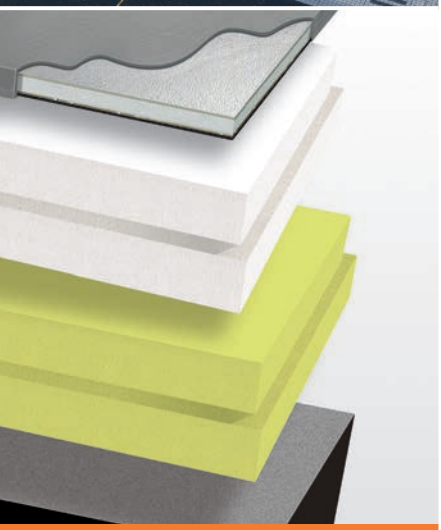
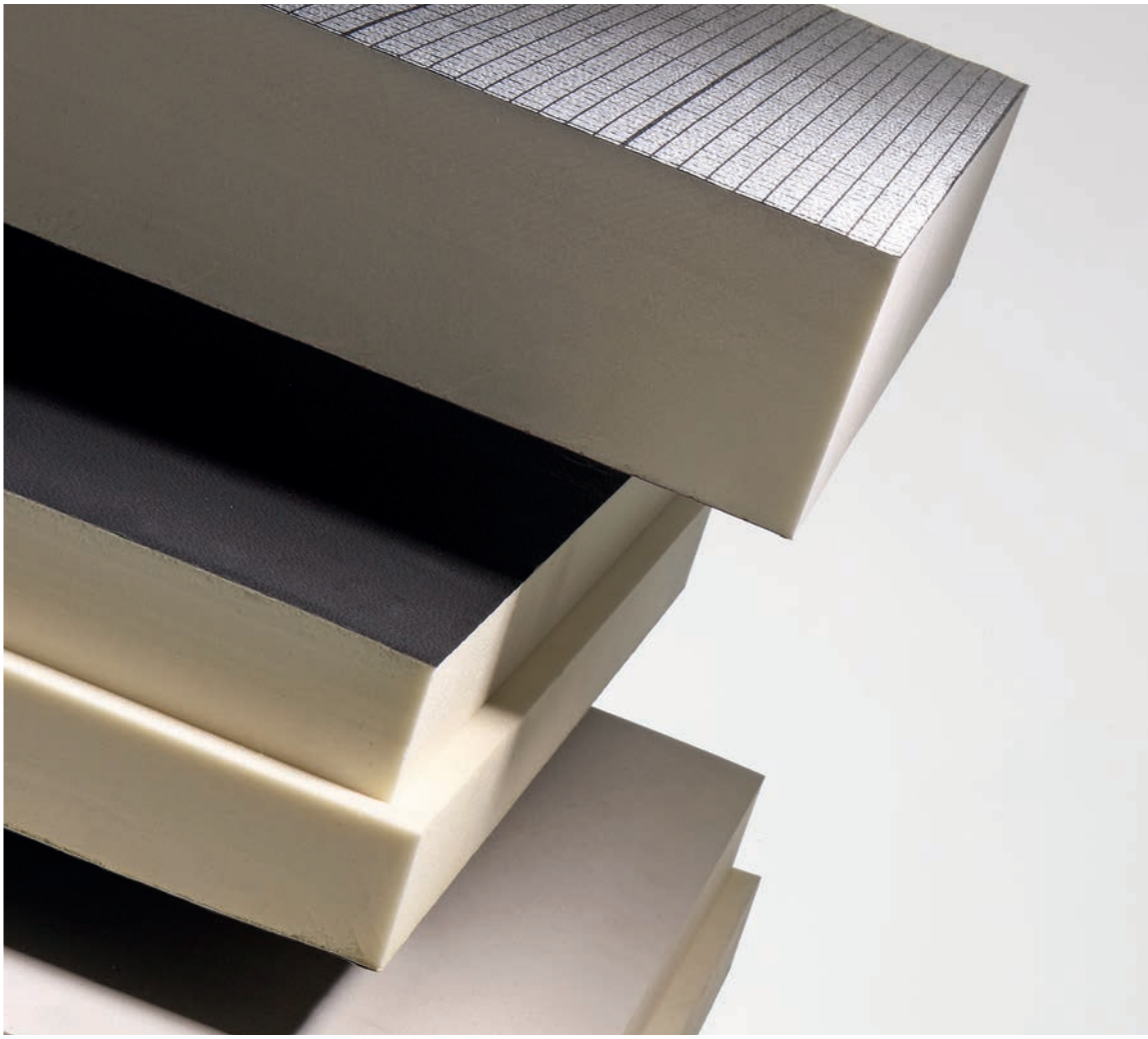
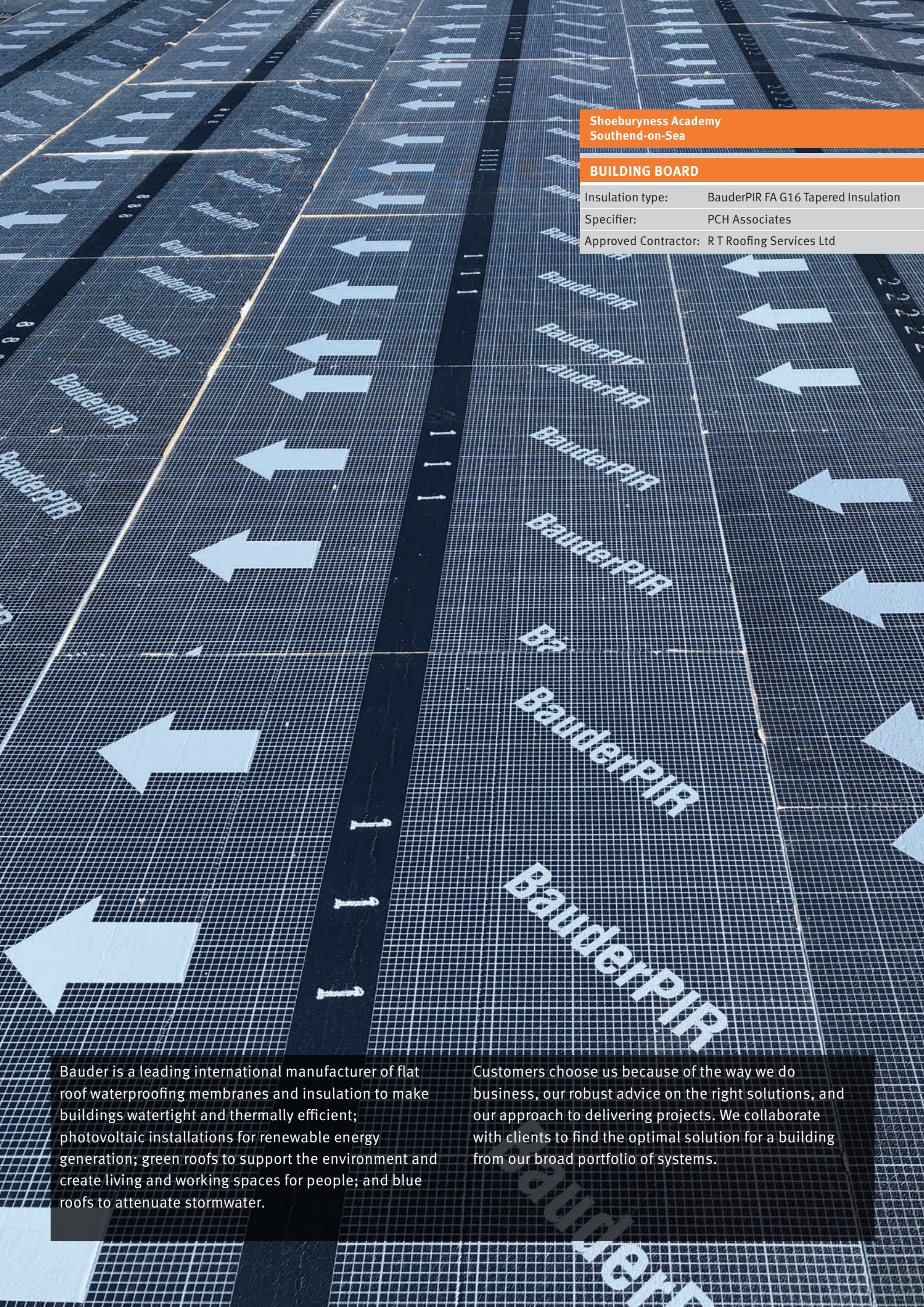
BAUDER
making roofs secure.

