

Reinforced Bitumen Membrane Systems Installation Guide



Bauder Reinforced Bitumen Membrane (RBM) Systems Installation Guide

This guide describes the correct installation of the Bauder RBM waterproofing systems for flat roofs.

Prerequisites

1. This guide must be read in conjunction with the Bauder specification to confirm the products used, installation method, and project tapered insulation scheme layout where appropriate.

Understanding of Section 1 is mandatory.

2. Operatives carrying out installation of bitumen membranes **MUST** be 'Bauder certified' for bituminous systems.

3. Workmanship **MUST** comply with Bauder Ltd installation guidance.

Conditions

The Bauder guarantee may not be issued if:

1. There is no safe access to inspect the roof area(s).

2. The waterproofing fails to meet final inspection standards.

3. Any specified component is substituted for an equivalent without the written authority of Bauder Ltd.

The information within this guide observes the standards and guidelines from BS 6229 and BS 8217, and is correct at the time of publication; however, confirmation should be sought from the correct authority if using the quoted standards in this document.

Technical support

If you require support or advice on the Bauder RBM Systems or products within the specification, please contact:

■ Richard Clennell	Product Manager RBM & Insulation	+44 (0)7824 539684
■ Technical Department		+44 (0)1473 257671 technical@bauder.co.uk



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1 Principles

1.1 Systems overview

Bauder's reinforced bitumen membranes are reinforced with either polyester or glass, or both, and are manufactured from modified bitumen to give high tensile strength, flexibility, and long-term durability. Some systems accommodate options for underlayers and air and vapour control layers (AVCL). All systems are available with a choice of Bauder insulations.

BTRS PLUS

Cap sheet: BauderKARAT, BauderSMARAGD (root resistant cap sheet)
Underlayer: BauderTEC KSA DUO 35
AVCL: BauderTEC KSD FBS, BauderTHERM DS 1 DUO or Bauder Super AL-E

BTRS

Cap sheet: Bauder K5K, BauderPLANT E (root resistant cap sheet)
Underlayers: BauderTEC KSA DUO, BauderFLEX G4E
AVCL: BauderTEC KSD FBS, BauderTHERM DS 1 DUO or Bauder Super AL-E

Note: Where there is a choice of more than one capping sheet, underlayer or AVCL, please refer to project specific specification.

Bauderflex

Cap sheet: BauderFLEX K4E, BauderPLANT E 42 (root resistant cap sheet)
Underlayers: BauderTEC Sprint DUO, Bauder EGV 35 TF
AVCL: BauderTEC KSD FBS, BauderTHERM DS 1 DUO, or Bauder EVA 35

Airtech

Cap sheet: BauderTEC KSO SN, KSO ALP SN, or KSO-P SN
Underlayers: BauderTEC KSA DUO
AVCL: BauderTEC KSD FBS

Stripes

Cap sheet: BauderTHERM SL500 torch-applied overlay membrane.

1.2 Cap sheets

Bauder cap sheets are reinforced and incorporate modified bitumen to give flexibility, high tensile strength, thermal stability, and robust protection for the roof.

Mineral finish – protect the bitumen from UV radiation where the cap sheet is exposed.

Mica finish – must only be used in hard landscaping scenarios where the roof is to have ballast, promenade tiles or paving. Mineral finish capsheet must be used for flashings and details where the membrane is exposed to UV (above the height of the landscaping).

Capping Sheet	Thickness (mm)	Roll size (w x l metres)	Weight (kg/roll)	Colour		
				Charcoal Grey	Grey Slate	Brown
Bauder KARAT	5.2	1 x 5	30	✓	✗	✗
Bauder K5K	5.2	1 x 5	32.5 (Ch G) 30 (B or GS)	✓	✓	✓
BauderFLEX K5E	5	1 x 5	29	Mica finish		
BauderFLEX K4E	4.2	1 x 7.5	41.25 (Ch G) 37.5 (B or GS)	✓	✓	✓
Bauder PYE PV200 S4	4	1 x 10	50	Mica finish		
BauderTEC KSO-P SN	4	1 x 5	23	✓	✗	✗
BauderTEC KSO SN	4	1 x 5	23	✗	✓	✗
BauderTEC KSO ALP SN	4	1 x 5	23	✗	✗	✓
BauderTHERM SL 500	5.2	1 x 5	30	✗	✓	✗

