

# 4

## Reinforced Bitumen Membrane Systems



Image: Jack Hobhouse

We manufacture to exact specification our modified bitumen membranes and high performance PIR insulation for complete compatibility.

Our long-established and fully integrated roof systems provide you with a single point of contact for every element of your flat roof project.

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# OVERVIEW OF WATERPROOFING



Paxman Academy  
Colchester, Essex





## Two Layer Waterproofing

### Bauder Total Roof System Plus (BTRS PLUS)

Our premier system, BTRS PLUS, utilises the latest manufacturing technology for Bauder's first dual formulation capping sheet uniting both APP and SBS polymer bitumen modifications to create BauderKARAT cap sheet.

The system also incorporates the new BauderTEC KSA DUO 35 self-adhesive SBS modified underlay which, when combined with the BauderKARAT cap sheet, jointly provide a formidable waterproofing solution with exceptional durability and system longevity.

### Bauder Total Roof System (BTRS)

Our high quality Bauder Total Roof System offers a choice of products that enable it to be tailored to meet the exact needs of each individual project. There is also a special root resistant cap sheet that is used in a green roof specification.

Whichever products are chosen, the system is extremely robust with a BBA stated life expectancy in excess of 35 years.

### Bauderflex

This system offers a commercial alternative to BTRS, for the specifier on a prudent budget. There is a choice of products to meet the needs of each individual project, and has a BBA stated life expectancy in excess of 25 years.

### System Airtech

When safety is of paramount importance, System Airtech is the torch-free alternative that uses a combination of the latest generation self-adhesive membranes, superior adhesives and hot air welding. The system's specific formulations give a life expectancy in excess of 30 years.

## Single Layer Waterproofing

### PRO F

This system features a single layer SBS modified bitumen cap sheet, which is designed to be installed directly over thermal insulation, either by torch bonding or mechanical fixing, depending on the deck substrate and the client's requirements.

The system offers a robust alternative to traditional thermoplastic single ply membranes, with a life expectancy of approximately 30 years.

### BauderTHERM 'Stripes'

This is an innovative single layer torch-applied overlay membrane that is practical, quick and cost-effective. It is designed for refurbishment projects to extend the life of existing bitumen-based roof systems by around 20 years.

We offer a complete range of modified bitumen solutions to suit project type and budget, and manufacture all membranes and insulation to exacting specifications and tolerances, ensuring full compatibility of components.

To give complete reassurance, all our solutions come with a range of guarantees to suit the project requirements.

All Bauder bitumen membrane systems incorporate our torch-safe detailing which is specified when roof details are located on or adjacent to combustible construction materials.

# ENVIRONMENTAL CREDENTIALS



## Building Research Establishment (BRE) Green Guide

The BRE Green Guide to Specification gives our bituminous systems various generic ratings, depending on the type of deck construction and the support structure used.

### Bituminous System Generic Ratings

- 'A+' generic rating, element number 1212540006 when used with warm roof insulation on a profiled steel deck with steel supports.
- 'A+' generic rating, element number 1212540033 when used with warm roof insulation on plywood deck and timber joists.
- 'B' generic rating, element number 1212540042 when used with warm roof insulation on concrete beam and block.
- 'B' generic rating, element number 1212540021 when used with warm roof insulation on pre-cast concrete hollow slab with screed.
- 'A' generic rating, element number 812530026 when used with inverted roof insulation and pebble ballast on ply lined profiled steel deck with steel supports. PIR Insulation Generic Ratings.
- 'A' generic rating, element number 1415320205 for PIR FA-TE Insulation.



## Environmental Product Declarations (EPD)

The Eco Platform accreditation is recognised by the BRE as valid and transferrable environmental documentation towards obtaining BREEAM credits within their assessment process for BREEAM UK New Construction 2018.

Within our bitumen membrane waterproofing systems we have the following EPD certificates for our membranes and PIR insulation.

- **Bitumen Membranes**  
S-P-00414
- **PU Insulation - Mineral Fleece Facing**  
EPD-IVP-20140206-IBE1-EN
- **PU Insulation - Aluminium Facing**  
EPD-IVP-20140207-IBE1-EN

↓ All certificates can be downloaded from our website  
[bauder.co.uk/technical-centre](http://bauder.co.uk/technical-centre)

## Our Products in Practice

We are committed to reducing the impact our manufacturing has on the environment as well as how our products can support the environment through the reduction of energy usage, recycling and reusing.

### Insulation

The BauderPIR insulation has extremely high thermal efficiency, is CFC and HCFC free and has zero ODP. As part of our PIR insulation manufacturing process, offcuts and waste are readily recycled and used in the production of hand cleansers and decking materials.

### Recycling and Reusing Bitumen Membranes

Bitumen is the primary raw material used in the production of bituminous waterproofing membranes. It is a by-product of oil refining and is essentially the waste material of this petrochemical process and therefore has little additional detrimental effect on the environment.

When roofs are replaced, the bituminous layers can be incinerated for heating and electricity production.

# TECHNICAL CREDENTIALS



## BBA Certification

BTRS PLUS, BTRS, BTGRS, Bauderflex and Bauderflex Green Roof all carry BBA certificate No. 10/4744.

All certificates can be downloaded from our website [bauder.co.uk/technical-centre](http://bauder.co.uk/technical-centre)

## British Standards

All membranes comply with BS EN 13707 Reinforced Bitumen Membrane Sheets for Roof Waterproofing.

## ISO Accreditation for Manufacturing

Our reinforced bitumen membranes and PIR insulation are all manufactured in our factories operating a Quality Management System that has been certified to be in accordance with ISO 9001:2015, an Environmental Management System that has been certified to be in accordance with ISO 14001 2015 and ISO 50001 2011 for Energy Management.

## Rain Noise Testing

The Bauder Total Roof System on a metal deck has been tested in accordance with BSEN ISO 140 - 18: 2006 to determine the sound intensity level within the building during heavy rainfall. A figure of 48.9 dB LIA was achieved, which is sufficient to gain a credit under certain BREEAM assessments and generally satisfies the requirements of 'Acoustic Design of schools: Performance Standards, Building Bulletin 93'.

## Fire Performance

Our systems hold fire classification B<sub>ROOF</sub>(t4) for compliance with building regulations under TS 1187 test method 4 for external fire exposure to roofs.

Bauder waterproofing systems verified by the BBA are deemed 'unrestricted' and suitable for use on any part of a roof.



## National Federation of Roofing Contractors (NFRC)

The NFRC is the UK's largest roofing trade association. With a history spanning over 125 years, NFRC has established itself as the voice of the roofing industry, constantly adapting to change and innovation to ensure its members are at the forefront



## CE Marking

All membranes and insulations carry a CE mark as required by the Construction Products Regulations.

## Root Resistance for Green Roofs

The Bauder Total and Bauderflex Green Roof Systems can each utilise special cap sheets that have been tested and certified under FLL (Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau) guidelines, which is the benchmark test for root resistance in Europe and has been for at least the last 25 years.

## Product and Installation Technology

### TEC Products

The TEC range of products feature self-adhesive compound on the underside, protected by a peel-off release film. These are the products used in our torch-free detailing, and some also feature heavily in all areas of the roof, particularly in the form of air and vapour control layers over combustible deck substrates, and underlayers due to the increased speed of application.

### DUO Products

Our patented 'DUO' range of products was developed to make installation faster, safer, simpler and more secure than previously possible. The technology features colour coded side laps. Beneath the red lap is an 80mm wide strip of glass fibre fleece to prevent immediate adhesion and allows the installer to create a secure welded lap by using flame or hot air, for guaranteed waterproofing integrity. These products feature significantly in most Bauder bituminous membrane systems.



### THERM Stripes Technology

This family of products feature a low melting point bitumen adhesive, in a striped pattern, which is activated with a minimal amount of heat.

The technology is used in the BTRS system on the uppermost surface of the DS1 DUO air and vapour control layer to provide the adhesive for installing the insulation. It also features in the BauderTHERM 'Stripes' system on the underside of the SL500 cap sheet to enable a quickly installed, partially bonded waterproofing.

# BAUDER TOTAL ROOF SYSTEM PLUS



# (BTRS PLUS)



BTRS PLUS is our prestigious waterproofing system that utilises the latest manufacturing technology with a dual formulation cap sheet, uniting both APP and SBS polymer bitumen modifications to create BauderKARAT.

The system also incorporates the new BauderTEC KSA DUO 35 self-adhesive SBS modified underlay which, when combined with the BauderKARAT cap sheet, jointly provide a formidable waterproofing solution with exceptional durability and system longevity.

The complete system is manufactured to exacting specifications and is applied within cold, warm or inverted roof constructions with a choice of insulations:

### When to Specify

BTRS PLUS is designed for use in both refurbishment and new build projects particularly when outstanding long life-span and high durability are required.

As with all our bitumen membrane systems, BTRS PLUS incorporates our torch-free detailing which is specified when roof details are located on or adjacent to combustible construction materials.

### Key Features

- Heavy duty and extremely enduring system.
- Life expectancy in excess of 40 years.
- Fire classification B<sub>ROOF</sub> (t4).
- APP/SBS dual modified bitumen 5.2mm capsheet.
- Softer bitumen SBS underside which aids speed of installation by circa 10%.
- 300g/m<sup>2</sup> polyester-glass composite reinforcement for exceptional tensile strength.
- Torch-free detailing on or adjacent to combustible construction materials using Bauder KSO-P SN self-adhesive cap sheet membrane.
- A standard Bauder PIR warm roof system is capable of withstanding permanently sited loads of up to 2000Kg/m<sup>2</sup>.
- System incorporates patented DUO membranes to minimise the use of flame to make installation faster, safer, simpler and more secure.
- Outstanding guarantee package.

#### Specification Support



Specification downloads:  
[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)



Telephone helpline:  
0845 271 8800



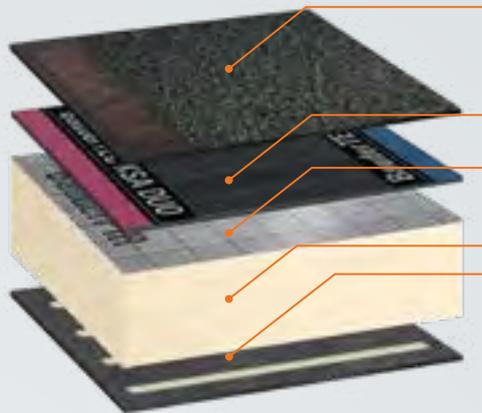
# BAUDER TOTAL ROOF SYSTEM PLUS

## Example System Configuration



### BAUDER TOTAL ROOF SYSTEM PLUS

Extremely robust torch-applied capsheet and innovative heat-activated self-adhesive membranes for safety. There is a choice of insulation types.



