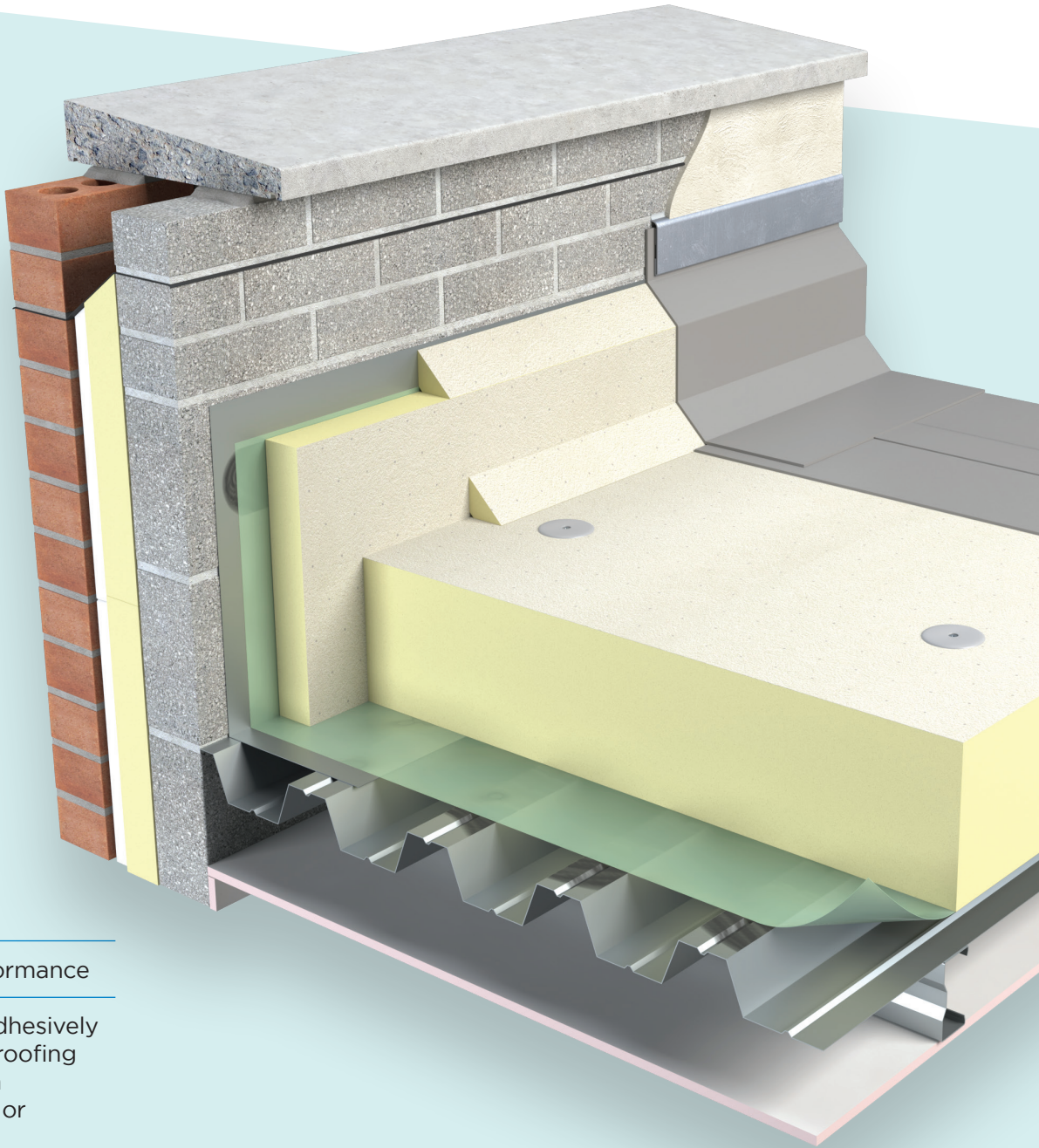


# FLAT ROOF TOTAL FLAT ROOF SOLUTIONS

Single Ply Fully Adhered Partially Bonded Built-Up Felt Systems

FR/MG



High Thermal Performance

Compatible with adhesively bonded single ply roofing membranes laid on mechanically fixed or adhered boards



For use below single ply waterproofing systems & partially bonded built-up felt

**FLAT ROOF** TOTAL FLAT ROOF SOLUTIONS

Single Ply Fully Adhered Partially Bonded Built-Up Felt Systems

**FR/MG**

**Flat Roof MG** is a high performance Polyisocyanurate with mineral coated glass facers suitable for use below single ply waterproofing systems and partially bonded built-up felt.

**Benefits**

- High Thermal Performance
- Compatible with adhesively bonded single ply roofing membranes laid on mechanically fixed or adhered boards.
- An Environmental Product Declaration (EPD), certified by IGBC is available for this product. Please contact technical support for further details.



**Roof Design**

Consideration should be given to the recommendations of BS 4841: Part 3 and those of the Single Ply Roofing Association.

**Falls**

The fall on a flat roof should be constant and steep enough to ensure that rainfall does not pond.

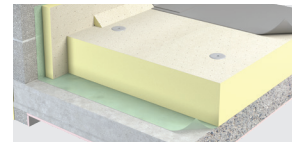
**Fire Performance**

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.

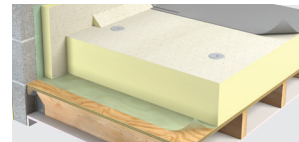
**Specification Clause**

The flat roof insulation shall be Thin-R FR/MG \_\_\_mm thick manufactured to EN 13165 by Unilin Insulation, comprising a rigid Polyisocyanurate (PIR) core between mineral glass 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.



