

BEWI Premium Inverted 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, 300, 500 and 600 grade and 200 Premium+ to suit all applications



The insulation boards are loose laid over the weatherproofing, there is no requirement to adhere or mechanically fix the boards. BEWI Filter Membrane (WFRL) is laid over the insulation with minimum 300mm wide laps. Where this cannot be achieved all laps should be sealed with the BEWI Filter Membrane (WFRL) Tape.

On inverted blue roofs, the BEWI Filter Membrane (WFRL) should be installed with sealed laps in the field area, at upstands, flow restricting device and penetrations using both the BEWI Filter Membrane (WFRL) Tape and Flexi Tape.

Lastly, gravel ballast and/or paving slabs are used to secure the insulation to the deck.

Note: Further information can be found in the LRWA's Guidance Note no. 14 (GN 14-2026).

BEWI Premium Inverted Roof Insulation is manufactured in accordance with BS EN 13163 under a Quality Assurance System approved to 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	Inverted Roof 500 & 600 Premium
Pedestrian	Non-trafficked Roofs	✓*	✓*	✓*	✓
	Roof Terraces	✓*	✓*	✓*	✓
	Green Roofs	✓*	✓*	✓*	✓
	Tapered	✓*	✓*	✓*	✓
Trafficked	High loads applications				✓

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

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Technical Datasheet

Properties

Inverted roof	200 Premium	200 Premium+	300 Premium	500 Premium	600 Premium
Mechanical properties					
Design load at 10% nominal compression (kN /m²)	200	200	300	500	600
Design load at 1% nominal compression (kN /m²)	90	90	120	190	190
Design load for long term compression (creep) kN/m² **	60	60	90	150	180
Bending Strength (kN/m²)	250	250	450	750	750
Thermal Properties					
Corrected Thermal Conductivity (mK)	0.033*	0.031*	0.033*	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	Euroclass E (BS EN 13501-1)				

* For details please refer to KIWA certificate number BAR 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 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 below).

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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Technical Datasheet

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 and Tapes

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 straight and flexible filter membrane tapes are also available.

BEWI Filter Membrane

Roll Length	300 m
Roll Width	3m
Water Vapour Resistance To BS EN ISO 12572	0.011 MNs/g

Accreditation

KIWA	BEWI Flat Roof Inverted Boards have been tested and approved for use in inverted roofs with pedestrian traffic, terraced roofs, 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
CE marking	BEWI have taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13163. 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 – Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification.

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Technical Datasheet

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 (W/m ² K)	Thickness (mm)				
	200 Premium*	200 Premium+*	300 Premium*	500 Premium	500 Premium
0.25	130	120	130	145	150
0.24	135	125	135	150	155
0.23	140	130	140	155	160
0.22	145	135	145	165	170
0.21	155	145	155	170	175
0.20	160	150	160	180	185
0.19	170	160	170	190	195
0.18	180	170	180	200	205
0.17	190	180	190	215	220
0.16	200	190	200	225	235
0.15	215	200	215	240	245
0.14	230	215	230	255	265
0.13	245	230	245	280	285
0.12	265	250	265	300	305
0.11	290	270	290	325	335
0.10	315	300	315	360	365

* 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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