Root Resistant Capping Sheets	Thickness (mm)	Roll size (w x l metres)	Weight (kg/roll)	Green	Green/white
SMARAGD	5.2	1 x 5	30	✗	✓
PLANT E	5.2	1 x 5	30	✓	✗
PLANT E 42	4.2	1 x 7.5	37.5	✓	✗

1 Principles *continued*

1.3 Underlayers

Bauder underlayers are glass reinforced and incorporate modified bitumen to give flexibility, high tensile strength, and protection for the roof prior to installation of the capping sheet.

Underlayer	Application	Thickness (mm)	Roll size (w x l metres)	Weight (kg/roll)
BauderTEC KSA DUO 35	Self-adhesive	3.5	1 x 7.5	30
BauderTEC KSA DUO	Self-adhesive	3	1 x 7.5	26.25
BauderTEC Sprint DUO	Self-adhesive	2	1 x 15	37.5
BauderFLEX G4E	Torch-applied	4	1 x 7.5	36
Bauder EGV 35 TF	Torch-applied	3.5	1 x 8	37.6

1.4 Air and vapour controls layers (AVCLs)

Bauder air & vapour control layers (AVCLs) are lined with aluminium foil and act as both a vapour control layer and air tightness layer, and when fully installed provide a watertight finish at this stage of the works.

AVCL	Application	Thickness (mm)	Roll size (w x l metres)	Weight (kg/roll)
BauderTEC KSD FBS	Self-adhesive	2.5	1.08 x 10	27
BauderTHERM DS 1 DUO	Self-adhesive	3.5	1.08 x 7.5	36.45
Bauder Super AL-E	Torch-applied	3.5	1. x 7.5	33.75
Bauder EVA 35	Torch-applied	3.5	1 x 8	36

1.5 Safe2Torch

Torch-free zone areas

- It is always the responsibility of the contractor to carry out a risk assessment on all aspects of the project contract to identify and appropriately catalogue the location of combustible materials used in the construction of the flat roof to ensure that operatives are fully aware.
- The NFRC Safe2Torch checklist should be used for guidance when assessing a flat roof for the location of combustible materials and hazardous zones.
- Gas torches **MUST NOT** be used within at least 900mm of the area around any combustible material used to construct the roof and their use must conform to safe systems of work.
- Torch-free or torch-safe detailing **MUST** be employed using the appropriate Bauder self-adhesive membrane as detailed in the Bauder project specification and further detailed in the Bauder torch-free and Bauder bituminous detail drawings.
- Refer to the Bauder project specific roof plan, specification and/or survey report and associated photographs of specific details for areas requiring torch-free application.



It is imperative that all combustible materials used in the construction of a flat roof deck/upstand are waterproofed following the recommendations of BS8217:2005, clause 7.3.2.1, paragraph 3, and the advice given in the 'Safe2Torch' document produced by the National Federation of Roofing Contractors (NFRC).

1 Principles *continued*

1.6 Delivery and storage

Check delivery upon the receipt of the goods against the delivery note. Bauder will not be liable for further costs in the case of subsequent deliveries if it is later discovered that any material is missing or damaged.

Bauder waterproofing membranes

All rolls of bituminous waterproofing membranes should be stored on end to prevent deformation, which makes the product more difficult to install.

Self-adhesive membranes must be stored out of direct sunlight as the self-adhesive properties of the membrane are reduced when exposed to UV radiation. The function of the release film on the underside of the membrane could also be affected if stored in direct sunlight.

During periods of warm weather, all mineral finish capping sheets should be protected from excess heat as this may bring oils in the bitumen to the surface and cause staining of the mineral, giving a darker appearance. This washes off following rainfall but can cause temporary discolouration.

Bauder insulation boards

All insulation boards must be kept dry, on pallets and off the ground. The packaging of Bauder insulation products should not be considered adequate for weather protection. The boards should be stacked clear of the ground and covered with suitable robust UV resistant, flame-retardant tarpaulin.

Insulation boards that have been allowed to get wet should be allowed to dry naturally before being used.