#### BauderKARAT

5.2mm thick dual modified APP/SBS bitumen cap sheet with 300g/m<sup>2</sup> glass/polyester composite reinforcement. Charcoal Grey slate granule surface finish

#### BauderTEC KSA DUO 35

3.5mm SBS self-adhesive bitumen underlayer

**BauderPIR FA-TE Flatboard or FA Tapered Insulation to create falls on the roof**

Foil-faced rigid PIR boards for warm roof construction

#### Bauder Insulation Adhesive

#### BauderTEC KSD Mica

2.5mm SBS self-adhesive air and vapour control layer with a mica finish installed to the deck which is prepared using Bauder Multi-Purpose Primer

### The System Products



#### BauderKARAT

The robust BauderKARAT capsheet has been developed to offer enhanced performance and service life.

The process for applying the slate granules used for BauderKARAT surface protection gives a particularly smooth and superior finish.

APP modified bitumen is used for the upper coating which offers increased resistance to ultraviolet radiation together with improved weathering that contributes to longer service life. The reinforcement is a 300g/m<sup>2</sup> polyester-glass composite offering extreme strength and stability.

The underside coating is Bauder's proven SBS modified elastomeric bitumen which provides outstanding flexibility to cope with climatic extremes.

The thermofusible polyethylene film to the underside of the membrane dissipates quickly with heat during installation.

Due to our special coating formulation, BauderKARAT is estimated to be more than 10% quicker to install than our current K5K cap sheet.



#### BauderTEC KSA DUO 35

Additionally, the new KSA DUO 35 is the underlay of choice in BTRS PLUS. This self-adhesive membrane provides even more durability due to the increased thickness of the product.

The system can be installed with a choice of Bauder uniform thickness insulation and tapered insulation boards and air and vapour control layers.

#### Cap Sheet Colour



Charcoal Grey

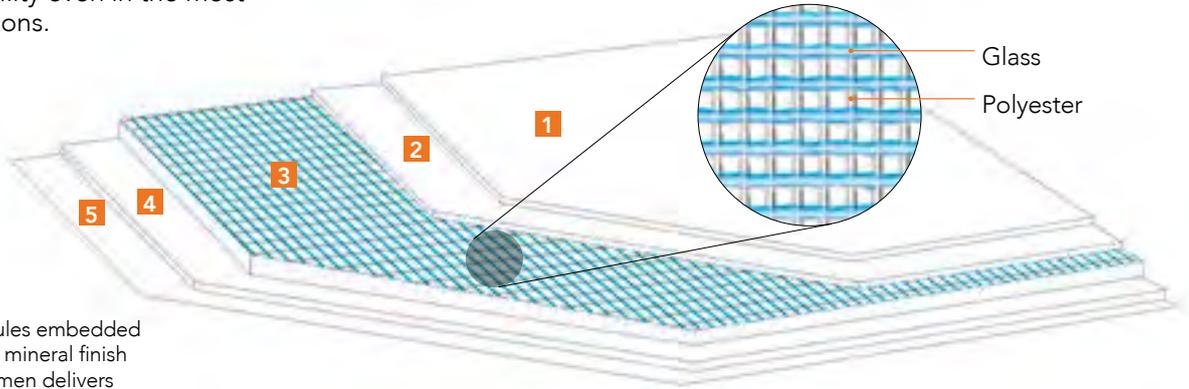


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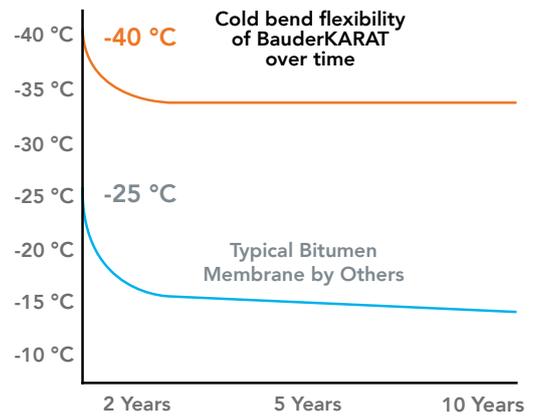
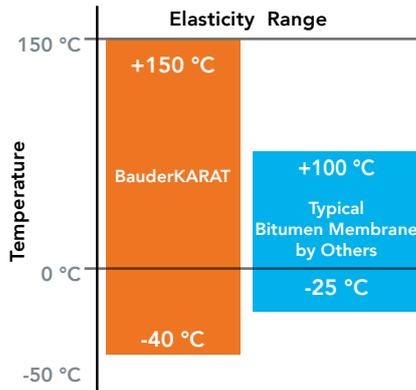
# TECHNICAL PERFORMANCE

## BauderKARAT

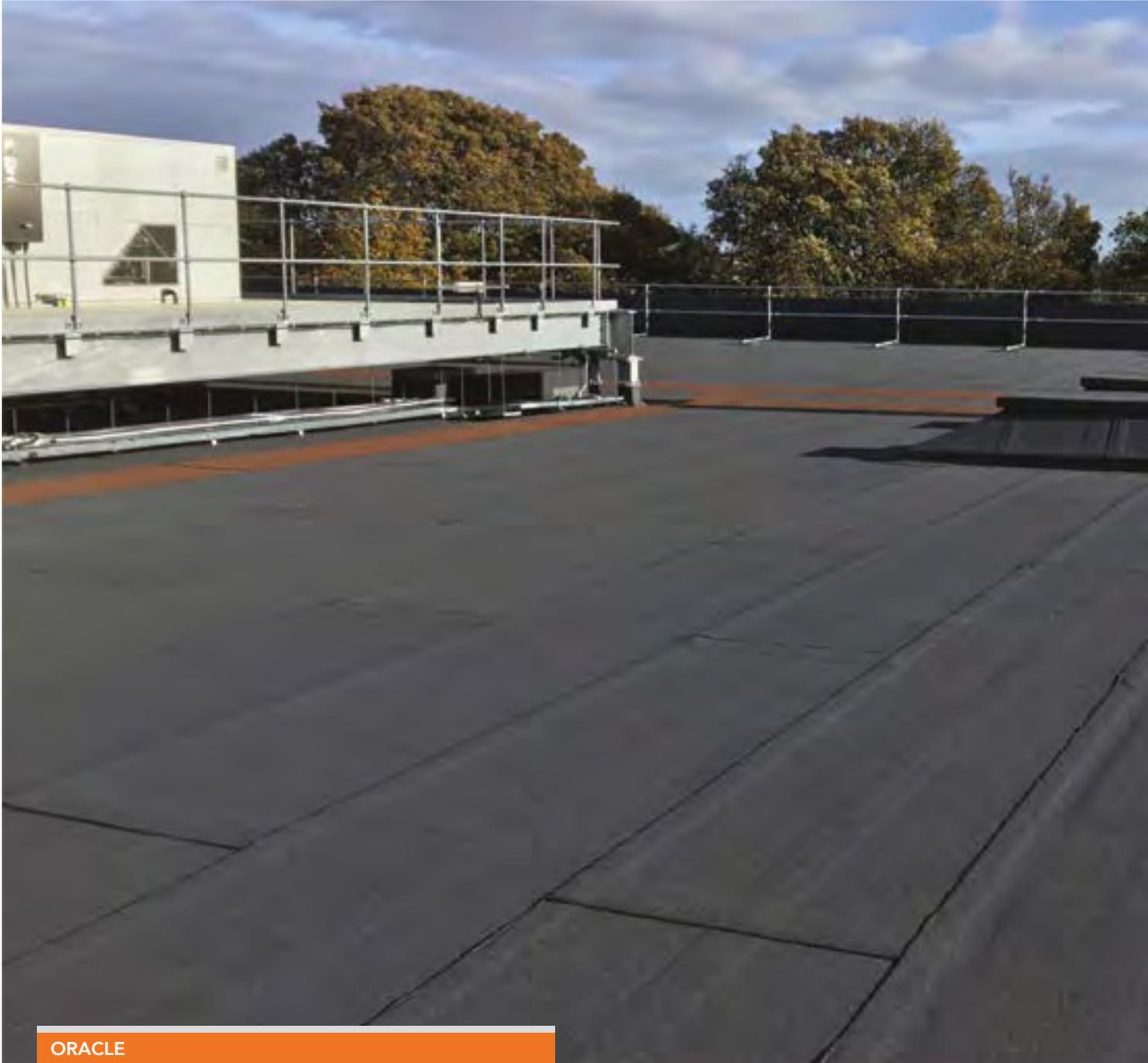
Dual-formulated bitumen membrane provides formidable durability even in the most demanding locations.



- 1: Refined slate granules embedded for a UV protective mineral finish
- 2: APP modified bitumen delivers weathering durability
- 3: 300g/m<sup>2</sup> composite glass-polyester reinforcement carrier
- 4: SBS modified bitumen maximises flexibility and cold bending properties
- 5: Thermofusible polyethylene film



# BAUDER TOTAL ROOF SYSTEM



## ORACLE

Location: **Linlithgow, Scotland**

The 9,100 sq m refurbishment roof on the offices in Scotland needed a solution that would last in excess of 35 years. The Bauder Total Roof System was selected for its BBA certified, durability and fire performance.



A first class bituminous system, in terms of both quality and technology. It is robust and durable enough to withstand foot traffic along with most permanently sited plant, and is specified in applications where outstanding longevity is required.

### When to Specify

It can be used in warm, inverted and cold roof designs on all normal deck constructions and can be used to overlay certain types of existing roof materials. Tapered insulation can be incorporated to provide falls if required.

### System Variations

Every roof has its own unique characteristics and BTRS offers a choice of products allowing it to be tailored to the specific needs of the project. There is a choice of innovative, heat-activated self-adhesive membranes for safety and speed, along with more traditional torch-applied membranes, which offer unrivalled waterproofing integrity. There is also a choice of insulation types and bonding methods.

All of these products are of the highest quality, and all feature their own unique attributes to ensure that the roof system on your building is the best solution, rather than a standard solution which has been made to fit.

### Bauder Total Green Roof System

The system incorporates an option to use a special cap sheet that has been tested by the FLL to ensure long-term root resistance. This stringent test is widely regarded as being the toughest trial currently available. Our Plant E cap sheet incorporates chemically impregnated bitumen suitable for all green roof applications.

### Key Features

- Heavy duty, robust and extremely tough.
- Service life in excess of 35 years as stated in BBA Certificate 10/4744.
- Utilises torch-free detailing on or adjacent to combustible construction materials.
- Capable of withstanding permanently sited loads of up to 2000Kg/m<sup>2</sup>.
- 5.2mm cap sheets with high tensile strength and choice of three colours.
- 250g/m<sup>2</sup> spunbond polyester reinforcement.
- Ability to withstand climatic extremes of 100°C variation and temperature shocks, such as at the edge of ice and water.
- DUO products incorporate patented technology to minimise the use of flame.
- Option of root resistant cap sheet for green roofs.
- Fire classification B<sub>ROOF</sub> (t4) and achieves 'low vulnerability' for Scotland. Verified by the BBA as 'unrestricted' and is therefore suitable for use on any part of a roof.
- Guaranteed system.

