.

BEWI Filter membrane also acts as a filter layer reducing the migration of fines and other debris from the layers above.

BEWI Filter Membrane:

Roll Length (m)	100
Roll Width (m)	3.0
Water Vapour Resistance to BS EN ISO 12572 (MNs/g)	0.011

Accreditation

KIWA	BEWI Flat Roof Inverted Boards have been tested and approved for use in inverted roofs with pedestrian traffic, terraced roof, extensive green and brown roof constructions with zero pitch and slopes up to 10° See KIWA certificate number BAR-19-098-S-A-UK for further information.
NHBC	If installed, used and maintained in accordance with the KIWA Certificate, BEWI Flat Roof Inverted Boards can satisfy or contribute to satisfying the relevant requirements in relation to NHBC Standards, Chapter 7.1 Flat Roofs and Terraces
CE marking	BEWI have taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13163:2012. Declaration of Performance is available on Request.
Quality	All BEWI products are manufactured in production facilities which are certified to ISO 9001 Quality Management
Environmental Responsibility	All BEWI manufacturing facilities are ISO 14001 certified. We operate an Environmental Management System which includes our supply chain
Compliance	BEWI 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.

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U-Values

Typical U-values

The table below shows thickness of BEWI Inverted Roof Insulation range required to achieve U values from 0.25 W/m²K down to 0.10 W/m²K.

The calculation is based on an inverted roof construction of 150mm reinforced concrete deck, hot melt waterproofing, BEWI Inverted Roof Insulation, BEWI Filter Membrane, drainage factor $f_x = 0.001$ and average rate of precipitation (P) ≤ 3.000 (mm/day)

U-Value	Thickness (mm)		
	200 Premium*	200 Premium+*	300 Premium*
0.25	135	125	135
0.24	140	130	140
0.23	145	140	145
0.22	150	145	150
0.21	160	150	160
0.20	165	160	165
0.19	175	165	175
0.18	185	175	185
0.17	195	185	195
0.16	210	195	210
0.15	225	210	225
0.14	235	225	235
0.13	255	240	255
0.12	275	260	275
0.11	300	285	300
0.10	330	310	330

* For details please refer to KIWA certificate number BAR-19-098-S-A-UK

Disclaimer: Every effort has been made to ensure the correctness of the information provided in this data sheet and is based on data and knowledge accurate at the time of production. It is designed for experienced professionals in the building and construction industry and does not offer a complete overview of industry practices. Therefore, this cannot guarantee the performance results, as usage and installation conditions are outside our control. If you have any questions regarding the suitability of the application, please contact us.

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