If glass tissue faced boards facings become damp or wet, then they must be allowed to fully dry out before use, otherwise there is a likelihood that they will delaminate from the board during the application of the underlayer. In addition, entrapped moisture within the board will lead to degradation of the insulation and loss of thermal performance will occur over time.

Primers and adhesives

The products should be stored in a secure storage cage, unopened, in a dry condition and at a temperature stated on the Technical Data Sheet and/or Safety Data Sheet. This will ensure the stated shelf-life.

Note: Products may have a limited life once the container is opened, refer to Technical Data Sheet.



RBM membranes:

Store the materials outdoors, on end/upright and off the ground with suitable robust UV resistant, flame-retardant tarpaulin. Ensuring the product(s) are clear of buildings and any other storage areas. Where there are storage containers on site, these may be suitable for storing products.



Insulation boards:

Store the materials outdoors with suitable robust UV resistant, flame-retardant tarpaulin. Ensuring the product(s) are clear of buildings and any other storage areas.

All insulation boards must be kept dry, on pallets and off the ground. The packaging of Bauder Insulation products should not be considered adequate for weather protection.

The products must not be exposed to a direct naked flame or other ignition sources, or to solvents or other chemicals.

Where there are storage containers on site, these may be suitable for storing products.



Important - Operatives must not attempt to dry the board facings using a gas torch. This will cause delamination of the facing and affect the structural integrity of the board.

1 Principles *continued*

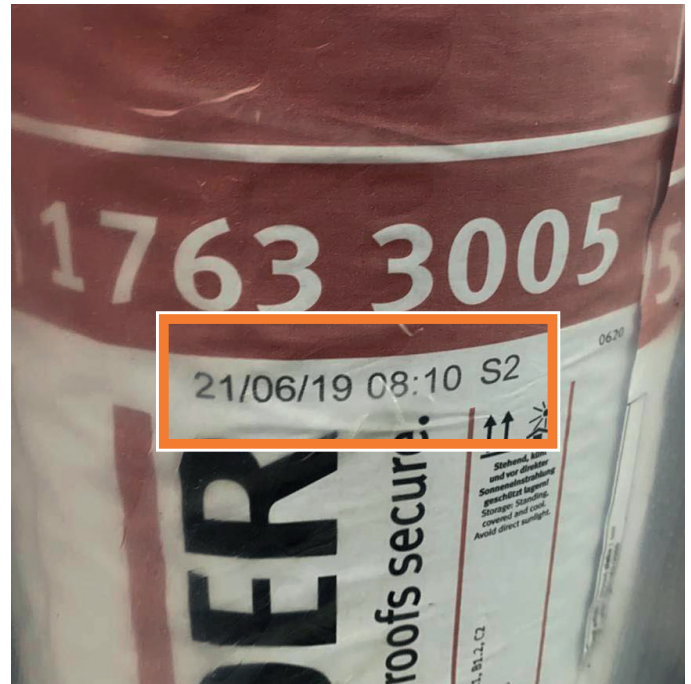
1.7 Packaging and labelling

Every roll of bitumen membrane will have a label which includes key information about the membrane; importantly it also includes the production batch number highlighted in the orange rectangle. This reference is important for identifying and cross referencing against where and when the batch was manufactured, should it be required.

1.8 Installation precautions

Cutting products - products should not be cut directly on installed membranes and a suitable protection board should be used to protect them, e.g. plywood.

Hot works permit will be required for the installation of the membranes.



1.9 Kit list

Documentation

- NBS J41 or Bauder standard format specification.
- CAD detail drawings – standard, torch-free (where applicable), and project specific.
- Tapered insulation scheme layout for the project, where applicable.
- U value calculation(s), drainage calculation(s), wind load calculation(s) where applicable.

Basic tools

- Craft knife equipped with hooked blade for cutting membranes.
- Craft knife equipped with straight blade for cutting peel-off release film from underside of self-adhesive products.
- Chalk line for setting out and aligning sheets. Marking alignment – tapered insulation, flashings etc.
- Hand roller.
- Tape measure.
- Hand saw.
- Hammers.
- Wire brush.
- Appropriate PPE.
- Metal cutting saw equipped with a hardened blade for cutting BauderGLAS Insulation.
- Trowel/scrapper.
- Straight edge to aid cutting membranes.
- Fire extinguishers.