#### Specification Support



Specification downloads:  
[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)



Telephone helpline:  
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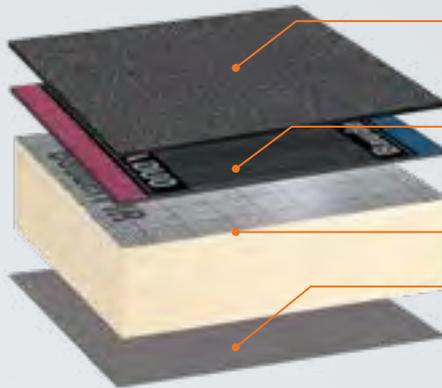
# BAUDER TOTAL ROOF SYSTEM

## Example System Configurations



### BTRS INCORPORATING SELF-ADHESIVE MEMBRANES

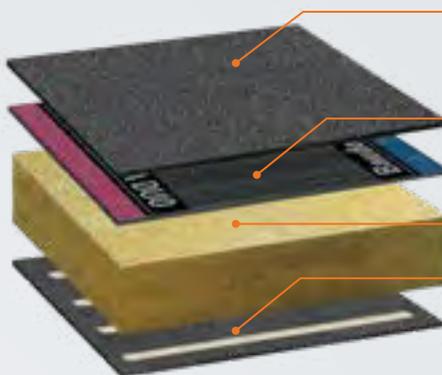
Innovative heat-activated self-adhesive membranes for safety and speed, along with traditional torch-applied cap sheet. There is a choice of insulation types.



- Bauder K5K**  
torch-applied, 5.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbond polyester.
- BauderTEC KSA DUO**  
3mm self-adhesive bitumen underlayer, for application to Bauder flatboard or tapered insulation (Bauder PIR, BauderROCK or BauderGLAS).
- BauderPIR FA-TE Insulation (shown)**  
rigid PIR flatboard with aluminium foil facings.
- BauderTEC KSD Mica Air and Vapour Control Layer**  
self-adhesive elastomeric bituminous membrane with a mica finish. Suitable for all deck types with Bauder Activator-Primer.

### BTRS

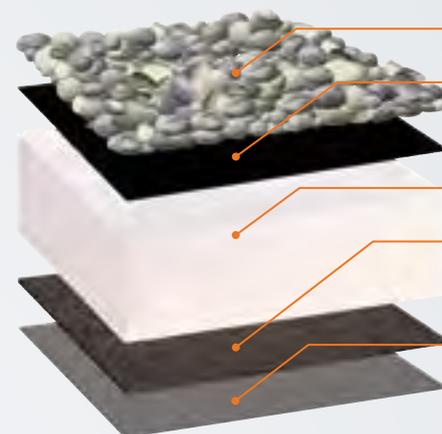
Traditional torch-applied membranes with a choice of insulation types.



- Bauder K5K**  
torch-applied, 5.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbond polyester.
- BauderTEC KSA DUO**  
3mm self-adhesive bitumen underlayer, for application to BauderPIR flatboard, BauderPIR FA-TE or BauderPIR Tapered Insulation.
- BauderROCK (shown)**  
rigid mineral fibre flatboard or tapered insulation.
- Bauder VB4 Expal Air and Vapour Control Layer**  
torch-applied, suitable for application to new concrete or screeded decks with Bauder Activator-Primer.

### BTRS INVERTED SYSTEM

Traditional torch-applied membranes with a choice of inverted insulation for use mainly on concrete decks.



- Ballast**  
such as pebbles or paving.
- BauderJFRI Vapour Permeable Membrane**  
designed to increase the thermal performance of the insulation and prevent fines from working their way beneath.
- BauderJFRI**  
inverted insulation to achieve required 'U' value.
- Bauder K5E**  
torch-applied, 5.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbond polyester.
- Bauder G4E**  
torch applied elastomeric bitumen underlayer suitable for concrete decks with Bauder Activator-Primer.

All configurations incorporate torch-free detailing on or adjacent to combustible construction materials.

#### Cap Sheet Colours



[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)

# PROJECTS



Andrew Ewing School  
Hounslow, London



ROM Limited  
Sheffield



Airedale Academy  
Castleford

# PROJECT STUDIES



**Oracle** **BAUDER TOTAL ROOF SYSTEM**



## ORACLE

"Having explored numerous factors including: local market presence and knowledge, ability to produce sufficient material quantities, turnover and financial standing, single-point guarantee, likely serviceable lifespan of the proposed roof system, technical assistance available (including design development), quality monitoring during installation and BBA Certification, we selected Bauder's Total Roof System for the project.

Throughout the process, the Bauder team were proactive, extremely knowledgeable and engaged; and assisted from conception to completion. The teams' expertise allowed us to deliver the project within budget and on programme. Support provided during the design and procurement stages was invaluable and included budgetary advice, preparation of standard and bespoke details, product sheets, specifications and input to programme in relation to material deliveries, order times and the likes.

Since completing this project, we have again engaged the Bauder team on two further sizeable flat roof replacement projects and have no hesitation in recommending their services and products to our clients and other consultants."

**Ged Gowans,**  
**Director of Thomas Gray Construction Consultants**

This refurbishment project needed a waterproofing solution that would last in excess of 35 years and an insulation upgrade that would meet current standards. Due to the tight timescale and its complexity, it was key that communication was maintained between all of those involved to ensure the project would be completed in time to a high standard.

Bauder and the client programmed in advance the disconnection of the plant to ensure any plant disconnected would not impact the business. Deadlines for re-connecting plant were set and this was monitored daily by the Marshall Construction site manager to ensure all deadlines were met. A strategy was put in place to ensure operatives installing the system within the 1,000m<sup>2</sup> of limited head room were not under undue pressure. This included rest breaks allowing the body to stretch and recover to avoid any straining injuries.

## BUILDING BOARD

Project:	<b>Oracle</b>
Location:	<b>Linlithgow, Scotland</b>
Roof Area:	<b>9,100m<sup>2</sup></b>
Client:	<b>Oracle Corporation UK Ltd</b>
Specifier:	<b>Thomson Gray Construction Consultants</b>
Approved Contractor:	<b>Marshall Construction Ltd</b>

## APPLIED PRODUCTS

- **Bauder Total Roof System**
- **PIR Insulation**



## Woolwich Polytechnic

BAUDER TOTAL  
ROOF SYSTEM

Woolwich Polytechnic is a secondary school for boys where the roof on the original main building was ageing, and in order to determine the extent of water ingress the school requested a moisture map roof survey. This specialist survey plots precisely the roof's condition confirming the suitability of the existing build up to receive a waterproofing membrane overlay and identifying areas that need the insulation to be replaced beforehand.

The technical diagnostic survey reported that the existing single ply insulated waterproofing system was saturated to levels between 25-40% on two of the different roof sections, whilst a third area only had isolated water damage. From the results, Bauder was able to recommend that only the upper roof system required stripping and with some minimal repair the original roof could be left in-situ and overlaid in the usual manner with an upgrade of insulation to comply with the current Part L building regulations.

The Bauder Total Roof System was specified to refurbish the school roof to give durability and a long-life expectancy. Approved contractor R T Roofing Services carried out the minor repairs before installing Bauder products to the 5,400m<sup>2</sup> roof areas.



### BUILDING BOARD

Project:	<b>Woolwich Polytechnic</b>
Location:	<b>Thamesmead, London</b>
Roof Area:	<b>5,400m<sup>2</sup></b>
Consultant:	<b>Barker Associates</b>
Approved Contractor:	<b>R T Roofing Services</b>

### APPLIED PRODUCTS

**1 Bauder K5K cap sheet**

Torch applied elastomeric bitumen cap sheet.

**2 BauderTEC KSA DUO underlayer**

Self-adhesive elastomeric bitumen underlayer.

**3 PIR FA-TE insulation**

Upgrading thermal performance with the addition of 80mm PIR insulation faced on both sides with aluminium foil

**4 VB4 Expal Air and Vapour Control Layer**

A 4mm thick, robust elastomeric bitumen AVCL.

# BAUDER TOTAL GREEN ROOF SYSTEM

## Example System Configurations

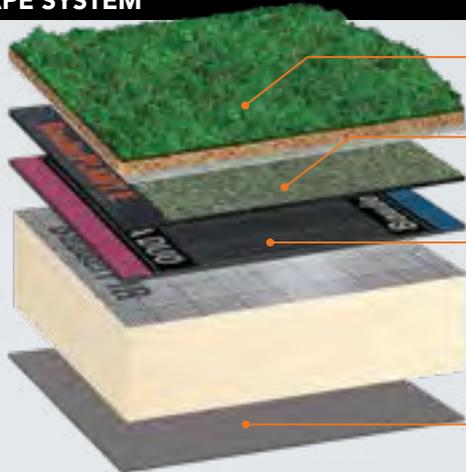
Plant-E root resistant cap sheet, which incorporates chemically treated elastomeric bitumen meets FLL requirements and complies with BS EN 13707:2004.



### EXTENSIVE ROOFSCAPE SYSTEM

The extensive finishes can include biodiverse planting and associated elements, sedum, herbs or native species planting.

The system is equally suited to either new build or refurbishment.



**Bauder Sedum System**

hardy pre-cultivated sedum plants for instant greening of a roof.

**Bauder Plant-E**

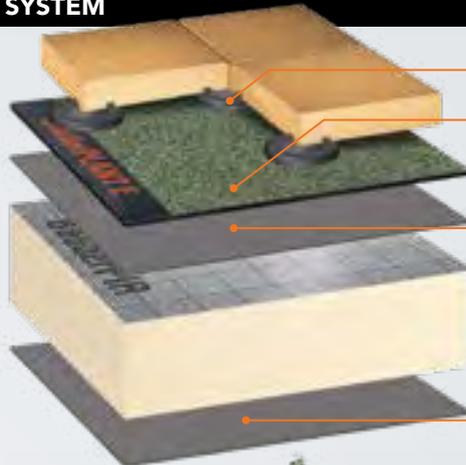
root resistant, 5.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> recycled spunbond polyester.

**Bauder Warm Roof Construction**

self-adhesive bitumen membranes, root resistant cap sheet and BauderPIR insulation.

### HARD LANDSCAPING SYSTEM

With decking or paving on pedestal support system for all types of terraces and balconies.



**Paving or Decking**

on pedestal support system.