Typical Installation Concrete Deck



Typical Installation Timber Deck

**Vapour Control Layer**

A continuous, approved, vapour control layer should be used below the insulation. (Unless over a sealed metal deck system). For mechanically fixed boards, a minimum vapour control layer of a 1000 gauge polythene layer lapped and sealed with double-sided tape should be used below the insulation. At vertical upstands and penetrations, the VCL should be turned up and sealed to encapsulate the insulation layer prior to the roof finish being completed. (A comprehensive U-Value calculation and condensation risk analysis should be carried out for all projects).

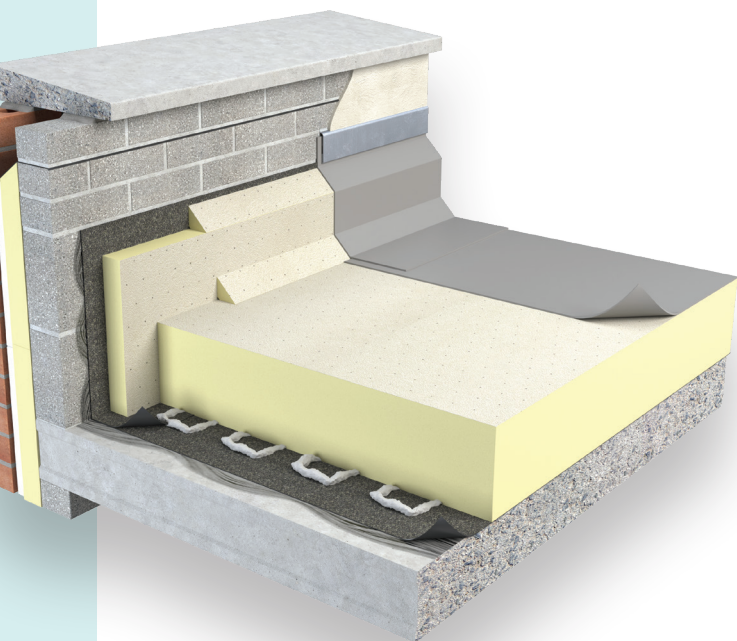
**Bonding boards to the vapour control layer**

The minimum vapour control layer should consist of a 3B type felt to BBS EN 13707: 2013 (Flexible sheets for waterproofing. Reinforced bitumen sheets for roof waterproofing). *Specification or BS8747. Reinforced bitumen membranes (RBMs) for roofing. Guide to selection and specification.* Other proprietary systems may be used, subject to approval.

Where the vapour control layer is to be bonded separately, sufficient adhesion to the substrate should be made to ensure correct resistance to wind uplift. Contact the system manufacturer for details.

**Membrane Systems**

Please contact Unilin Technical Support for advice on membrane and adhesive system compatibility. Technical guidance from the appropriate waterproofing manufacturer should be sought.





FLAT  
ROOF

## FR/MG

### Loadings

The boards are suitable for use on roof decks that are subject to maintenance 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.

### Laying (Metal Deck)

The boards should be laid over the vapour control layer in a break bonded pattern. The long edges of the boards should be laid at right angles to the corrugations and all board joints must be fully supported by the deck.

### Laying (Concrete Deck)

Decks should be dry, and clean of debris, and laid to correct fall. The boards can be secured using approved mechanical fixings and washers, with boards laid with a break-bonded pattern. Joints should be closely butted. Alternatively, the boards can be adhered to the decking with approved adhesive systems.

### Partially Bonded Built Up Systems

Partially bonded built-up felt waterproofing should be laid, where in accordance with BS 8217 (Reinforced bitumen membranes for roofing. Code of practice).

### Fully Adhered Systems

The MG boards are suitable for use with most fully adhered single-ply waterproofing membranes. Board joints and abutments should be taped subject to the approved adhesive system being used. A fleeced backed membrane might be required with the system being used, check with the system manufacturer.

### Fixings

Depending on the fixings specification chosen, quantity and pattern of fixings 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 are adequate, located between 50mm and 150mm from all edges, additional fixings may be placed along the centre line. Additional fixings around roof perimeter may be required. 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. During the construction process, the insulation should be protected from rain penetration during breaks in the process. It is recommended to seek advice from the fixing manufacturer for specific guidance.

## FR/MG

UK	
<b>Length (mm)</b>	1200
<b>Width (mm)</b>	600
<b>Thickness (mm)</b>	25, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150

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

## Property & Units

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

## Typical U-Values

Construction	Thickness (mm)	U-Value (W/m <sup>2</sup> K)
Concrete deck <sup>1</sup>	150mm	0.15
Metal deck <sup>2</sup>	160mm	0.15
Timber deck <sup>3</sup>	150mm	0.15
Concrete deck <sup>1</sup>	125mm	0.18
Metal deck <sup>2</sup>	130mm	0.18
Timber deck <sup>3</sup>	120mm	0.18
Concrete deck <sup>1</sup>	120mm	0.19
Metal deck <sup>2</sup>	120mm	0.20
Timber deck <sup>3</sup>	110mm	0.19

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

The given U-values are indicative only. The effect of fixings has been assumed to have had no effect on the U-Value. For comprehensive calculations on all deck types, please contact Unilin Technical Support.

\*Thermal conductivity is dependent on facings and product thickness.

## 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.

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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**FREE**  
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advice



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### **The Sustainable Solution**

Specifying Unilin Insulation is a real commitment to minimising energy consumption, harmful CO<sub>2</sub> 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 and 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 O2 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.



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