Gas torches – only used for torch-safe detailing and lap welding

- Not used for System Airtech or torch-free detailing.
- All torches must have a support stand, adjustable pressure regulator (set at a suitable pressure), and safety gas cut off valve.
- Torches should comply with Safe2Torch guidelines and fitted with an electronic ignition so no pilot flame is left on.
- Long handled torch for torch-applied products to the flat areas.
- Short-handled torch for torch-safe detail work.
- With SBS modified membranes, it is important to use a torch that does not have an over-large burner head and too high a pressure setting. Over-torching can damage the membranes.
- Sievert electronic ignition gas torches are available to purchase or hire from:

James Lister & Sons Limited
Tel: 0121 553 2949
Email: sales@lister.co.uk

1 Principles *continued*

1.9 Kit list

Hot air welding equipment for torch-free areas and System Airtech installation

- 240 volt electrical supply required from either a direct connection to the building's mains power installed and disconnected (once works are complete) by a qualified electrician.

If electrical supply is via a generator a 10 KVA output is required. For further advice contact either:

LCH Generators
T: 02476 361 333

M&J Engineers Ltd
T: 01462 429 311

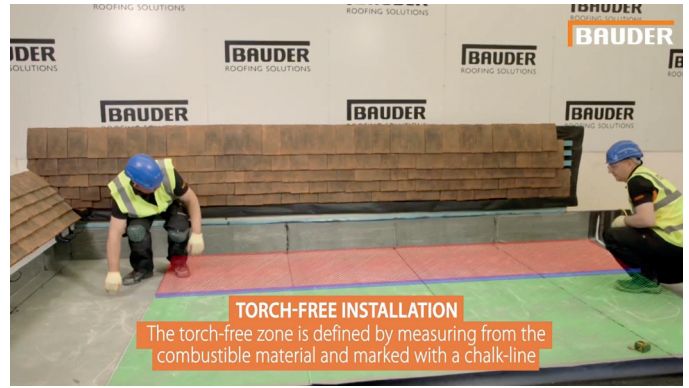
- If required and upon request, refer to Bauder guidance sheet including diagrams on electrical installation and a document covering the health and safety recommendations relating to using 240 Volt portable electrical equipment on site.
- The hot air gun's temperature should be set between 500 - 550°C to ensure the bitumen is sufficiently activated.
- Nozzles for the hot air guns should be 40mm for hand held tools and 80mm in size for automated equipment.

Suitable hot air welding equipment manufactured by 'either':

LEISTER HOT AIR WELDING TOOLS -
Welwyn Tool Group
T: 01707 331 111
W: www.welwyntoolgroup.co.uk

James Lister & Sons Limited
T: 0121 553 2949
E: sales@lister.co.uk
W: www.liser.co.uk

ETORCH MAX
Imperial Thermal Engineering Ltd
T: 01376 330582
W: www.imperialthermal.co.uk



1 Principles *continued*

Bauder exclusively supplies specialist equipment to assist the installation of its bitumen membrane systems.

Specialist equipment

- **Bauder roll bar** with removable spindle (System Airtech requires spindle only) whereby the weight of the roll bar helps to evenly spread the bitumen flow across the roll.
 - The operative can clearly see the bitumen flow and adjust and control the application speed to suit and achieve a neat, even, bitumen bead extrusion from all the lap joints. This is especially important when applying mineral surfaced capping sheets.
 - Unsightly foot marks in the newly laid and still hot material can be avoided by walking backwards (where safe to do so) in front of the membrane, rather than walking directly on the membrane being applied.
- **Bauder long handled lap roller** - necessary for the installation of 'DUO' products.
 - Used within a two-man operation whereby one operative activates the bitumen whilst the other uses the long-handled roller to apply pressure.
 - Ensures a neat bead of bitumen to be extruded out of the lap for a successful lap joint.
 - Provides a fast method of lap sealing.
 - A lap joint sealed with a pressure roller is much stronger.



1.10 Operative training

Bauder reinforced bitumen membrane systems are only permitted to be installed by operatives who have been successfully assessed and trained by Bauder site technicians.