Warm and Inverted Insulations

Flat roof systems







Shoeburyness Academy
Southend-on-Sea

BUILDING BOARD

Insulation type:	BauderPIR FA G16 Tapered Insulation
Specifier:	PCH Associates
Approved Contractor:	R T Roofing Services Ltd

Bauder is a leading international manufacturer of flat roof waterproofing membranes and insulation to make buildings watertight and thermally efficient; photovoltaic installations for renewable energy generation; green roofs to support the environment and create living and working spaces for people; and blue roofs to attenuate stormwater.

Customers choose us because of the way we do business, our robust advice on the right solutions, and our approach to delivering projects. We collaborate with clients to find the optimal solution for a building from our broad portfolio of systems.

Insulating a Flat Roof, Podium or Terrace

Creating energy efficient roofs

Effectively insulating a roof improves the energy efficiency of the building, reduces running costs, and has positive effects on the environment.

There are different insulation options for constructing a warm roof where the insulation is within the waterproofing system, or inverted roof when the insulation is positioned above the waterproofing system.

Specifying insulation for a project

Our flatboard and tapered insulation options are manufactured as rigid boards making them easy to handle and install with the different roof constructions, our waterproofing types and systems.

Building usage, weight loading, and project requirements are key considerations towards selection.

Meeting building regulations

The efficiency and performance levels across our range of insulants can affect the thickness needed to satisfy building regulations specific to the location of the construction.

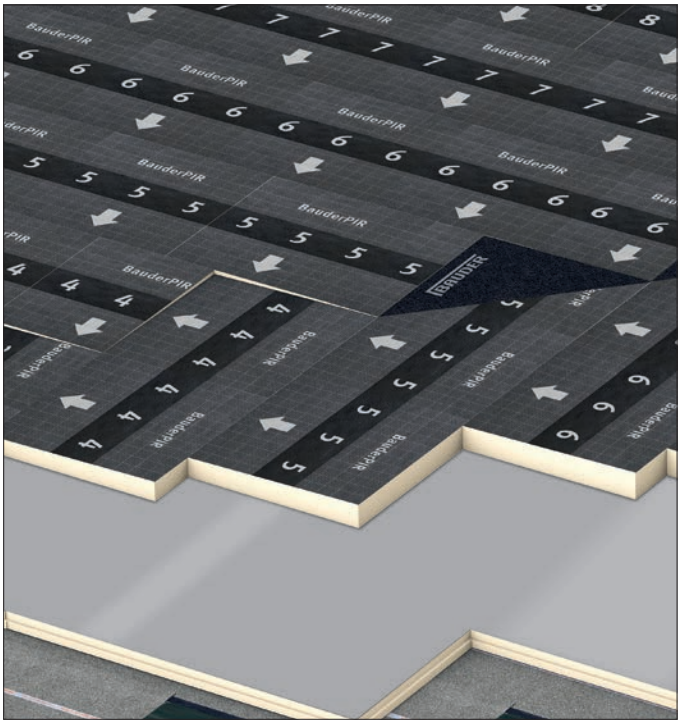
Bauder can advise on the latest requirements and make provision for the correct amount of insulation for your project within a bespoke specification.

Tapered insulation to create falls on a roof

Tapered insulation systems are a lightweight, convenient, and cost-effective alternative method of providing falls on the roof and can be used with our reinforced bitumen membrane (RBM), single ply, and cold applied liquid roof systems.

Upgrading insulation on current roofs

Increasing the thermal insulation within a roof reduces energy usage for heating or air conditioning, helping to meet current building regulations and support the environment.



Bauder Tapered Insulation

Bauder Insulations

Types of insulants within our waterproofing systems for the optimum outcome above heated spaces

The thermal property of insulation is a significant contributor towards reducing the carbon emissions associated with the heating and cooling of buildings. The solution for each project is unique to the building and its requirements.

BauderPIR
Inert, rigid foam thermoset polyisocyanurate (PIR) insulation commonly used for all kinds of load-bearing decks in warm roof construction. Available in flatboard and tapered fabrication.

BauderECO FF
Rigid foam thermoset PIR insulation consisting of 80% renewable inorganic raw materials (REDcert²-900-36600100), helping to preserve fossil reserves and reduce greenhouse gas emissions for a more sustainable future, without compromising quality and performance.

The 80 mm board can be used as a packer board for our tapered insulation.

BauderVIP
Vacuum insulation panels for areas with limited installation height requiring the thinnest solution, such as in balconies and terraces or to mitigate changes to parapet heights in refurbishment projects. Suitable for warm roofs and as a rigid encased panel for inverted roof construction.

BauderROCK
Mineral fibre insulation with assessed acoustic testing and fire resistance properties and utilised within warm roofs in flatboard and tapered options, and as an upstand board for inverted roofs.

BauderGLAS
Cellular glass insulation used where high compressive performance is required. The unfaced boards achieve Euroclass A1 rating, as a faced insulation Euroclass E rating is achieved. Used for inverted roof construction and for warm roofs in flatboard and tapered fabrication.

