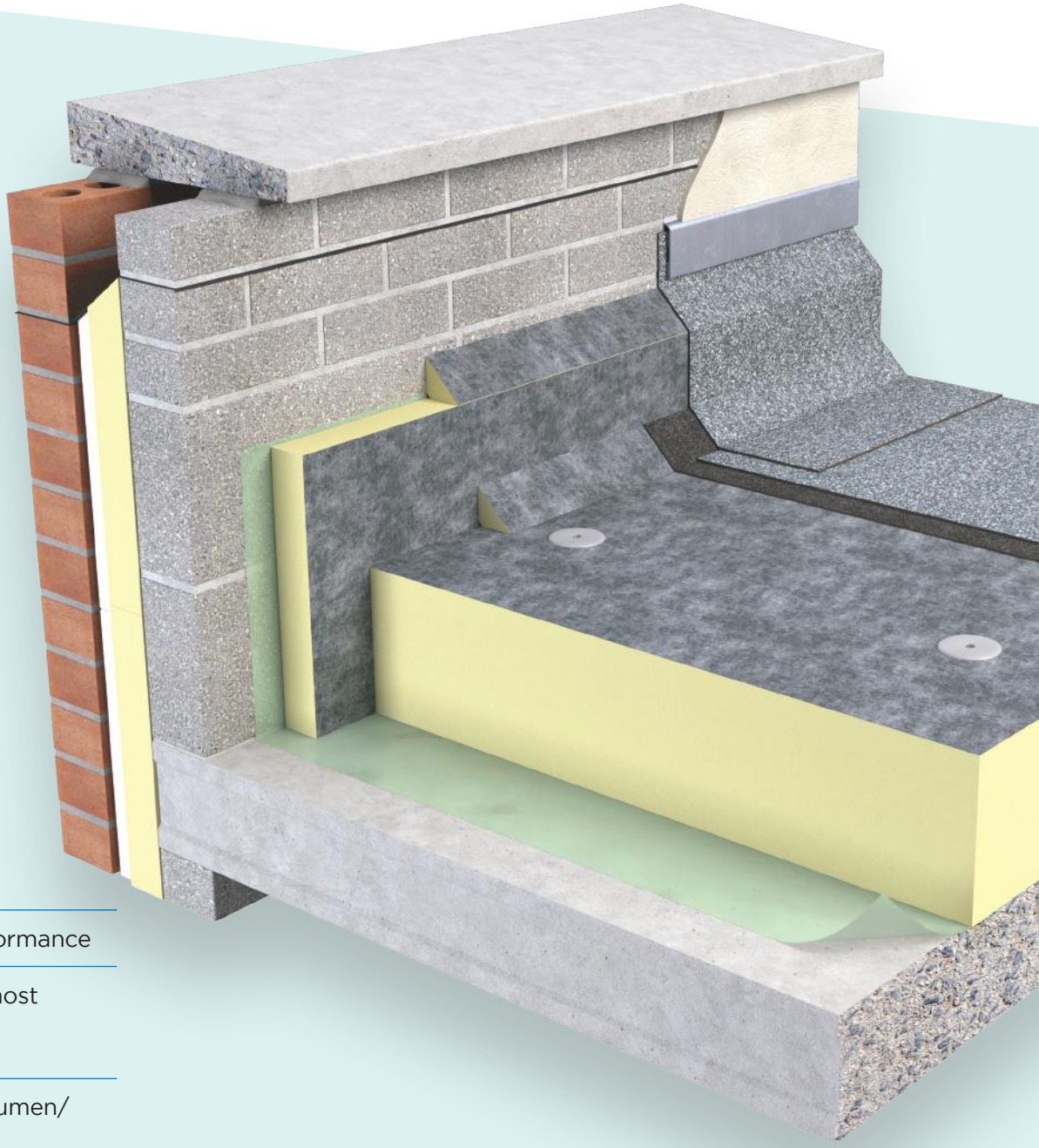
FLAT ROOF TOTAL FLAT ROOF SOLUTIONS

Partially Bonded Torched-on Built-up Bituminous Felt Systems

FR/BGM



BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 11/4878

- High Thermal Performance
- Compatible with most bituminous based roofing systems
- Fleece finished bitumen/ glass fibre facings

UNILIN INSULATION

Compatible with most bituminous based roofing systems

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FR/BGM

Flat Roof BGM is faced with a polypropylene fleece finished bitumen/glass fibre working surface and a mineral glass facing to the under side. Flat Roof BGM is part of Unilin's comprehensive range of high performance flat roof boards providing total solutions for flat roof projects.