**Bauder Plant-E**

root resistant, 5.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> recycled spunbond polyester.

**Bauder Warm Roof Construction**

torch-bonded bitumen membranes, root resistant cap sheet and BauderPIR insulation.

### INTENSIVE ROOFSCAPE

The intensive rooftops may incorporate forms of hard and soft landscaping found within recreational gardens, including lawns, plants, shrubs or trees, pathways, roadways and raised planters.



**Vegetation with Intensive Substrate**

lightweight growing medium to support the planting scheme.

**Filter Fleece**

prevents substrate fines from washing into the drainage layer.

**DSE 60**

water storage and drainage layer infilled with Bauder mineral drain.

**FSM 1100**

protection mat.

**PE Foil**

separation and slip layer.

**Bauder Plant-E**

root resistant, 5.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> recycled spunbond polyester.

**Bauder Warm Roof Construction**

torch-bonded bitumen membranes and BauderPIR insulation.

**Cap Sheet Colours**



# GREEN ROOF PROJECTS



Lagg Distillery  
Isle of Arran



James Terry Court  
South Croydon, London

# BAUDERFLEX SYSTEM



## HEXAGON TOWER

Location: **Manchester**

"Thank you for making this project as seamless as possible. Your continued support has reaffirmed my position that you are the 'go to guys' for flat roofing. A job well done."

**Tom Frankel, Director, IF Building Consultancy**

Photograph by: Matthew Nichol

This specialist science and technology facility located in North Manchester was experiencing water ingress and needed the insulation upgrading to increase thermal properties and improve the appearance of the rooftop. Bauderflex, was installed with 120mm PIR insulation on the 6000 square metre roof areas.



Bauderflex utilises the same technology as the Bauder Total Roof System, but offers an alternative to the specifier on a tighter budget. It is a highly rated reinforced bitumen membrane system with a choice of self-adhesive and torch-applied membranes that are resistant to high levels of structural and thermal movement. The SBS modified elastomeric membranes provide a robust, durable and highly adaptable solution that can withstand foot traffic and most permanently sited plant and equipment.

The system is estimated to have a life expectancy in excess of 30 years and is ideal for both new build and refurbishment flat roof projects.

### Key Features

- 4.2mm thick, torch bonded SBS elastomeric bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbound polyester giving a tensile strength (EN 12311-1) of 800N/50mm to prevent tears and punctures.
- BBA certified life expectancy in excess of 30 years.
- Utilises torch-free detailing on or adjacent to combustible construction materials.
- Stable in extreme weather conditions for temperatures ranging from -30°C to +110°C when tested to the following European Standards; cold bending test (EN 1109) and heat stability test (EN 1110).
- BBA Certification 10/4744.
- Fire classification B<sub>ROOF</sub>(t4) and verified by the BBA as 'unrestricted' and suitable for use on any part of a roof.
- Guaranteed system.

#### Specification Support



Specification downloads:  
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Telephone helpline:  
0845 271 8800



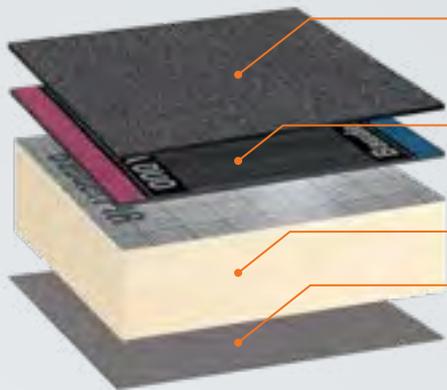
# BAUDERFLEX SYSTEM

## Example System Configurations



### BAUDERFLEX INCORPORATING SELF-ADHESIVE MEMBRANES

Innovative heat-activated self-adhesive membranes for safety and speed, along with traditional torch-applied cap sheet for unrivalled waterproofing integrity. There is also a choice of insulation types.



**Bauder K4E**

torch-applied, 4.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbond polyester.

**BauderTEC SPRINT DUO**

2mm self-adhesive SBS modified bitumen underlayer with a glass lattice reinforcement, incorporating the patented 'DUO' lap technology.

**BauderPIR FA-TE Insulation**

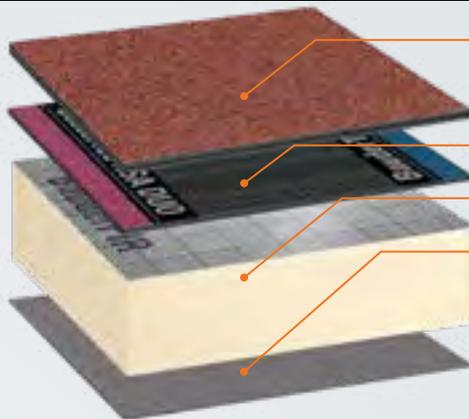
rigid PIR flatboard with aluminium foil facings.

**BauderTEC KSD Mica Air and Vapour Control Layer**

self-adhesive elastomeric bituminous membrane with a mica finish. Suitable for deck types with Bauder Activator-Primer.

### BAUDERFLEX WITH TORCH-APPLIED MEMBRANES

Traditional torch-bonded membranes with a choice of insulation types.



**Bauder K4E**

torch-applied, 4.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbond polyester.

**Bauder EGV3.5**

3.5mm torch-applied SBS modified bitumen underlayer.

**BauderPIR Insulation**

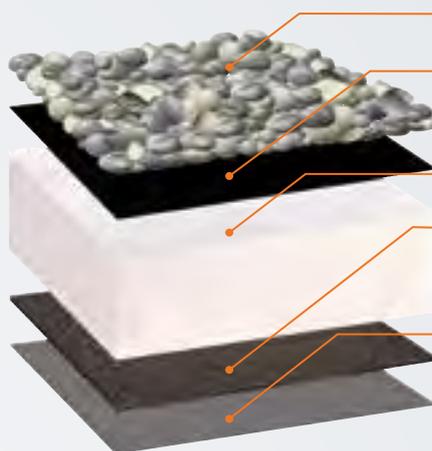
rigid PIR flatboard with glass tissue facings.

**BauderTEC KSD Mica Air and Vapour Control Layer**

self-adhesive elastomeric bituminous membrane with a mica finish. Suitable for deck types with Bauder Activator-Primer.

### BAUDERFLEX INVERTED SYSTEM TORCH-APPLIED MEMBRANES

Traditional torch-applied membranes with a choice of inverted insulation types for use mainly on concrete decks.



**Ballast**

such as pebbles or paving.

**BauderJFRI Vapour Permeable Membrane**

designed to increase the thermal performance of the insulation whilst preventing fines from working their way beneath.

**BauderJFRI**

inverted insulation to achieve required 'U' value.

**Bauder K4E**

torch-applied, 4.2mm thick, SBS modified bitumen cap sheet reinforced with 250g/m<sup>2</sup> spunbond polyester.

**Bauder EGV3.5**

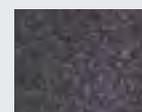
3.5mm torch-applied SBS modified bitumen underlayer suitable for concrete decks with Bauder Activator-Primer.

All configurations incorporate torch-free detailing on or adjacent to combustible construction materials.

#### Cap Sheet Colours



Grey Slate



Charcoal Grey



Brown



AP2 root barrier for green roofs



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# PROJECTS



Ormiston Forge Academy  
Cradley Heath, West Midlands



Clarence Lane Estate  
London



Hotter Shoes  
Skelmersdale, Lancashire

# SYSTEM AIRTECH

System Airtech has been specifically developed to meet the demands for improved safety in the installation of bituminous roof systems. Superior self-adhesive membrane technology, and hot air welding combine to eliminate the inherent dangers of naked flame and hot bitumen.

Airtech is safer to install, and quieter than traditional pour and roll or torch-applied bituminous systems.

The system has an estimated life expectancy in excess of 30 years and is ideal for both new build and refurbishment flat roof projects.

## Key Features and Benefits

- 4mm thick, self-adhesive elastomeric bitumen cap sheet with hot air welding at the laps for a flame-free solution.
- Completely torch-free system.
- Able to withstand climatic extremes and temperature differences at the edges of ice and water; stable in extreme weather conditions for temperatures ranging from -30°C to +100°C when tested to the following European Standards; Cold bending test (EN 1109) and heat stability test (EN 1110).
- The system is resilient, tough, long lasting and is easily capable of withstanding foot traffic or permanent loads of up to 2000Kg/m<sup>2</sup>.
- Fire classification B<sub>ROOF</sub>(t4) 'unrestricted' and suitable for use on any part of a roof.
- Guaranteed system.

The system can be used in both warm roof and cold roof design on most types of decking materials and also as an overlay on certain types of existing roofing materials.

The patented DUO membrane laps on the underlayer are heat sealed with hot air welding equipment, extruding a bitumen bead to provide a completely watertight layer across the whole roof.



## Specification Support



Specification downloads:  
[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)

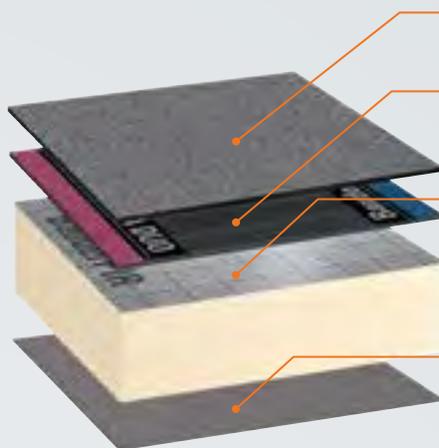


Telephone helpline:  
0845 271 8800



## System Configuration

### SYSTEM AIRTECH WARM ROOF



**BauderTEC KSO-P SN Cap Sheet**

self-adhesive elastomeric bituminous membrane with laps sealed using hot air welding equipment.

**BauderTEC KSA DUO Underlayer**

self-adhesive elastomeric bituminous membrane with glass lattice reinforcement that incorporates our patented 'DUO' lap technology.

**BauderPIR FA-TE Insulation**

extremely thermally efficient, lightweight, fire resistant and zero ODP rated. The insulation is foil faced on both sides.

**BauderPIR Tapered Insulation** can be used beneath a layer of PIR FA-TE to provide improved drainage falls. Bonded to the air and vapour control layer using Bauder Insulation Adhesive.

**BauderTEC KSD Mica Air and Vapour Control Layer**

self-adhesive elastomeric bituminous membrane with a mica finish. Suitable for deck types with Bauder Activator-Primer.

#### Cap Sheet Colours



Grey Slate  
KSO SN



Brown  
KSO SN



Charcoal Grey  
KSO-P SN



[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)

## System Installation

The laps are sealed using a hot air welding machine to create a secure and watertight joint.