BauderJFRI
Closed cell expanded polystyrene (EPS) insulation for inverted roof construction with low water absorption properties.

BauderXPS
CO_2-blown extruded polystyrene insulation with a closed cell structure which makes it impervious to moisture for inverted roof construction.

Creating Falls on a Roof

Designing falls within the waterproofing system instead of incorporating them into the structure

Tapered insulation for warm roof construction creates falls on the roof of a heated building and is suitable for both new build and refurbishment projects.

Meeting building standards and regulations

Building regulations require adequate provision for rainwater to be carried from the roof of the building. According to BS 6229 and BS 8217, flat roofs should be designed with minimum falls of 1:40 to ensure a finished fall of 1:80 can be achieved. This applies to general roof areas and internal gutters.

Tapered scheme design

Your local area technical manager will assist with the tapered insulation proposal for the project. Our technical department will convert the proposal into a bespoke tapered insulation scheme in accordance with the latest versions of BS 6229 for falls on flat roof surfaces and BS 5250 for control of condensation in a building.

This team can also provide bespoke U-value calculations in accordance with BS 6946 Annex E (calculation method) to confirm the thickness required and/or U-value achieved and provide a layout to aid with installation on site.

Compatible waterproofing systems

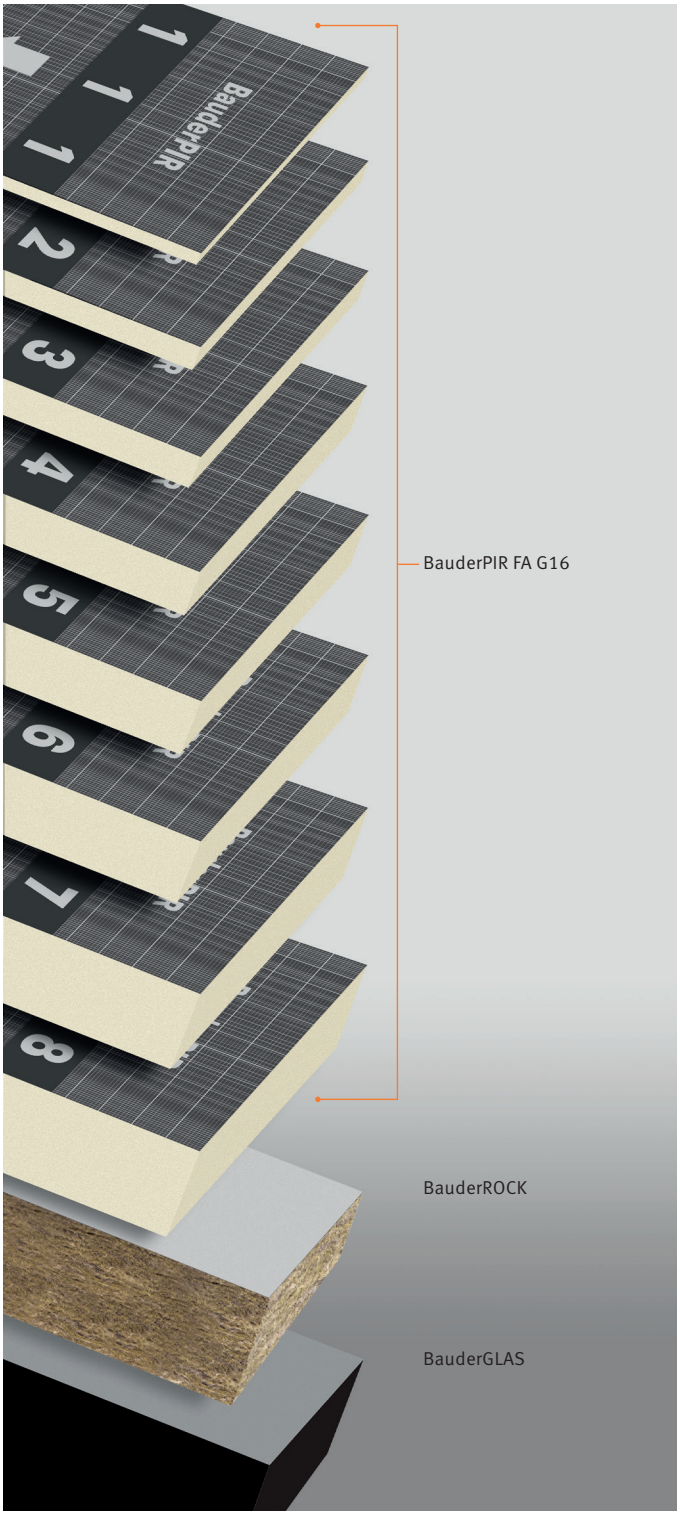
This insulation scheme can be specified within RBM, single ply, and cold applied liquid roof systems.

Plus points

- Complex fall configurations can be created and layout schemes designed for minimal waste.
- Can be retrofitted on an existing building.
- Tested with Bauder waterproofing systems.
- Multi-layered schemes created to deliver falls over large roof areas.
- Maintains thermal performance throughout life cycle of the roof system.

Tapered schemes available in these insulations:

- **BauderPIR FA G16** – see p.7
- **BauderPIR T G** – see p.7
- **BauderROCK** – see p.9
- **BauderGLAS** – see p.10



Warm Roof Insulation

BauderECO FF rigid foam thermoset polyisocyanurate (PIR) insulation

Insulation consisting of 80% biomass and renewable inorganic materials according to mass balance approach.

BauderECO FF

Low embodied carbon compared to standard PIR production that uses 80% biomass and renewable inorganic materials based on the biomass balance approach.

- Manufactured using renewable raw materials derived from biomass waste and residues from, for example, agricultural production, crop or food processing.
- REDcert²-900-36600100 sustainability certification: Third-party auditing for a voluntary certification scheme for the use of sustainable materials in the chemical industry. This is for the chemicals used to make our PIR insulation and the finished product itself.
- At Bauder, sustainability is at the core of our product development and operations. Environmental Product Declarations (EPDs) provide transparent, verified information about the environmental performance of our products throughout their life-cycle. (ECO FF declaration number: EPD-BAU-20220210-CBC5-EN)
- Retains all the benefits of PIR.
- Fire performance matches our conventional PIR.
- Wind load testing and fire testing has been carried out for our Bauder Total Roof System (BTRS) and Thermofol mechanically-fixed system. Further system testing is ongoing.
- The 80 mm board can be used as a packer board for our tapered insulation.