Fully certified operatives:

- Have satisfied the application requirements and specification criteria while under instruction.
- Will carry a certified installer card or digital card detailing the Bauder systems in which they are approved.
- Should be able to produce their Certified Installer Card or digital card at any time, as a form of identification, when requested by any party with an interest in the roofing work.

Provisionally certified operatives will be:

- Experienced operatives who are provisionally certified are permitted to install the system but will be assessed on-site for a limited period by the Bauder site technician.
- Upgraded to 'fully certified' when Bauder is satisfied with the quality and consistency of their work, and their card issued.



1.11 Recycling and disposal of waste

Canister adhesives & primers

- Once a canister is no longer expelling adhesive or primer, then transfer the hose and gun to a new canister. Open the valve on the new canister and purge the adhesive/primer through the hose and gun.
- Open the valve at the top of the used canister and empty any remaining adhesive/primer and propellant into a suitable container.
- Ensure the valve remains open. Leave for at least 1 hour.
- Use a non-ferrous rod and mallet to strike the bursting disk at its perimeter.
- Remove the disk, which will reveal an aperture. This will ensure that the canister remains depressurised.
- Leave for 24 hours to allow any residue adhesive/primer to dry and/or cure.
- After this procedure has been followed, the canister will be empty of any hazardous materials and depressurised. Therefore, it can be considered as scrap metal in accordance with the national or local waste company, under code EWC 150104 (empty aerosol, no hazardous residues).
- Canisters that are still pressurised and contain adhesive/primer should be disposed of in accordance with the national or local waste company under code EWC 160504 (full or partially empty aerosol).

Drum or tin adhesives

- Empty containers should be treated as controlled waste. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Bituminous membranes

- Bituminous membranes and off cuts can be sent for disposal with household waste. EWC code 170302 “asphalt tar-free” (comply with local authority regulations).
- Bitumen membrane rolls are wrapped in protective paper and some rolls have a cardboard core for stability. Full pallets have further wrapping to ensure stability of the rolls in transit. It is important that protective strapping and wrapping is kept in place until the membrane is about to be installed.

- All packaging is readily recyclable at most transfer centres.

Insulation offcuts

- Rigid polyurethane foam waste can be disposed of with household waste or commercial waste similar to household waste (European waste catalogue EWC number 170604 ‘insulation material’).

BauderROCK:

- Disposing of any waste material must be carried out in accordance to national regulations.

BauderGLAS:

- BauderGLAS Insulation is recyclable. Off-cuts need to be disposed via an authorised disposal contractor to an approved waste disposal site, observing all relevant regulations.

Gas cylinders

- Some local authorities accept gas bottles at household waste recycling centres. Please check with staff at the recycling centre where the bottles should be left so they can be stored safely before being re-used. Generally they would be re-filled at your local gas filling centre.

2 Preparation of the Deck

For all deck types:

- Carry out all preliminary work such as formation of independent upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
- Fixing of battens, fillets and anchoring plugs/strips.



The deck should be thoroughly examined for any sharp protrusions i.e. screws, nails, staples, etc. All such items should be repaired as required to eliminate the possibility of puncturing the new waterproofing layer.

2.1 Plywood decks

- Plywood should conform to BS EN 636-3 condition of use Service Class 3 (Exterior) and Use Class 3, minimum 18mm thickness as specified by client.
- Cold roof specifications will require AP1 cut to size by the contractor to be used on the joints. Retained in place using clout nails.

2.2 OSB/3 decks

- OSB/3 should conform to BS EN 300, minimum 18mm thickness as specified by client.
- Cold roof specifications will require AP1 cut to size by the contractor to be used on the joints.

2.3 Timber decks

- Nail the sacrificial layer TA 600 polyester based membrane, to timber boarded decks (close butted or T&G), and MUST also be used on cross laminated timber panel decks.
- Random nailed in the field area at maximum 150mm centres. At perimeter of roof and all side and head laps with maximum 50mm centres.

2.4 Metal decks

- The new metal deck should be of a suitable type/profile to support the air and vapour control layer and insulation and achieve an approximate bond area of 50% when adhering to the crowns i.e. the crowns should be wider than the troughs. This is calculated by dividing the crown width by the pitch then multiplying this by 100. Metal decks with profile stiffeners in the crown will further reduce the effective bond area.