Fairstead Community Primary School  
King's Lynn



# PRO F SYSTEM

Our PRO F system is a single layer waterproofing solution designed to be torch-applied or mechanically fixed over Bauder PIR insulation and is suitable for new build and refurbishment applications.

The system offers a real alternative to traditional single ply membranes or other bitumen single layer systems which often require the use of adhesive for attachment of the membrane.

Bauder PRO F is a high quality, heavy duty, elastomeric bitumen membrane. The product features a spunbond polyester reinforcement that allows the finished membrane to cope with structural movement without fracture, and a mineral finish to provide protection against UV degradation.

## Key Features and Benefits

- 5.2mm single layer durable bitumen membrane system.
- Life expectancy of 30 years.
- Utilises Torch-free detailing on or adjacent to combustible construction materials.
- Installed over Bauder PIR insulation.
- 250g/m<sup>2</sup> spunbond polyester reinforcement.
- Suitable for new build and refurbishment applications on flat roofs with a minimum fall of 1:60.
- Mechanically fastened or partially bonded cap sheet.
- The membrane laps can be welded together by using hot air or gas torch.
- Fire classification BROOF (t4) 'unrestricted' and suitable for use on any part of a roof.
- Guaranteed system.



### Specification Support



Specification downloads:  
[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)



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**Safe2  
Torch**  
REGISTERED



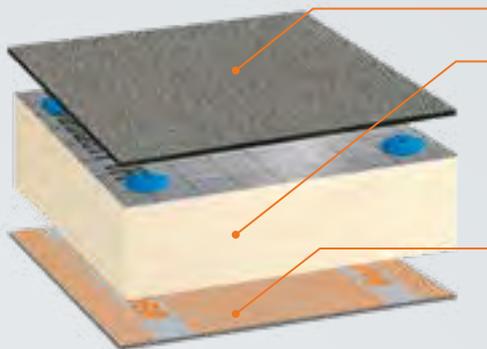
**NFRC**  
LEADING ROOFING EXCELLENCE



## Example System Configurations

### MECHANICALLY FIXED

Attachment of the system uses high performance mechanical fasteners and extending tube, or washer plate combinations.



#### Bauder PRO F

5.2mm heavy duty elastomeric bitumen cap sheet.

#### BauderPIR FA-TE Insulation

extremely thermally efficient, lightweight, fire resistant and zero ODP rated. The insulation is foil faced on both sides.

**BauderPIR Tapered Insulation** can be used beneath a layer of PIR FA-TE to provide improved drainage falls.

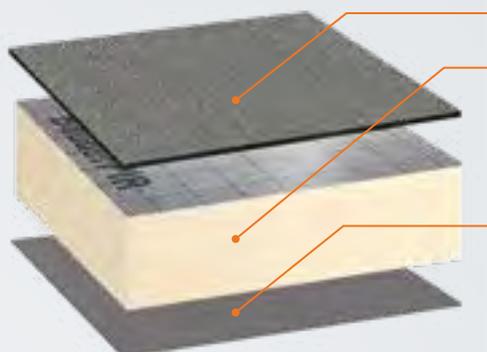
Bonded to the air and vapour control layer using Bauder insulation adhesive.

#### BauderTEC DBR

self-adhesive elastomeric bitumen air and vapour control layer for use on all deck types with Bauder Activator-Primer.

### TORCH-BONDED

The capping sheet is bonded with a gas torch.



#### Bauder PRO F

5.2mm heavy duty elastomeric bitumen cap sheet.

#### BauderPIR Flatboard Insulation

highly thermally efficient, lightweight, fire resistant and zero ODP rated. The insulation has mineralised glass fibre facings on both sides. As an alternative, **BauderPIR Tapered Insulation** can be used to provide improved drainage falls.

#### BauderTEC KSD Mica

self-adhesive elastomeric bituminous air and vapour control layer with a mica finish. Suitable for deck types with Bauder Activator-Primer.

All configurations incorporate torch-free detailing on or adjacent to combustible construction materials.

Colour



Grey Slate  
PRO F Cap Sheet

**Safe2  
Torch**  
REGISTERED



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# BAUDERTHERM 'STRIPES' SL500

When a roof covering is reaching the end of its serviceable life, but is still essentially waterproof, overlaying the existing system is a sensible way of considerably enhancing the life expectancy of the roof by at least 15 years; providing that the thermal properties of the roof are satisfactory.

BauderTHERM 'Stripes' can be used over existing asphalt or reinforced bitumen membrane systems; roofs with a traditional chipping finish may also be suitable if the existing finish can either be adequately removed by a suitable mechanical scarifying machine, or overlaid with a recovery board. Refurbishment of roofs containing insulation are also suitable, providing they do not suffer from moisture contamination or degradation problems.

It is possible to overlay existing waterproofing where a small amount of entrapped moisture is present, as the stripes finish to the underside of the SL500 cap sheet allows any vapour pressure to dissipate in a controlled fashion, reducing the possibility of surface blistering after installation.

## Key Features

- 5.2mm thick, torch bonded elastomeric bitumen membrane.
- 250g/m<sup>2</sup> spunbond polyester reinforcement to give a tensile strength of 1000N/50mm.
- Life expectancy of around 20 years.
- Utilises Torch-free detailing on or adjacent to combustible construction materials.
- Stable in extreme weather conditions for temperatures ranging from -30°C to +105°C when tested to the following European Standards; cold bending test (EN 1109) and heat stability test (EN 1110).
- Guaranteed system.

BauderTHERM 'Stripes' consists of a single layer membrane with two layers provided at all upstands and details to provide extra reinforcement at these more vulnerable areas and a longer life expectancy for the roof.



## Specification Support



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The underside of the Bauder SL500 membrane features a highly adhesive thermally activated SBS elastomeric bitumen resin, set in a 'stripes' bonding pattern at pre-determined intervals across the membrane surface.

This unique bonding pattern ensures an accurate 50% bond to the existing waterproofing beneath. The area between the stripes is coated with a special mica finish that remains unbonded, allowing room for any future expansion of moisture vapour that may be present in the overlaid system. This technology helps to reduce the likelihood of interlayer blistering after installation, which is commonly associated with traditional overlays.

## System Configuration

### TORCH-BONDED

The Bauder SL500 membrane is torch-applied to the existing waterproofing with a 50% bond to allow for any future expansion of moisture vapour that may be present in the overlaid system.

Utilises Torch-free detailing on or adjacent to combustible construction materials.



#### BauderTHERM SL500

5.2mm thick heavy duty elastomeric bitumen overlay refurbishment membrane, installed over the current waterproofing with Bauder Quick Dry Primer or Bauder Multi-Purpose Primer.

#### Existing Roof System

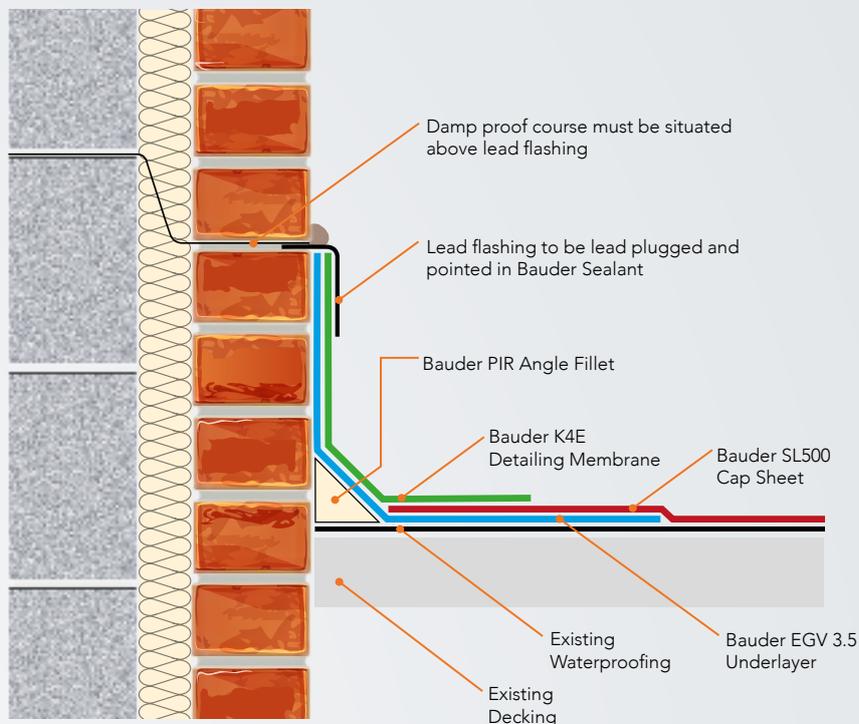
e.g. Asphalt.



## Installation Configuration

All roof details are installed with Bauder K4E Detailing Membrane and EGV 3.5 Underlayer for robust interfacing.

**Note:**  
Torch-free detailing on or near combustible materials.



# TORCH-FREE DETAILING FOR ALL

## Safe Installation of Bitumen Membrane Systems

In order to reduce risk when installing torch-applied systems, consideration must be given to avoiding the use of a gas-torch in the vicinity of combustible materials.

Our torch-free detailing is integral within all Bauder bituminous waterproofing solutions, and is designed specifically to deliver secure and safe application where necessary.

A completely torch-free installation option for an entire roof is delivered through our Airtech system. See page 70.

The foundation for our torch-free detailing is the group of hot air welded, self-adhesive, SBS modified bitumen membranes for the air and vapour control layers, underlayers and cap sheets. These membranes and their application techniques conform to the recommendations given in the 'Safe2Torch' guidance published July 2017 by the National Federation of Roofing Contractors (NFRC).

Bauder was the first flat roof waterproofing manufacturer to promote and pledge support to the NFRC's Safe2Torch campaign, recognising our role as an industry leading supplier to endorse safety best practice through our products and to promote to our approved contractors the safest installation methods possible in every flat roof project we are involved in.



# BITUMEN MEMBRANE SYSTEMS

## Industry Best Practice

The key to industry best practice for the application of bituminous membranes is the responsible identification of combustible construction materials on the roof and specifying the correct combination of detailing and field area membranes. In addition specific installation methods need to follow the BS 8217:2005 code of practice and NFRC guidelines.

Principally, this installation best practice will impact on refurbishment roof projects, though responsibilities also reside with all parties involved in the design and construction of a new build project under the Construction Design and Management (CDM) Regulation 2015 to ensure that hazardous details are fully considered or designed out. In some instances, this could impact on sequencing of construction works to ensure that the roof materials are installed prior to other combustible elements being constructed.

## Torch-Free Roof Zones

The roof areas which have details formed with, or are adjacent to, combustible construction materials require an exclusion zone to be identified in a minimum 900mm radius from the material. This sanction demands specific membranes, particular design, and accurate torch-free installation techniques.