BIOMASS BALANCED INSULATION
BauderECO®

REDcert²
REDcert²-900-36600100

Warm Roof Insulation

BauderPIR closed-cell rigid polyisocyanurate (PIR) foam insulation

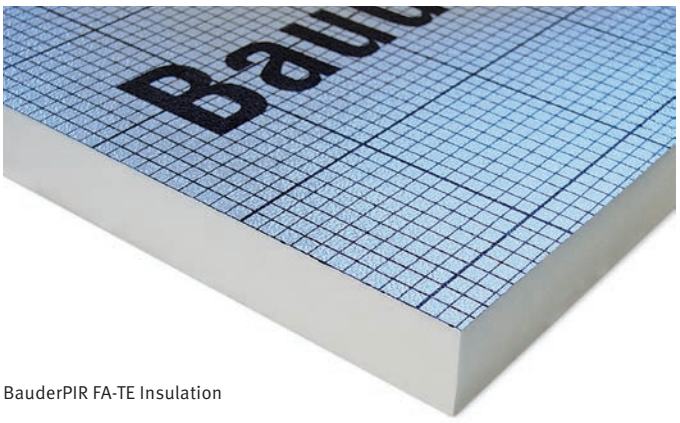
Efficient and inert with verified compressive strength, PIR insulation is thinner compared to other flat roof insulants due to its thermal conductivity and density, making it suitable for new build and refurbishment projects.

BauderPIR FA-TE

Flatboard insulation faced on both sides with aluminium foil to increase thermal efficiency and available in various thicknesses to achieve thermal requirements.

Used in:

- RBM, single ply, and cold applied waterproofing systems.
- Base layer to a multi-layer tapered scheme.
- Insulated upstands.



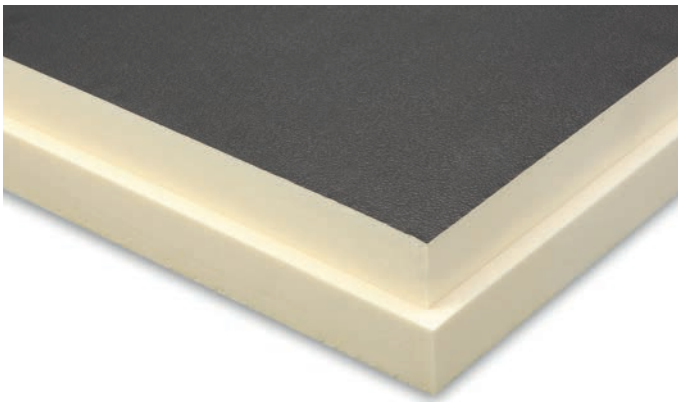
BauderPIR FA-TE Insulation

BauderPIR FA

Flatboard insulation faced on both sides with aluminium foil to increase thermal efficiency, available in various thicknesses. The large boards enable fast-track installation and are rebated to ensure thermal continuity. Solely for our single ply waterproofing systems.

Used in:

- Single ply waterproofing systems
- Insulated upstands



BauderPIR FA flatboard insulation rigid polyurethane foam board foil

TAPERED SCHEMES

BauderPIR FA G16

Tapered rigid board faced with aluminium foil. The top facing of the square boards feature a number and arrow to indicate board size and direction of fall.

Used in:

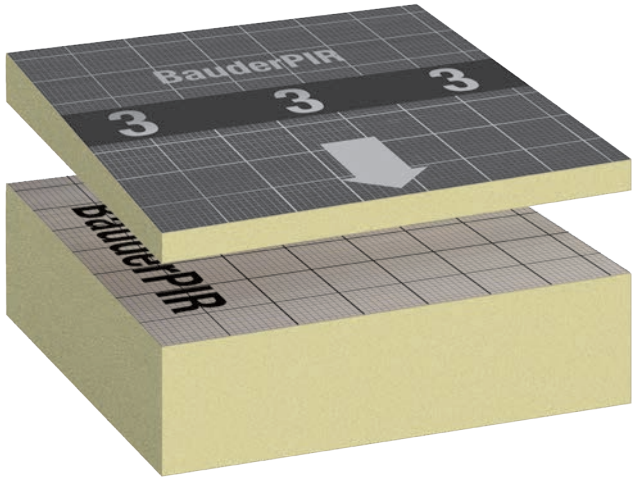
- Gradient of 1:60
- Multi-layer schemes utilising BauderPIR FA-TE
- RBM, single ply, and cold applied waterproofing systems

BauderPIR T G

Tapered rigid un-faced board with numbers and an arrow printed on the top of the board to indicate which way up the board should be installed.

Used in:

- Gradients for 1:80, 1:67, 1:60, 1:50, 1:40 and 1:33
- RBM and single ply waterproofing systems



BauderPIR FA G16 Tapered Insulation

Warm Roof Insulation

BauderVIP TE slimline vacuum insulation panel

Pre-assembled panel with a vacuum silica core designed for areas with limited installation height.

BauderVIP TE

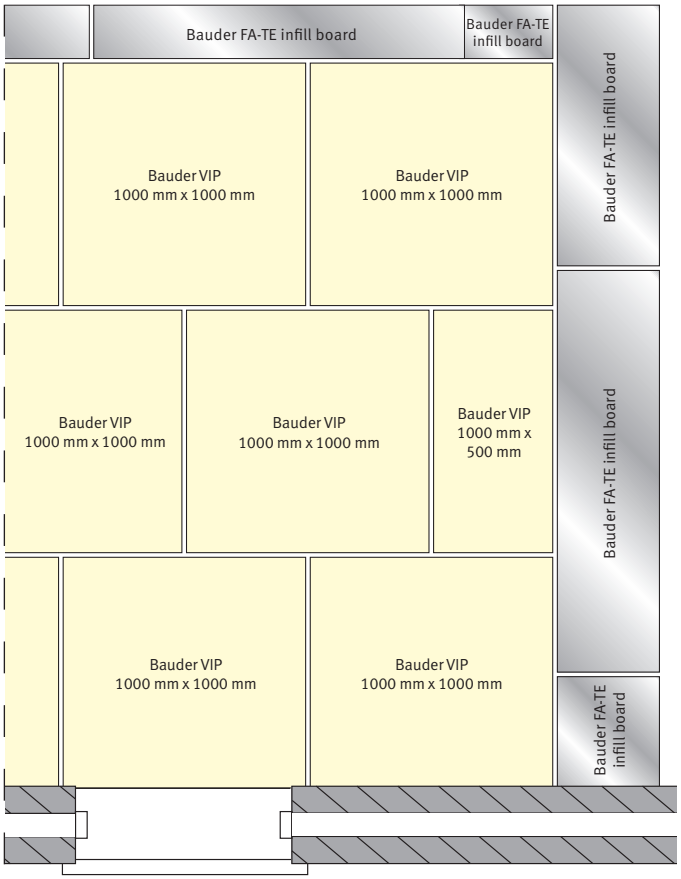
The BauderVIP TE silica core is created with a multi-layer composite aluminium foil. The air is removed from the silica to create a vacuum and the core sealed. BauderVIP TE is installed intact and can be used in conjunction with other Bauder insulation boards to enhance U-values further if required.