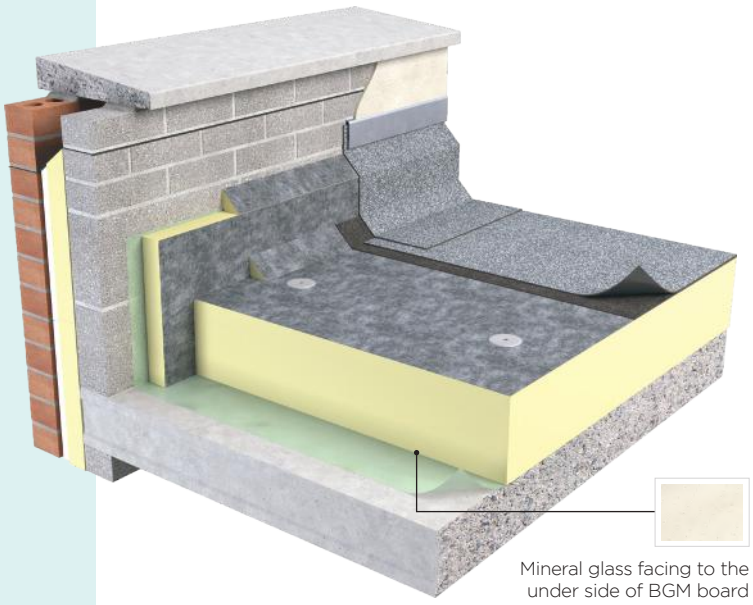
Benefits

- High thermal performance.
- Compatible with most bituminous based roofing systems.
- Fleece finished bitumen/glass fibre facings.
- An Environmental Product Declaration (EPD), certified by IGBC is available for this product. Please contact technical support for further details.

Roof Design

These boards are suitable for use with most bitumen based, partially bonded water proofing systems typically including a BS EN 13707: 2013 (Flexible sheets for waterproofing). Reinforced bitumen sheets for roof waterproofing type 3G perforated base layer or proprietary system. FR/BGM (Fleece side upper most) may also be fully bonded. Guidance in regard to moisture and condensation should be in accordance with BS 8217 (Reinforced bitumen membranes for roofing).

- During the construction process, the construction should be protected from rain penetration during breaks in the process.
- With fully bonded applications additional care is required to ensure that the construction remains free from moisture. Failure to protect will result in blistering of the waterproof layer.



Mineral glass facing to the under side of BGM board

Falls

The fall on a flat roof should be designed to ensure that rainfall does not pond.

Roof Loading

The boards are suitable for use on roof decks that are subject to limited maintenance foot traffic. Walkways should be provided on roofs requiring regular pedestrian access. When the roof is complete, protective boarding should be laid if additional site work is to be carried out.

Roof Finish

Built up roofing systems should be finished with a suitable reflective layer such as chippings. Advice should be sought from system manufacturer.

Fire Performance

The fire rating, when tested to EN 13501-5 and BS 476 Part 3 'External Fire Exposure Roof Test', will be dependent upon waterproofing system specified.

Vapour Control Layer

Decks should be primed before the application of the hot bitumen used to bond the vapour control layer. Reference should be made to BS 8217 when applying the vapour control layer. Carry the VCL past the insulation and seal with the parapet wall.

Laying (Metal Deck)

On metal decks, Unilin FR/BGM should be laid break bonded into hot bitumen (max temperature 240°C) mopped or poured over the vapour control layer. The boards can also be mechanically fixed or the mineral coated glassfibre facer (MG) can be adhered with other suitable adhesive. Fixing heads should be sealed with bitumen.

Laying (Concrete Deck)

Ensure concrete decks are laid to provide correct falls to outlets and are clean, dry, without projections. Primer should be laid in accordance with the manufacturer's instructions. The vapour control layer should be fully bonded to the deck and the Unilin FR/ BGM should be laid into hot bitumen on the vapour control layer in a break bonded pattern. The boards can also be mechanically fixed or the mineral coated glassfibre facer (MG) can be adhered with other suitable adhesive. Fixing heads should be sealed with bitumen.

Laying (Timber Deck)

On plywood decks, Unilin FR/BGM should be fully bedded in hot bitumen over a continuous vapour control layer which has been nailed or bonded to

the deck. The boards can also be mechanically fixed or the mineral coated glassfibre facer (MG) can be adhered with other suitable adhesive. Fixing heads should be sealed with bitumen.

Fixing

The specification for fixing Unilin roof boards will vary with the location, roof height/width and topographical data. Architectural specification should be consulted. Generally with 1200mm x 600mm boards, a minimum of 4 fixings per board are adequate, located between 50mm and 150mm from all edges, additional fixings may be placed along the centre line. Counter sunk washers, 50mm in diameter should be used with each fixing. However, BS 6399 Part 2 or BS EN 1991-1.4: 2005 + A1: 2010 (National Annex to Eurocode 1.Actions on structures. General Actions. Wind Actions) should always be consulted. In two layer systems, all layers should be fixed in accordance with fixing manufacturers instructions.