Our torch-free detailing design utilises our self-adhesive membranes for all three built-up waterproofing layers comprising the air and vapour control layer, underlayer and cap sheet. All laps for these membranes are sealed using hot air welding.

In a warm roof construction, the insulation is bonded to the air and vapour control layer with Bauder PU Insulation Adhesive.

A completely torch-free installation option is available for an entire roof project with our Bauder Airtech System incorporating the KSO SN cap sheet in natural slate or brown or KSO-P SN in charcoal grey.

## Safe to Torch Roof Zones

In certain situations, it is perfectly safe to use torch-bonded bitumen membranes and roof areas involving non-combustible materials.

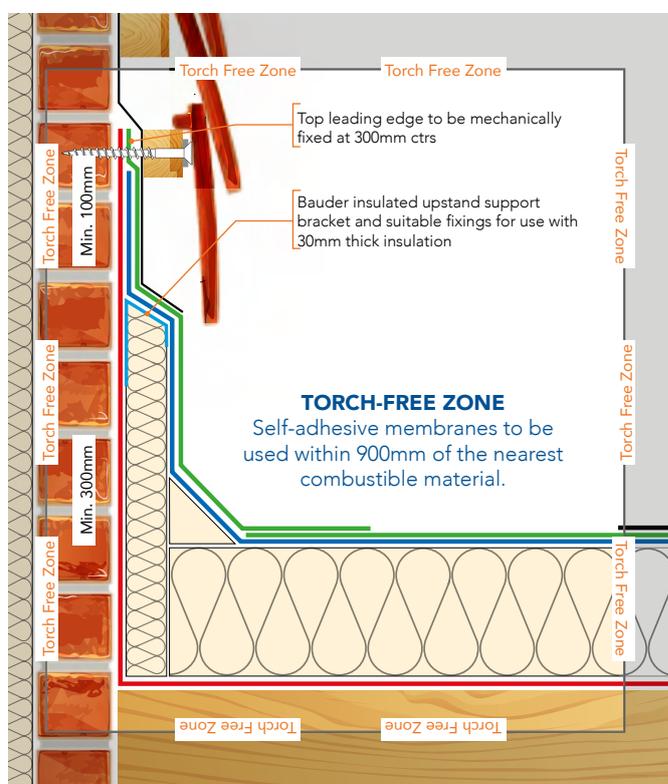
There are two options for safe to torch application and these are dependent on the specific detail and the construction materials used:

1. The roof area does not have any combustible materials within its construction and is safe to accept torch-applied membranes, such as a concrete deck.

or

2. Full encapsulation of the exposed combustible detail with self-adhesive underlayer, installed using hot air welding so that the detail is now risk-free and a torch-bonded cap sheet is subsequently safe to install.

**Be safe, make safe, is safe**



## Specification Support



Specification downloads:  
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**Safe2  
Torch**  
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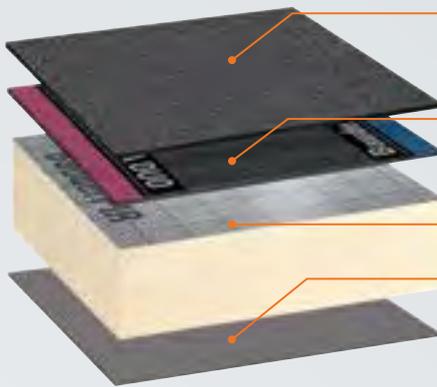
**NFRC**  
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# TORCH-FREE DETAILING

## System Configuration

### TORCH-FREE DETAILING WITH SELF-ADHESIVE MEMBRANES

Innovative self-adhesive membranes for safety first installation using hot air welding to seal the laps. There is a choice of insulation types.



**Bauder KSO SN or KSO-P SN**

hot air welded, 4mm thick, SBS modified bitumen detailing cap sheet.

**BauderTEC KSA DUO**

3mm self-adhesive bitumen underlayer, for application to BauderPIR flatboard, BauderPIR FA-TE or BauderPIR Tapered Insulation.

**BauderPIR FA-TE Insulation**

rigid PIR flatboard with aluminium foil facings.

**Bauder KSD Mica Air and Vapour Control Layer**

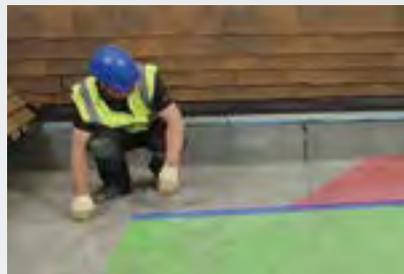
self-adhesive membrane reinforced with polyester coated aluminium foil and 60g/m<sup>2</sup> glass fleece.

## System Installation

Release film removed from the self-adhesive air and vapour control layer for installation on the primed combustible deck.



The torch-free zone is marked out around all combustible detailing.



Hot air welding the underlayer within the torch-free zone.



Cap sheet detailing membrane hot air welded within the torch-free zone.



### Cap Sheet Colours

KSO SN



Grey Slate

KSO-P SN



Charcoal Grey

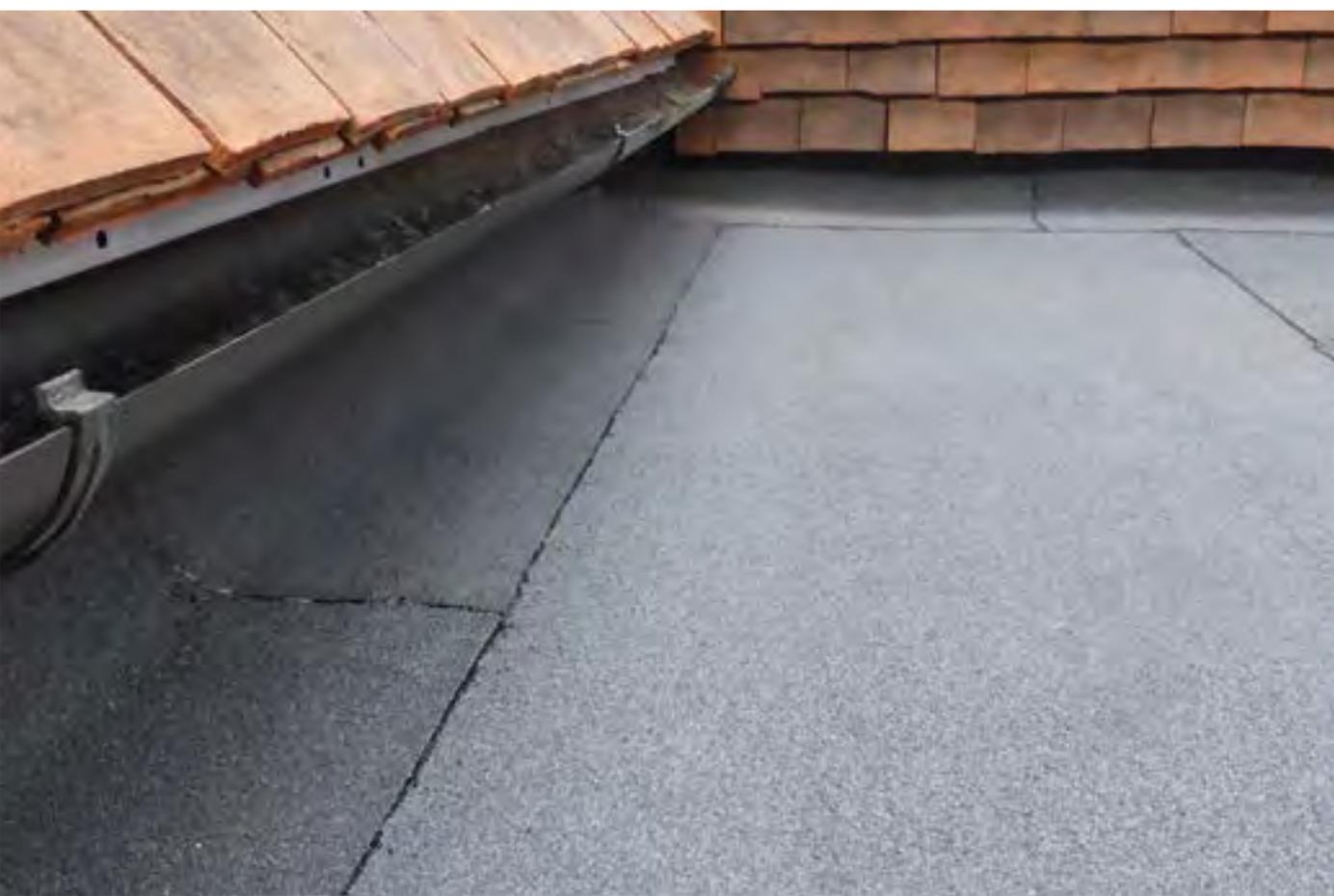


Brown



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# EXAMPLES OF TORCH-FREE DETAILS





Paxman  
ACADEMY

# TECHNICAL DESIGN

## Reinforced Bitumen Membrane Systems



[www.bauder.co.uk/technical-centre](http://www.bauder.co.uk/technical-centre)

■ Application	<b>82</b>
■ Detailing	<b>83</b>
■ CAD Details	<b>84</b>

# SYSTEM APPLICATION

## MEMBRANE APPLICATION

### Bitumen Membrane Primers

Following suitable preparation of the substrate, the first stage of any Bauder reinforced bitumen membrane system is the application of a suitable primer. This will ensure a satisfactory bond of the first layer to provide resistance against wind uplift throughout the system's lifespan. Three Bauder primers are currently available.

### Bauder Activator-Primer

Our latest development is a spray-applied activator-primer which is suitable for the preparation of substrates prior to the installation of both torch-bonded and self-adhesive bitumen membranes. It can also be used as an activator to improve the bond between a self-adhesive cap sheet and underlayer, particularly in colder temperatures.



### Bauder Quick Dry Primer

This roller applied product is designed for use beneath torch-bonded membranes and helps to seal the substrate and improve adhesion.

### Self-Adhesive Membranes

These membranes are always specified when combustible substrates are involved, and can be installed simply by removing the peel off release film.

### Torch Bonded Membranes

The method of torch bonding bituminous membranes is widely used throughout the industry and provides a reliable method for securing a watertight installation across the roof. Only suitable in the presence of non-combustible substrates/materials.

### 'DUO' Lap Bonding

The self-adhesive 'DUO' products require the laps to be heat sealed red over blue to extrude a bitumen bead – the sign of a homogenous bond.

## INSULATION APPLICATION

Three types of insulation adhesive are available in the Bauder product range.

### Bauder Polymer Adhesive

The Bauder Foil Contact Adhesive (Canister) is a synthetic rubber resin-based product that has been specifically developed to provide the necessary preparation of foil substrates prior to the installation of foil faced insulation or suitable membranes. The spray application significantly improves the speed of application and it dries in a matter of minutes, meaning installation of foil faced products can take place much quicker and more easily.