This flatboard panel is ideally suited for warm roof terrace or balcony applications with a hard or soft landscaped finish where the construction is situated above heated spaces. The core is protected by a 3 mm thick rubber granulate mat on the underside and with 17 mm Bauder high-density PIR on the upper surface. Both layers are bonded to the vacuum core to provide an enclosed panel.

Used in:

- Thicknesses of 60 mm and 80 mm
- Conjunction with BauderPIR FA-TE at roof perimeters and penetrations

Bauder Vacuum Insulation



Example Layout

Warm Roof Insulation

BauderROCK mineral fibre insulation

A consideration for specification when thermal, acoustic, and fire performance are key considerations in new build construction and refurbishment projects.

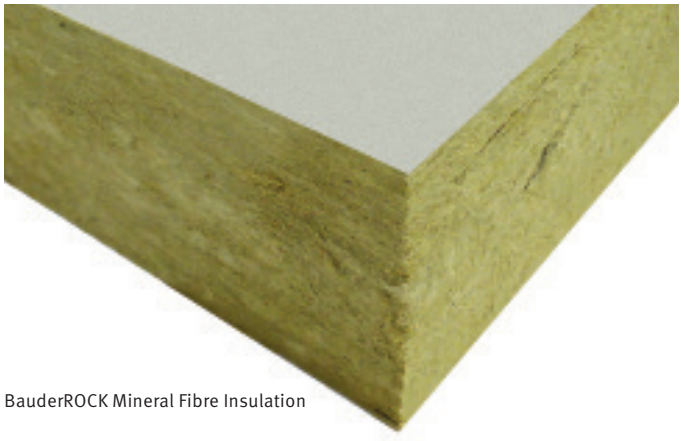
BauderROCK has a dual-density composition. Boards have a multi-purpose facing to allow the insulation to be either mechanically fixed, torch-applied, or adhered within the roof system.

BauderROCK

Flatboard insulation available in a range of thicknesses with the faced board achieving A2-s1,d0 rating and the unfaced board, used in multi-layer schemes, achieving Euroclass A1 rating.

Used in:

- RBM, single ply, and cold applied waterproofing systems



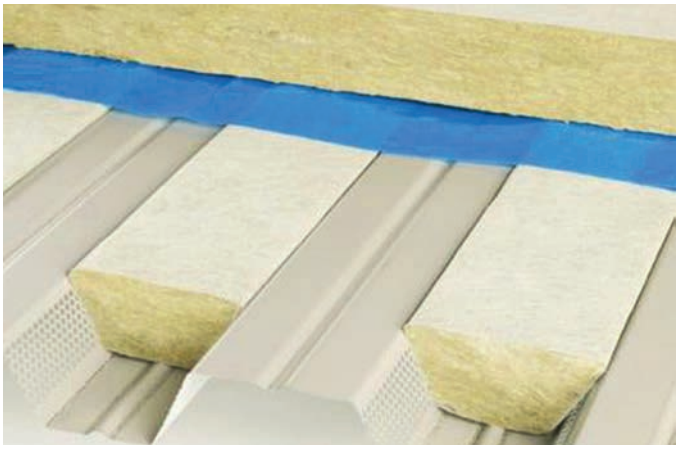
BauderROCK Mineral Fibre Insulation

BauderROCK Infills

Tissue-faced pre-cut trapezoidal infills with Class C sound absorption performance installed into troughs of perforated metal decks.

Used in:

- Acoustic solutions
- RBM, single ply, and cold applied waterproofing systems



BauderROCK Acoustic Infill

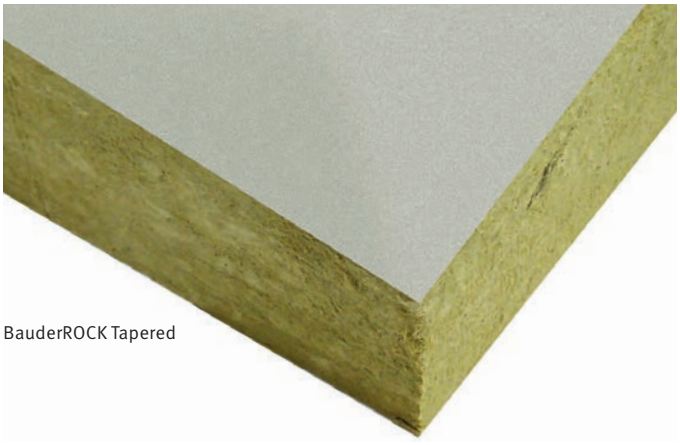
TAPERED SCHEMES

BauderROCK Tapered

This tapered rigid board has a top surface that is multi-purpose-facing, and the bottom surface is an unfaced, bare product.

Used in:

- Gradients for 1:80, 1:60, 1:40
- RBM, single ply, and cold applied waterproofing systems



BauderROCK Tapered

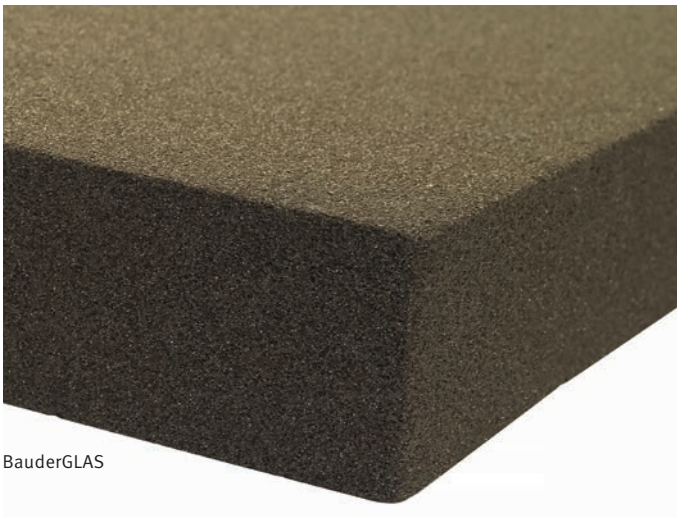
Warm Roof Insulation

BauderGLAS cellular glass with a pre-attached facing on the upper surface

A solution for new build or refurbishment projects requiring high fire performance and non-combustibility.

Manufactured from graded recycled glass (≥ 60%) and abundantly-available natural raw materials including sand, dolomite, and lime. The insulation is inorganic and the core inherently non-combustible. The cellular glass achieves Euroclass A1 rating and faced boards achieve Euroclass E rating.

Faced boards are produced with either a geotextile or bitumen facing.



BauderGLAS

BauderGLAS

Flatboard insulation for warm roof construction available in various thicknesses to achieve thermal requirements.