Bitumen Based Built Up Roofing Systems

Technical guidance from the appropriate bitumen waterproofing manufacturer should be sought as to assure proper installation of the bonded built up roofing system.

Fire

Each project should be assessed for suitability of torch on applications. The suitability of materials, substrates and specifications should be assessed before commencement. Application of the torch on system should be undertaken only by fully trained personnel with appropriate fire precautions and fire extinguishing equipment available at hand. All timber roof components, and most insulation materials are combustible, and will be vulnerable to a naked flame. These materials may be hidden from view. Due attention should be given and all precautions taken. This is the responsibility of the operatives.

Specification Clause

The flat roof insulation shall be Unilin Insulation Thin-R FR-BGM _ _ _mm thick manufactured to EN 13165 by Unilin Insulation comprising a rigid Polyisocyanurate (PIR) core between fleece finished bitumen/glass fibre facings with a Agrément declared Lambda value as low as 0.024 W/mK. The flat roof insulation shall be installed in accordance with instructions issued by Unilin Insulation.

Refer to NBS clause J42 420, J42 10.

NBS Plus

FR/BGM

	UK
Length (mm)	1200
Width (mm)	600
Thickness (mm)	25, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140

Other sizes are available subject to quantity and lead time.
Note: Unilin reserves the right to amend product specifications without prior notice.

Property & Units

Density (Foam Core)	32 kg/m^3
Compressive Strength	>150kPa@10% Compression
Thermal Conductivity	0.024 - 0.027 W/mK
Reaction to Fire	NPD

Typical U-Values

Construction	Thickness (mm)	U-Value (W/m^{2}K)
Concrete deck[1]	150mm	0.15
Metal deck[2]	160mm	0.15
Timber deck[3]	150mm	0.15
Concrete deck[1]	125mm	0.18
Metal deck[2]	130mm	0.18
Timber deck[3]	120mm	0.18
Concrete deck[1]	120mm	0.19
Metal deck[2]	120mm	0.20
Timber deck[3]	110mm	0.19

1. 200mm Concrete deck with suspended ceiling below.
2. 0.7mm metal deck with suspended ceiling below.
3. 18mm timber deck with joists and plasterboard below.

The given U-Values are indicative only. Adhered application has been used to calculate the U-Value. For comprehensive calculations on all deck types, please contact Unilin Technical Support.

INSULATION FIXING TABLE

Minimum area of stress plate, number of fixings and layout

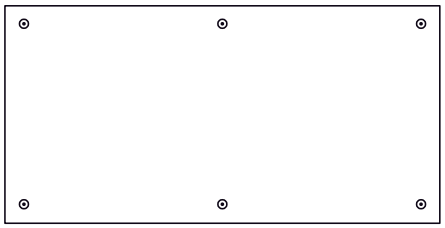
Recommended Fixing Patterns

For comprehensive guidance and details on fixing patterns, please refer to guidance from the following bodies.

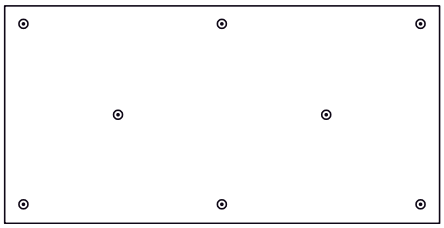
- "SPRA: SINGLE PLY DESIGN GUIDE"
- Insulation Manufacturers Association Information document ID/1/2009, published by IMA
- Liquid Roofing and Waterproofing Association, Technical Guidance

Distribute mechanical fixings evenly across the board, at a minimum of 50mm from the board edge and a maximum of 150mm. Refer to fixing patterns below for indicative purposes.

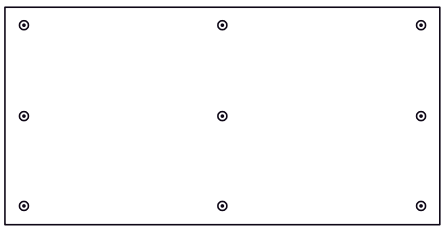
The required number of fixings shown is the minimum only. Regardless of the water proofing system attachment method, wind load calculations should be undertaken in order to determine actual fixing requirements in corner, perimeter and field roof areas. These areas should be clearly defined, especially where different numbers of fixings are required for each zone.