Our foaming polyurethane adhesive is available in a tin for pouring on to the air and vapour control layer in strips so that each insulation board is adhered to ensure effective resistance to wind uplift.

### Bauder Polyurethane Adhesives

The most versatile product is a twin-cartridge chemically curing polyurethane adhesive for all insulation bonding applications, especially for use on vertical surfaces due to its initial grab characteristics. It is suitable for bonding aluminium faced insulation boards together.



# DETAILING

## General Detailing

At all perimeters and details the air and vapour control layer is taken up the detail to lap with the underlayer by a minimum 100mm. This applies to all Bauder RBM systems, and is important to give security to the system during high winds. This practice also ensures that any water ingress at details will not contaminate the insulation as it is totally encapsulated. Our detail drawings are available to download from our website [bauder.co.uk/technical-centre](http://bauder.co.uk/technical-centre)

## Protection at System Termination

Protection must be provided at all vulnerable edges of the system to prevent water ingress behind. This may be a metal coverflashing or a cladding system in the case of an upstand to a wall, or a welded collar around a plant support leg. Bauder will provide a range of standard drawings showing preferred solutions to common problems on request.



## Angle Fillets

At all 90° internal bends, at horizontal / vertical interfaces, Bauder angle fillets are provided above the insulation in order to soften the angle and make it easier to seal where the membrane laps occur at the interface. In a cold roof design, fillets should be used prior to installing the waterproofing membranes.

## Separate Flashings

The cap sheet should never be taken across the roof and up a detail in one piece as the polyester within the cap sheet may shrink over time causing ripples and de-bonding of the membrane. All Bauder details show separate cap sheet flashings to counteract this.



## Welded Drips

This traditional method of terminating the membranes at the roof edge, whether at a kerb or external gutter, remains a favourite. The method of creating a welded drip is detailed in Codes of Practice BS8217 and shown on many Bauder detail drawings.



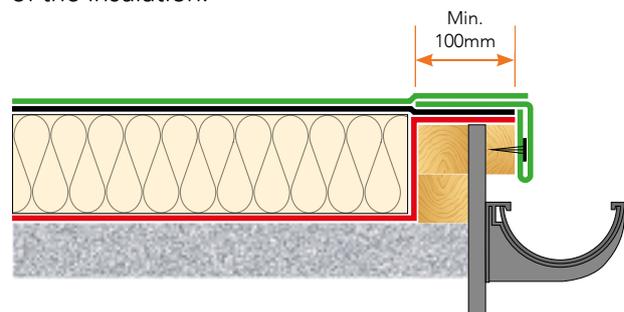
## GRP Edge Trims

A more aesthetically pleasing alternative to a welded drip at the edge kerb is a GRP trim. We can supply these in black as standard. We advise against the use of metal trims (particularly aluminium) as these have been a common cause of problems in past years - their high rate of expansion and contraction causing splits to traditional felt membranes and asphalt on the top of the kerb directly above trim joints.



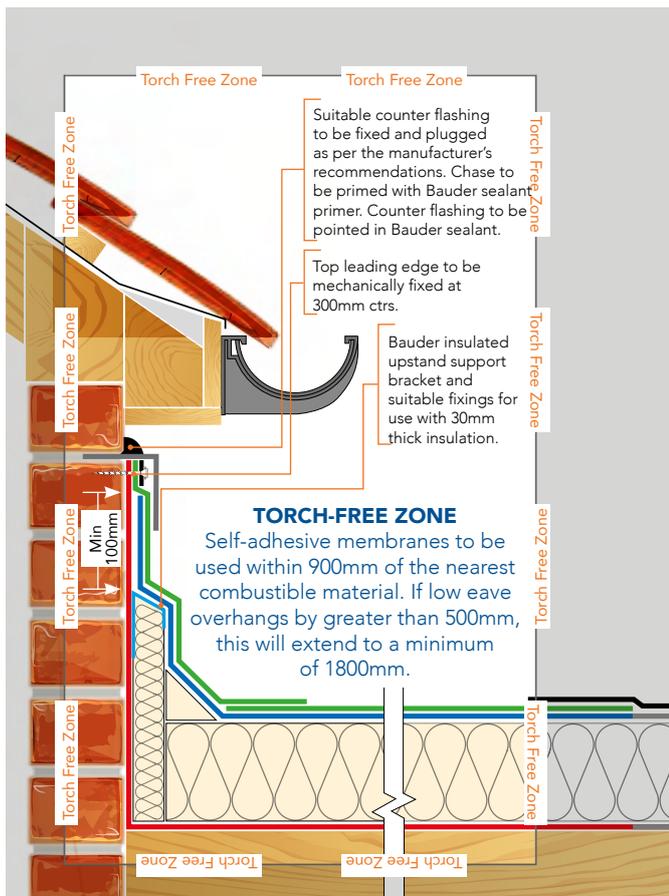
## Timber Protection Plates

These are to be provided against the exposed edges of insulation to prevent mechanical damage (gutter edges, drip edges etc.). The use of a batten or timber plate will depend upon the actual situation. A 100mm timber plate should be used where water drains off or over the detail and the thickness of the waterproofing build-up must be accommodated to avoid the creation of a water check. The plate must be at least 15mm less than the thickness of the insulation.



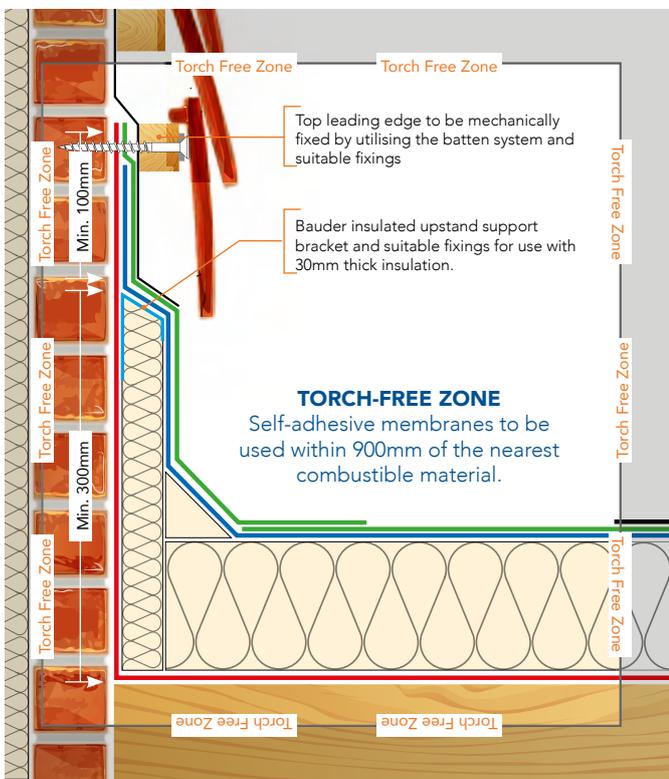
⌵ All CAD details can be downloaded from our website [bauder.co.uk/technical-centre](http://bauder.co.uk/technical-centre)

# TORCH-FREE DETAILS



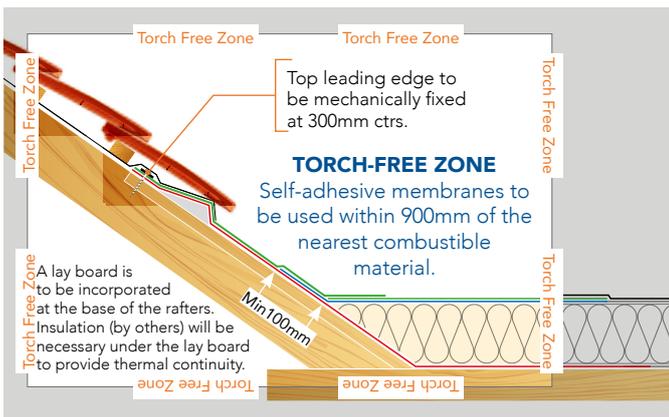
## Insulated Upstand to Existing Low Eaves

Some details of this nature have a very large overhang, in which case it will be necessary to increase the amount of torch-free products accordingly to enable the torch-free zone to be maintained.



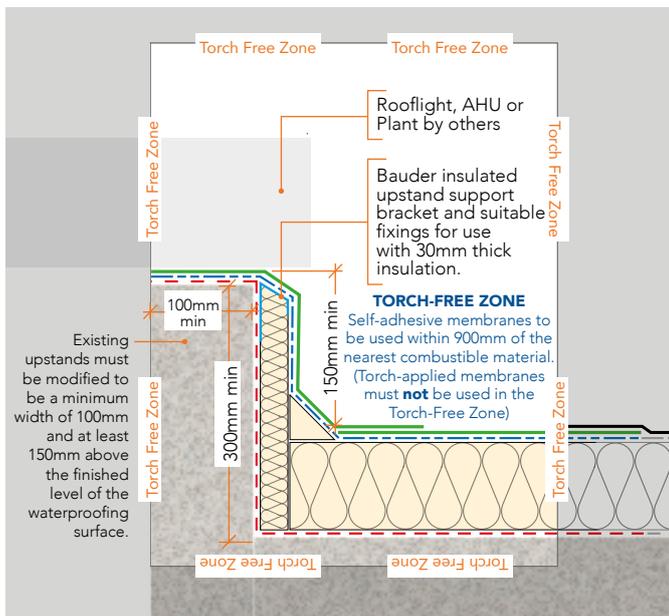
## Insulated Upstand to Vertical Tiles

This detail will always require torch-free application due to the potential presence of combustible products behind the vertical tiles. The top leading edge of the waterproofing upstand will need to be mechanically fixed at 300mm centres, by utilising the batten system fixings or a separate fixing bar.



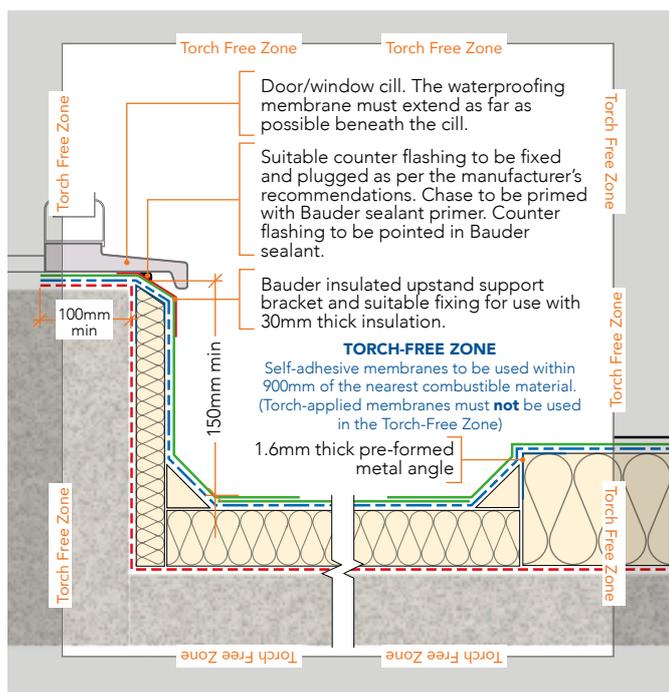
### Upstand to Pitched Roof

This detail will always require torch-free application due to the potential presence of combustible products beneath the tiles. The bottom rows of tiles must be removed and the underslating pinned back as necessary to allow the roof membranes to be taken to a minimum upstand height of 150mm using torch-free installation methods.