Used in:

- Warm roof construction available in various thicknesses to achieve thermal requirements
- Waterproofing systems incorporating self-adhesive membranes with geotextile facing
- Multi-layer systems using an un-faced board as a base layer

TAPERED SCHEMES

BauderGLAS Tapered

Insulation for projects that require improved drainage falls and is installed as the top layer of the tapered scheme.

Used in:

- Gradients for 1:80, 1:60, and 1:40
- Torch-applied membrane applications utilise boards with a bitumen facing
- Waterproofing systems incorporating self-adhesive membranes utilise boards with geotextile facing

Inverted Insulation

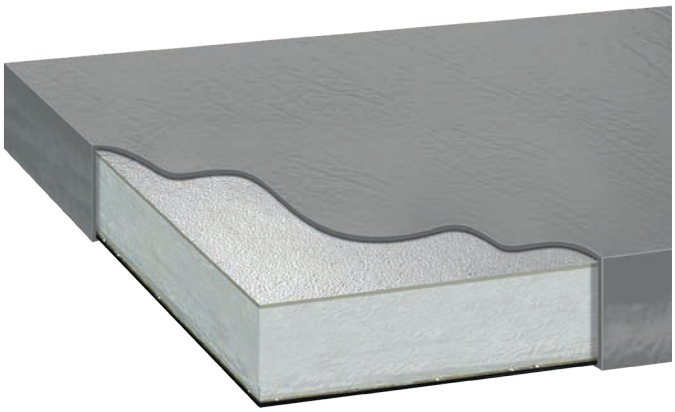
BauderVIP INV vacuum insulation panel

A rigid vacuum insulation panel with a microporous core that is evacuated, encased, and sealed in a gas-tight membrane. The panels are encapsulated in a protective polyurea coating for increased robustness in an inverted roof construction.

BauderVIP INV panels are suitable for roof areas where a lack of construction depth or space is an issue, such as roofs, roof terraces, enclosed balconies over heated spaces, and insulated walkways in an inverted roof build-up. BauderVIP INV panels are suitable for use in both new build and refurbishment situations with our hot melt, RBM, and Bauder LiquiTEC cold applied liquid waterproofing options.

BauderVIP INV panels can be used as part of an inverted roof construction in either a single or double layer which is determined by the thermal requirements of the project. They are used in conjunction with BauderXPS (300) on top of the BauderVIP INV panels and as infill boards for any spaces. Its thickness is also determined by the thermal requirements.

BauderVIP INV panels can be used in conjunction with BauderXPS, BauderROCK NC Upstand Boards, and warm roof insulation upstands giving the designer flexibility.



BauderVIP INV Vacuum Insulation Panel

Inverted Insulation

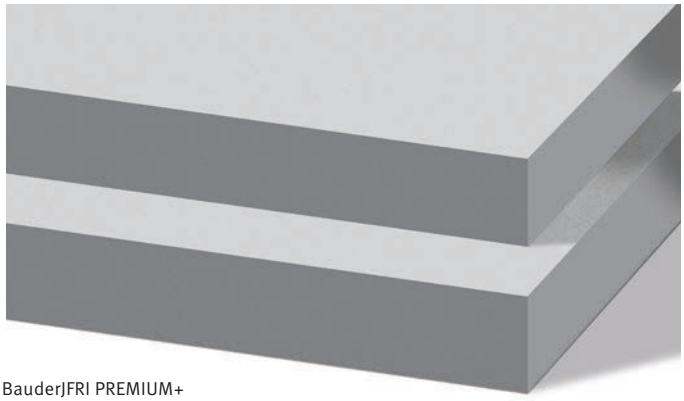
BauderJFRI rigid expanded polystyrene (EPS) insulation

Inverted insulation where foam beads of polystyrene within a mould are heat treated to expand and fuse together.

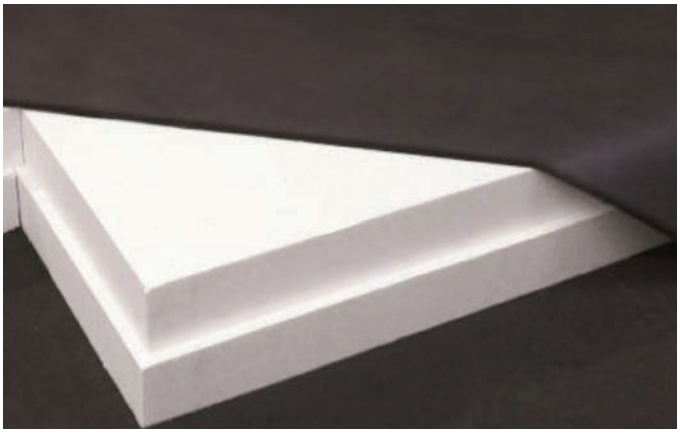
The BauderJFRI PREMIUM inverted insulations are used within a buried or covered scenario with either hard or soft landscaping finish.

The horizontal boards are rebated on all four sides to ensure thermal continuity and installed directly onto our hot melt, RBM and cold applied liquid waterproofing systems.

When fire performance is a factor within the specification the BauderROCK NC Upstand Board or BauderGLAS NC Upstand Board can be used to exposed vertical perimeter edgings.



BauderJFRI PREMIUM+



BauderJFRI 300

BauderJFRI PREMIUM+

Inverted flatboard insulation that achieves a low lambda value to reduce the thickness specified to achieve the required U-value when compared to other BauderJFRI insulations.

Used in:

- Conjunction with BauderROCK NC Upstand Board, BauderXPS NC Upstand Board and BauderGLAS Upstand Board where required.

BauderJFRI PREMIUM 200 and 300

Flatboard insulation with differences between all grades (200, 300 and 500).

Used in:

- Conjunction with BauderXPS or BauderROCK NC Upstand Board where required.

BauderJFRI WFRL Membrane

A vapour-permeable membrane to accompany the installation and meet the recommendations within BS6229:2018 to reduce the flow of rainwater around the insulation.

Inverted Insulation

BauderXPS rigid extruded polystyrene (XPS) insulation

Inverted insulation with a closed cell structure to the polystyrene and a sealed smooth surface to the board that prevents water penetration.

Specified for inverted roofs with soft or hard landscaping finishes. If the project has exposed upstands and stipulates a non-combustible solution, the BauderROCK NC Upstand Board is required.

The boards are rebated on all four sides to ensure thermal continuity and installed directly onto our hot melt and RBM waterproofing systems.