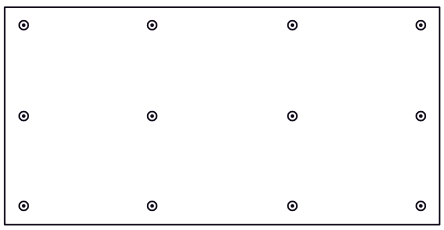
6 fixings per board
Recommended fixing pattern
for 6 fixing per board
(2400m x 1200m board - 2.08 fixings/m^2)



8 fixings per board
Recommended fixing pattern
for 8 fixing per board
(2400m x 1200m board - 2.77 fixings/m^2)



9 fixings per board
Recommended fixing pattern
for 9 fixing per board
(2400m x 1200m board - 3.13 fixings/m^2)



12 fixings per board
Recommended fixing pattern
for 12 fixing per board
(2400m x 1200m board - 4.16 fixings/m^2)

HANDLING, CUTTING & STORAGE

Unilin insulation should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure. Care should be taken to protect the insulation in storage and during the build process.

The insulation boards can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for within the ACDs. Appropriate PPE should be worn when handling insulation. Please refer to Health & Safety data sheets on our website.

The boards are wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack.

Durability

Unilin Insulation products are stable, rot proof, provide no food value to vermin and will remain effective for the lifetime of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil. When contact is made, clean materials in a safe manner before installation.

Expect more Knowledge

Unilin Insulation, formerly Xtratherm, is one of the UK's largest manufacturers and suppliers of insulation. We have a 20-plus year history of working in partnership with construction professionals to close the gap between design and as-built performance.

FREE
One-to-one advice

Higher standards of fabric performance call for greater adherence to best practice detailing. To achieve this and to 'close the gap' between design and build, we provide a dedicated Technical Team, all qualified to the highest standards of competency in U-Value calculation and condensation risk analysis.

Here to support you

- BRE listed Thermal Bridging Detailing
- BRE Trained Modelling
- BBA/TIMSA calculation competent
- Warranted Calculations available
- Immediate technical response
- SAP Qualified
- Insulation systems to deliver real onsite performance

Get in touch

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ISO 45001 Occupational Health & Safety Management Systems
ISO 9001 Quality Management Systems
ISO 14001 Environmental Management Systems

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The Sustainable Solution

Specifying Unilin Insulation is a real commitment to minimising energy consumption, harmful CO_2 emissions and their impact on the environment. Using our products is one of the most effective ways to reduce energy consumption – in fact, after just eight months the energy they save far outweighs the energy used in their production. In addition, our manufacturing facilities operate to an ISO 14001 certified Environmental Management System.

Environmental Product Declaration (EPD)

An Environmental Product Declaration or EPD for a construction product indicates a transparent, robust and credible step in the pursuit and achievement of real sustainability in practice, it is a public declaration of the environmental impacts associated with specified life cycle stages of that product. Unilin EPDs have been independently verified in accordance with EN 15804+A2:2019 and ISO 14025 accounting for stages of the LCA from A1 to A3, with options A4-A5 and modules C1-C4 and D included. The process of creating an EPD allows us to improve performance and reduce resource wastage through improvements in product design and manufacturing efficiency. They play a crucial role in manufacturing and construction and are increasingly asked for by industry.

EPDs and BREEAM

BREEAM is primarily trying to encourage designers to take EPDs into consideration when specifying products. BREEAM requires EPDs to be verified by a third-party. For the Mat 02 category, points are awarded based on whether EPDs are generic, manufacturer-specific, or product-specific. Non 3rd party verified EPDs to EN 15804 cannot be accepted. All of Unilin EPDs are externally verified.

Responsible Sourcing

Unilin has BES 6001 certification for responsible sourcing. The second BREEAM credit under that category is based on responsibly-sourced materials – at least 80% of the total insulation used in roofs, walls, ground floors and services must meet any of tier levels 1 to 6 in the BREEAM table of certification schemes. Our Environmental Management System is certified under EN ISO 14001, and our raw materials come from companies with similarly certified EMS (copies of all certificates are available for BREEAM assessments). This level of responsible sourcing meets tier level 6 in the BREEAM table.

Good workmanship and appropriate site procedures are necessary to achieve expected thermal and airtightness performance. Installation should be undertaken by professional tradespersons. The example calculations are indicative only, for specific U-Value calculations contact Unilin Insulation Technical Support. Unilin technical literature, Agrément certifications and Declarations of Performance are available for download on the Unilin Insulation website. The information contained in this publication is, to the best of our knowledge, true and accurate at the time of publication but any recommendations or suggestions which may be made are without guarantee since the conditions of use are beyond our control. Updated resources may be available on our websites. All images and content within this publication remain the property of Unilin Insulation.