### Insulated Upstand to Builder's Kerb

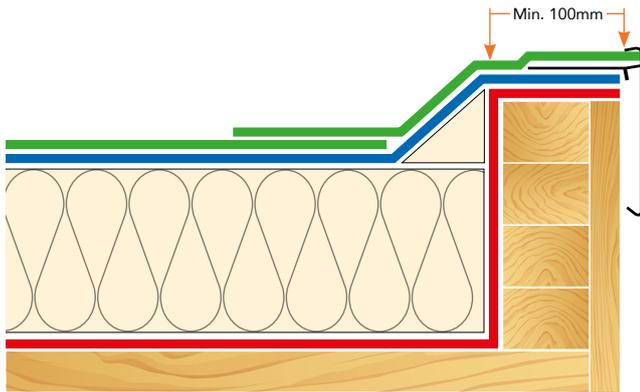
This detail will always require torch-free application due to the potential presence of combustible products within the unit above the waterproofing. The top leading edge of the waterproofing upstand will need to be mechanically fixed at 300mm centres using appropriate fasteners, and suitable termination bar if required.



### Internal Gutter Clerestory Window

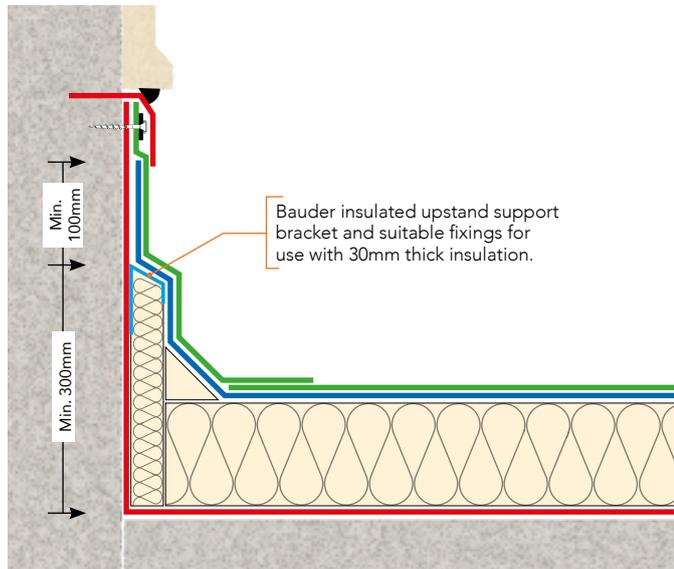
This detail will always require torch-free application due to the potential presence of combustible products behind the cill and also the cill itself. The top leading edge of the waterproofing upstand will need to be mechanically fixed at 30mm centre using appropriate fasteners, and suitable termination bar if required.

# SAFE TO TORCH DETAILS



## Perimeter Kerb

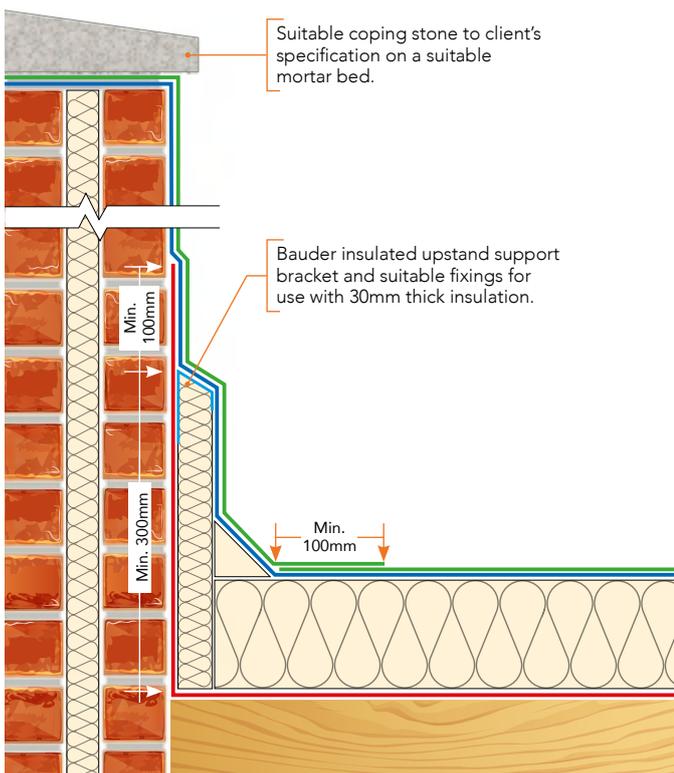
Providing a self-adhesive air and vapour control layer and self-adhesive underlayer are used there is no need for a minimum 900mm torch-free zone on perimeter details of this type.



## Insulated Upstand

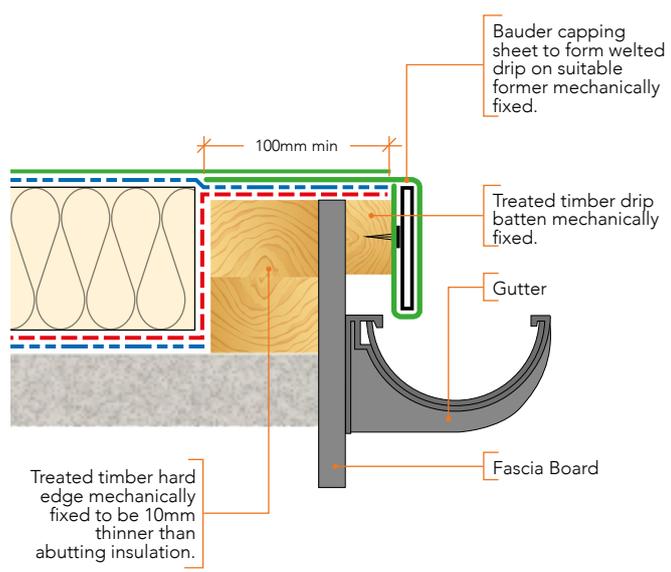
Upstands to brickwork can be treated as torch-safe, unless cavity weepholes are present, in which case they should be treated as torch-free.

Suitable counter flashing to be fixed and plugged as per the manufacturer's recommendations. Chase to be primed with Bauder sealant primer. Counter flashing to be pointed in Bauder sealant.



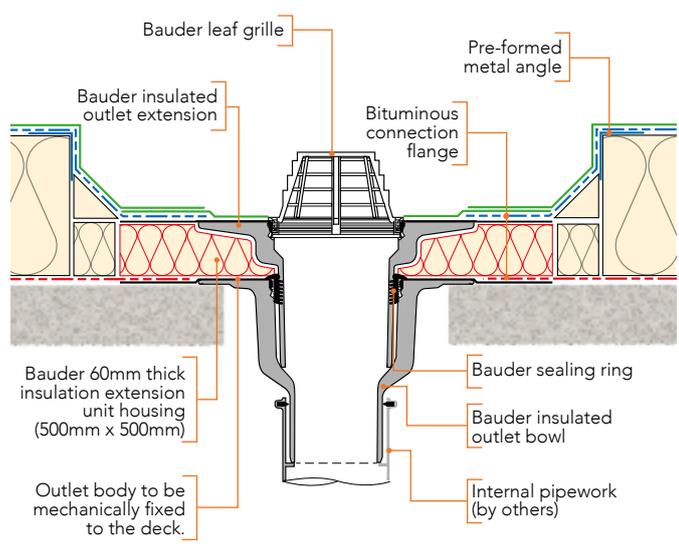
## Insulated Parapet

Self-adhesive air and vapour control layer and self-adhesive underlayer can be used to cover all combustible substrates making the detail torch-safe for subsequent application of the capping sheet.



### External Gutter

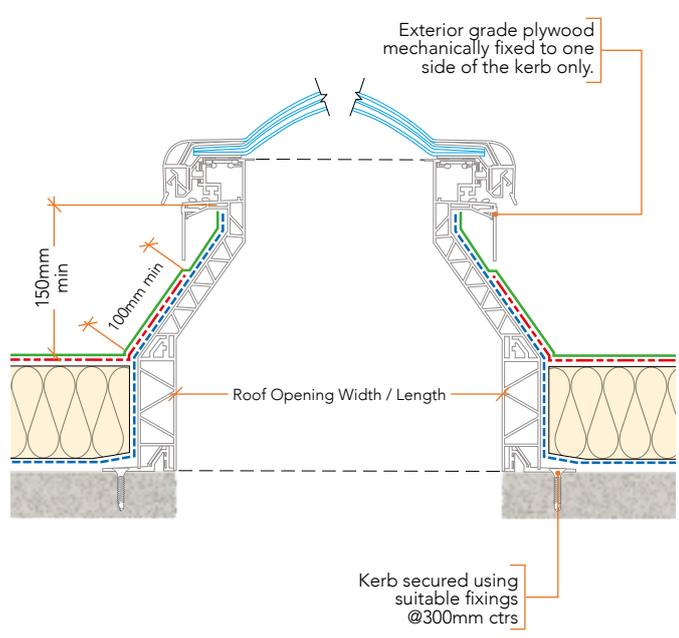
This detail can be torch-free or torch-safe depending on location. For torch-free detailing, a self-adhesive capping sheet must be used. For torch-free detailing, a self-adhesive underlayer must be used to encapsulate the timber, and a suitable former (pre-primed) must be incorporated.



### Outlet - Compact

This detail using our insulated outlet helps maintain thermal continuity of drainage points. The BRE Certified high thermal value of the rigid foam body prevents condensation from forming on the underside of the outlet body.

One of the benefits of using a two part outlet is that the first section, the outlet bowl can be installed to the deck, allowing the air and vapour control layer to be installed and the internal pipe work connected. This provides waterproof integrity and allows internal work to commence.



### Upstand to Bauder Rooflight - Euroglaze

This rooflight detail ensures waterproofing integrity is maintained with the incorporation of a UPVC weather flange. Bauder rooflights are designed to be fully compatible with our roof waterproofing systems.



MK Gallery  
Milton Keynes