BauderXPS 300 and BauderXPS 500

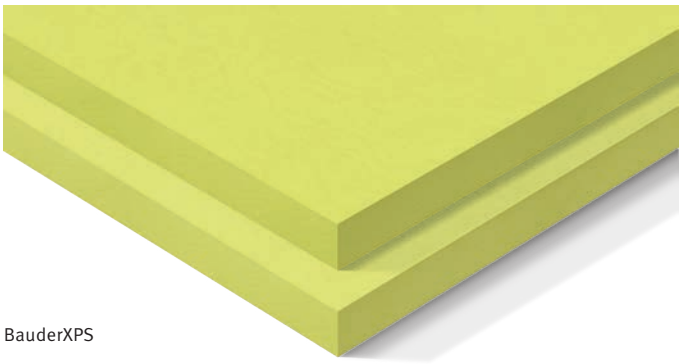
Flatboard unfaced insulation is used in most inverted blue roof, hard landscaping and soft landscaping situations.

Used in:

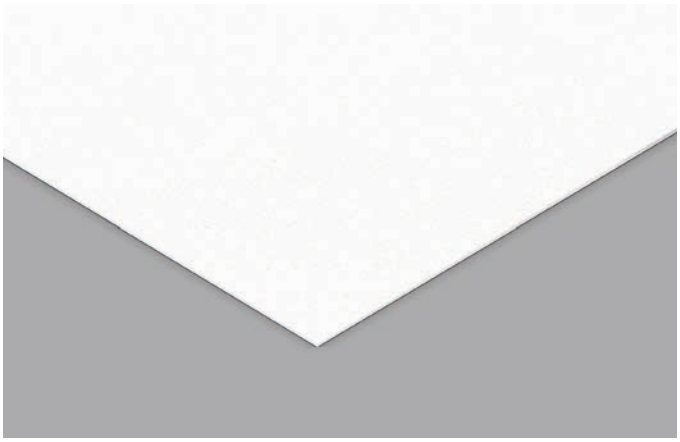
- Conjunction with BauderROCK NC Upstand Board where required.

BauderXPS WFRL Membrane

A vapour-permeable membrane to accompany the installation and meet the recommendations within BS6229:2018 to reduce the flow of rainwater around the insulation.



BauderXPS



BauderXPS WFRL Membrane (shown here on BauderJFRI insulation)

Inverted Insulation

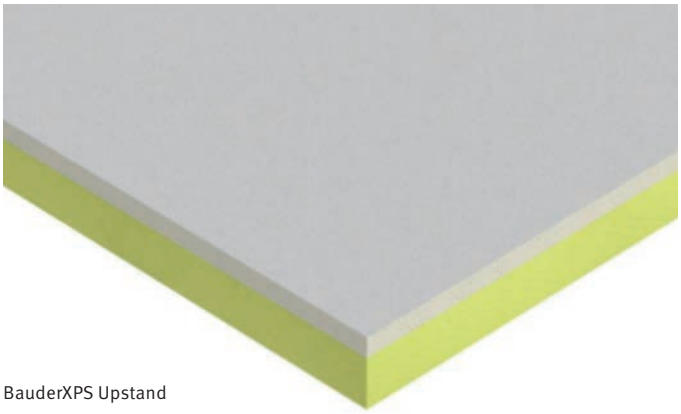
BauderXPS rigid extruded polystyrene (XPS) insulation for upstands

BauderXPS Upstand Board is a rigid extruded polystyrene (XPS) consisting of 50 mm laminated XPS insulation. A 6 mm fibre-cement facing provides weather resistance as well as impact and UV protection to the extruded polystyrene core.

This product provides thermal insulation that offers resistance to impact and weather, for use on low-level inverted roof upstands including to and across compartment walls.

This product is specifically for use with upstands where BauderXPS (300) and BauderJFRI Premium Inverted Insulation are used on the main flat area.

BauderXPS Upstand Insulation is compatible with our hot melt, RBM, and Bauder LiquiTEC cold applied liquid waterproofing options.



BauderXPS Upstand

Inverted Insulation

BauderGLAS INVERTED cellular glass insulation with a pre-applied inorganic coating on the upper surface

A solution for new build or refurbishment projects requiring high fire performance and non-combustibility.

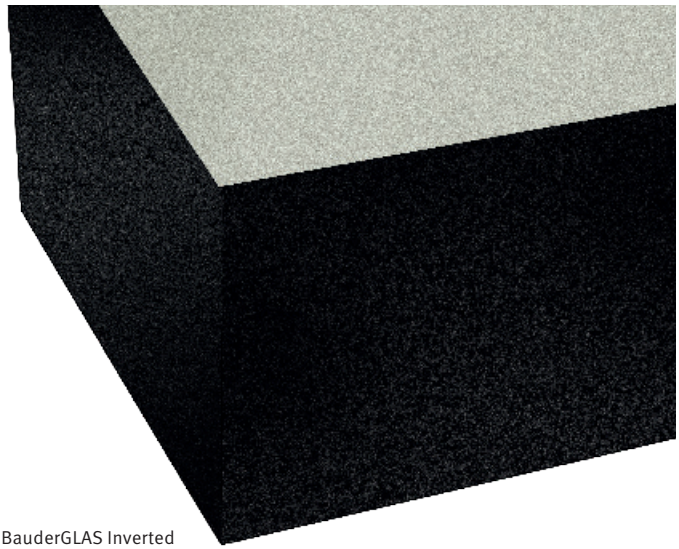
Manufactured from graded recycled glass (≥60%) and available natural raw materials including sand, dolomite, and lime. The insulation is inorganic and the core inherently non-combustible. The cellular glass achieves Euroclass A1 rating and faced boards achieve Euroclass E rating.

Used in:

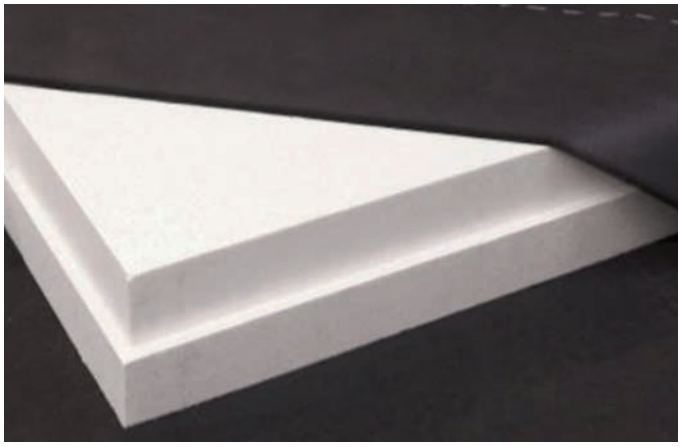
- RBM and hot melt waterproofing systems.
- Conjunction with the BauderJFRI WFRL Membrane over the insulation to reduce the cooling effect of rainwater movement around and between the boards.

BauderJFRI WFRL Membrane

A vapour permeable membrane to accompany the installation and meet the recommendations within BS6229:2018 to reduce the flow of rainwater around the insulation.



BauderGLAS Inverted



BauderJFRI WFRL-Membrane (shown here on BauderJFRI insulation)

Inverted Insulation

BauderROCK mineral wool insulation for upstands

BauderROCK NC Upstand Insulation is compatible with our hot melt, RBM, and Bauder LiquiTEC cold applied liquid waterproofing options.