Approval of the specified deck should be first obtained from Bauder Limited at specification stage to confirm suitability.

2 Preparation of the Deck

2.5 Concrete decks

- The surface of the concrete should be finished with a wood float to provide a suitably even surface free from ridges, hollows, and surface irregularities.
- A concrete surface which is not adequately even, or does not provide adequate drainage falls, should be screeded to correct these points.
- Provision should be made for drying out the slab properly before waterproofing commences to ensure good adhesion.
- Generally, in-situ structural concrete has a curing time of 28 days to get to optimum strength (this can be up to 60 days if concrete is used in conjunction with a structural metal tray). This curing time should not be confused with the drying time. After the concrete is properly cured it will then need to be assessed to prove the moisture levels are at acceptable levels in order to achieve the correct adhesion to the surface of the concrete. Any surface laitance will need to be removed by scabbling or jet washing, prior to waterproofing installation.
- A peel test should be carried out to check adequate adhesion to the concrete/screed. Alternative testing methods can be employed, including a moisture meter and/or a 'Plastic Sheet Test' using polyethylene sheet or rubber mat.



Image displaying concrete deck with a wood float finish



2.6 Peel test for concrete decks

- Clean a small area of the substrate being tested (1m²) by using a soft broom to remove any dirt/debris from the surface.
- Apply the specified primer to the substrate and allow to dry as per Bauder recommendations.
- Once the primer has dried, apply the specified AVCL or underlayer as per Bauder recommendations leave overnight.

Checking results

- Submit and arrange for inspection.
- Cut a V-shaped incision through the AVCL/underlayer in the centre of the test patch.
- Lift the membrane at the point of the 'V' and pull back.
- If the membrane can be peeled up easily from the substrate, then the substrate has not dried out sufficiently or there is an issue of contamination or laitance with the surface.



If the membrane cannot be pulled away and distorts when pulled then the bond is considered satisfactory.

3 Primers

3.1 Primer compatibility

Specific primers are required to enhance adhesion of the AVCL or underlayer to the different prepared substrates.



Caution: Use only outdoors in well ventilated areas or with respiratory apparatus and keep away from all sources of ignition. Take necessary precautions to avoid the solvent vapour from entering the buildings ventilation system. Ensure products are stored correctly and out of direct sunlight.

Important: All surfaces must be dry, clean, and free from dust, dirt, oil, grease, and loose material before application.

Substrate	Self-adhesive membrane	Torch-on membranes
	KSA DUO, KSA DUO 35, KSD FBS, DS 1 DUO, Sprint DUO	Super AL-E, EVA 35, EGV 35 TF, G4E
Concrete New	SA Bonding Primer (Drum) - Black	Quick Dry Primer (Drum) - Black
Concrete Refurb	SA Bonding Primer (Drum) - Black	Quick Dry Primer (Drum) - Black
Plywood/OSB	Activator - Primer (Canister) - Black	Not permitted
Metal	Activator - Primer (Canister) - Black	Not permitted
Cement Particle Board	Activator - Primer (Canister) - Black	Quick Dry Primer (Drum) - Black Activator - Primer (Canister) - Black
Asphalt	Activator - Primer (Canister) - Black	Quick Dry Primer (Drum) - Black
In-situ Reinforced Bitumen Membranes	Activator - Primer (Canister) - Black	Quick Dry Primer (Drum) - Black

3.2 Activator-Primer (Canister) - Black

Application method: spray - applied.

Application temperature: should be between +5 to +30°C. Where the temperature falls outside of this, please refer to Summer and Winter advice documents from Bauder.

Application rate: 300mm wide spray.

Coverage: Approx. 96 g/m² (up to 150m² per canister) - Two coats may be required for very porous substrates.

Drying time: Approx. 5 - 10 mins, dependent upon ambient temperature and material porosity.

Coats: Where additional coat required, fully bond to previous coat.

Re-application: Necessary after 4 hours exposure if waterproofing has not yet been applied, to maintain adhesion performance.



Never attempt torching within 10 mins of primer application, even if the surface appears dry.

Regularly clean spray nozzle tips with Bauder Spray Gun Nozzle Cleaner to ensure an even spray pattern is achieved. Not to be used on new or refurbishment concrete decks.