BauderROCK NC Upstand Insulation is a 56 mm upstand board consisting of a stone wool insulation slab bonded to a 6 mm fibre-cement facing. The insulation facing provides impact resistance as well as UV protection to the stone wool core.

BauderROCK NC Upstand Insulation provides thermal insulation that offers resistance to impact and weather, for use on low-level inverted roof upstands including to and across compartment walls.

This product is specifically for use with upstands where BauderXPS (300) and BauderJFRI PREMIUM are used on the main flat area.

BauderROCK NC Upstand Insulation

Specialist Insulation Solutions

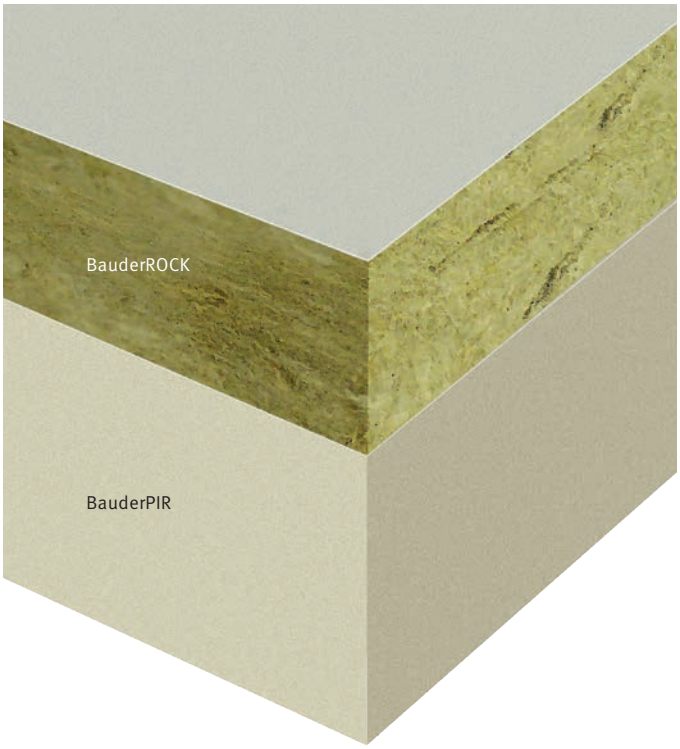
Acoustic solution reducing rain noise and airborne sound transmission

This build-up combines BauderROCK with BauderPIR, which can help reduce rain noise and airborne sound tranmission, whilst keeping weight loadings and system thickness to a reduced level compared to using BauderROCK for the entire build-up.

The sound properties of the base layer of BauderPIR insulation are further enhanced with an upper layer of BauderROCK insulation. See page 9 for more information.

BauderROCK Acoustic Infills can also be used in conjunction with this hybrid build-up to further enhance acoustic performance on perforated metal decks.

The BauderROCK Acoustic Infills are installed into the troughs of the metal deck prior to application of the air and vapour control layer.



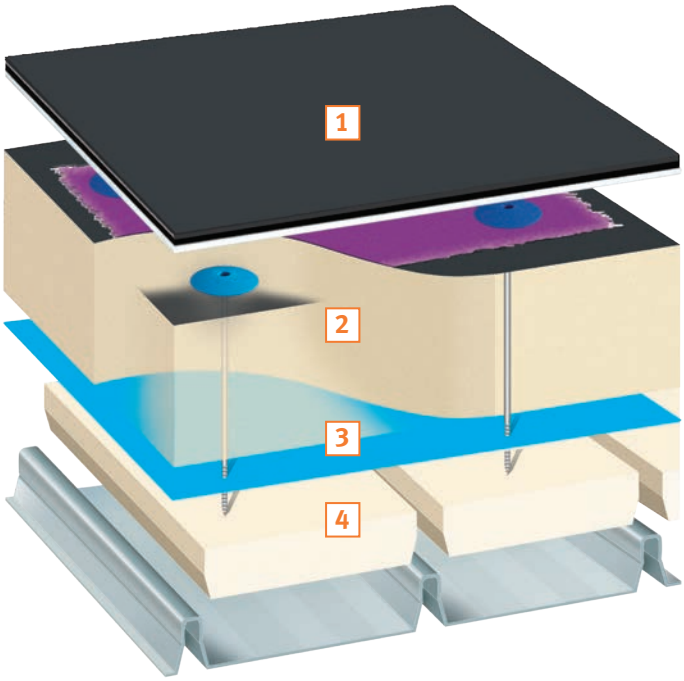
Specialist Insulation Solutions

BauderPIR Infill System overlaying existing profiled sheet metal roofs to improve thermal performance

PIR insulation infill is cut on site to match the profiled sheet metal roof structure. It is used within refurbishment projects with our singly ply waterproofing system for a cost effective solution.

The PIR infills are loose laid to create a flat surface for an additional layer of BauderPIR insulation to be mechanically fastened above, ensuring both layers of PIR are secured. The insulation is then waterproofed with a Bauder single ply membrane which can be either mechanically fastened or adhered.

The simple insulation upgrade solution can be installed whilst the building remains operational.



Insulation is Mechanically Fastened

SYSTEM DATA (download product data sheets for more information bauder.co.uk/technical-centre)	
1 **Waterproofing membrane** Adhered or mechanically fastened	**BauderTHERMOFOL** **BauderTHERMOPLAN**
2 **Warm roof insulation** Range of thicknesses to meet thermal efficiency requirement.	**BauderPIR FA** (mechanically fastened flatboard)
3 **AVCL**	**BauderSYN DB-PE 100**
4 **Profiled PIR Infills**	PIR insulation infills cut to match the existing roof sheets

Project studies

CFPR & Future Space Expansion, University of the West of England

Synposis

The Frenchay campus underwent a full refurbishment to transition the building into a modern facility.

The existing profiled sheet metal roof was overlaid with PIR insulation infills to the troughs to create a flat surface for the BauderPIR FA flatboards to be mechanically fastened, securing the insulation to the existing deck, before waterproofing with Bauder single ply and decorative profiles.

Highlights

- Single source supply and guarantee
- No building interruption
- Cost-effective solution

System summary

Insulation	BauderPIR Infill System
Waterproofing	Bauder Thermofol

The Burrell Collection, Glasgow

Synposis

The roof was failing on this Category A Listed Building with insufficient falls and high levels of water ingress. There was no capacity for additional outlets so a bespoke tapered scheme was created to work within these limitations and to preserve the immovable rooftop features.

Highlights

- Fire performance
- Improved roof falls for effective drainage

System summary

Insulation	BauderGLAS Tapered Scheme
Waterproofing	Bauder Total Roof System

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