3 Primers *continued*

3.2 Activator-Primer (Canister) - Black

- Prepare the canister according to the set-up instructions.
- Use a test surface to ensure the canister spray system is working correctly and achieves an even spray pattern 300mm wide.
- Protect any areas not requiring primer.
- Spray-apply an even coat of primer to achieve full coverage, avoiding over-spray or pooling.
- Remove any over-spray with Bauder spray gun nozzle cleaner.
- Allow the non-flammable solvent & propellant to evaporate from the primer for a minimum of 10 mins at 20° C.
- Continue with installation as described in **Section 4**.



Never attempt torching within 30 min of primer application, even if the surface appears dry.



3.3 Quick Dry Primer (Drum) - Black

Application method: brush or roller

Application temperature: +5 to +25°C

Coverage: 100 to 200m² per drum depending on porosity of substrate. Two coats may be required for very porous substrates.

Drying time: Approx. 3 - 6 hours, dependent upon ambient temperature and substrate porosity.

Coats: Where additional coat required, fully bond to previous coat. Allow volatiles to dry off thoroughly between coats.

Re-application: Necessary after 24 hours exposure if waterproofing has not yet been applied to maintain adhesion performance.

- Protect any areas not requiring primer.
- Apply a thin even coat directly onto the substrate with a roller or brush, ensuring a full coverage and avoid pooling.
- Absorb any spillage in inert material and shovel up - remove contaminated material to safe location for subsequent disposal.
- Replace lid when not in use.
- Allow the solvents to evaporate from the primer for at least 30 minutes. Drying time approx. 3-6 hours at 20°C. Once fully dried it is safe to install membrane.
- Continue with installation as described in **Section 4**.



Quick dry primer onto refurb concrete deck

3 Primers *continued*

3.4 SA Bonding Primer (Drum) - Black

Application method: Brush or roller.

Application temperature: +5 to +30°C.

Application rate: Timber/metal: approx. 200 g/m².
Concrete/brickwork: approx. 200-300 g/m²
depending upon roughness and porosity.

Coverage: Two coats may be required for very porous substrates.

Drying time: Approx. 30 mins, dependent upon ambient temperature and material porosity.

Coats: Where additional coat required, fully bond to previous coat. Allow volatiles to dry off thoroughly between coats.

Re-application: Necessary after 4 hours exposure if Bauder self-adhesive bitumen membrane has not yet been applied to maintain adhesion performance.

- Protect any areas not requiring primer.
- Apply an even coat directly onto the substrate with a roller or brush, ensuring a full coverage and avoid pooling.
- Methods for cleaning up: absorb in vermiculite, dry sand or earth and place into containers.
- Replace lid when not in use.
- Allow the solvents to evaporate from the primer for at least 30 minutes. Drying time approx. 30 mins at 20°C. Once fully dried it is safe to install membrane.
- Continue with installation as described in **Section 4**.



Caution: Use only outdoors in well ventilated areas or with respiratory apparatus and keep away from all sources of ignition.

Take necessary precautions to avoid the solvent vapour from entering the building's ventilation system.

Tools and overspill can be cleaned in Bauder PMMA Cleaner. Must be used on new and refurbishment concrete decks.



SA Bonding primer installed onto deck

4 Air and Vapour Control Layer (AVCL)

4.1 General guidance for all AVCLs

Side and end laps: minimum 100mm, laid with all laps heat sealed to provide a continuous bitumen bead extrusion. Installation methods as recommended by Bauder.

Exposed edges of insulation: (at roof perimeters, abutments, upstands, kerbs, outlets, penetrations): Enclose, with AVCL.

Upstands: dress the air and vapour control layer up all upstands and to the full extent of the detail to ensure the detail is fully encapsulated. This reduces the risk to exposed combustible materials and improves wind resistance.

Details: form all details in such a way that a fully bonded 100mm lap is obtained between the AVCL and underlayer – refer to project detail drawings.

Metal decks: all side laps must be supported on the crowns of the metal deck.

Installation tips:

- Care should be taken to ensure adhesion when the temperature is below + 5°C.
- On cold days or when the deck is slightly damp – gently warming the deck area in front of the roll with a torch or hot air will improve the speed of the bonding application (torch to be used on non-combustible substrates only).
- All details and penetrations need to be sealed according to Bauder’s instructions and CAD drawings for the roof to pass its inspections.



Metal decks - To ensure side laps of the air and vapour control layer (AVCL) are fully supported, they will need to have the width cut to suit the profile of the deck or larger laps should be formed. To support end laps, cut approximately 200mm strip off the end of the AVCL roll and apply it taut across the troughs where the roll ends will meet.

AVCL	Application
BauderTEC KSD FBS	Self-adhesive
BauderTHERM DS 1 DUO	Self-adhesive
Bauder Super AL-E	Torch-applied
Bauder EVA 35	Torch-applied



Self-adhesive membrane installed to main field area and upstands.

4 Air and Vapour Control Layer (AVCL) *continued*

4.2 Self-adhesives AVCLs

- Lay out the membrane and align so that the membrane runs straight.
- Roll back the membrane on the spindle to half the length of the roll and ensure it is wound tight onto the spindle.
- Using the straight-bladed knife, carefully cut across the release film to the full width of the roll.
- Pull the release film, so that the membrane unrolls onto the substrate.
- Roll out applying pressure to ensure adhesion to the substrate. Any air pockets should be rolled over with the long handle lap roller to remove them.
- Complete for the remaining half of the roll.
- Heat seal the head laps ensuring a continuous bitumen bead extrusion is achieved.
- Cut appropriately sized and shaped membrane pieces appropriate to the detail.
- Press the membrane into/around the detail to ensure it will fit.
- Carefully cut the release film halfway across the membrane piece.
- Remove one half of the release film and press the adhesive side into the detail, consolidate with a hand roller. Heat seal the laps ensuring a bitumen extrusion is achieved.
- Remove the remaining half of the release film and press the adhesive side into the detail, consolidate with a hand roller.
- Heat seal the laps ensuring a bitumen extrusion is achieved.



The side laps are to be 100mm and must be laid with the fleece side laid on top of the thermofusible film side (red over blue for DS1) and sealed with appropriate heat sources according to NFRC Safe2Torch guidelines:

- A hot air gun in torch-free zones.
- Gas torch in torch-safe zones.

All laps are sealed to extrude a continuous bead of bitumen by hot air welding for torch-free zones and detailing or torching and rolling in torch-safe zones.

Installation in the field areas



DS 1 DUO installed to field area



AVCL taken to full extent of upstand

4 Air and Vapour Control Layer (AVCL) *continued*

4.2.1 TEC KSD FBS

Attachment: Cold applied and fully bonded to substrate in accordance with Bauder's requirements and following **Section 4.2**

Head lap: 100mm and staggered in a brickwork pattern.

Side laps: 100mm and fleece side laid on top of the thermofusible film side.



4.2.2 DS 1 DUO

Attachment: Cold applied and fully bonded to substrate in accordance with Bauder's requirements and following **Section 4.2**.

Head lap: 100mm and staggered in a brickwork pattern.

Side laps: 100mm and must be laid red over blue.

Tips: Use a straight bladed craft knife when cutting the peel off film on the back of the self-adhesive membranes.



Important: If BauderTHERM DS 1DUO is left exposed for longer than two weeks as a temporary waterproof layer, the burn off release foil and surface of the torch-activated adhesion stripes will be affected by the exposure to ultra-violet. Please note that as a result, more heat will be required to activate the stripes to enable sufficient adhesion with the insulation boards.

DS 1 DUO should not be used in torch-free zones as you cannot use a torch to activate the bitumen stripes.

DS 1 DUO should not be used to bond PIR Tapered, PIR FA Tapered or BauderROCK by heat activating the stripes, as this does not give a sufficient bond strength. The specified Bauder insulation adhesive should be used.



4 Air and Vapour Control Layer (AVCL) *continued*

4.3 Torch-on AVCLs for Safe2Torch areas zones

Bauder torch-on AVCL's are generally required to be fully bonded to the deck substrate, however, for new concrete, it should be partially bonded to meet the requirements of the current codes of practice.

- Lay out the membrane and align so that the membrane runs straight.
- Roll back the membrane on the spindle to half the length of the roll and ensure it is wound tight onto the spindle.
- Using the roll bar and spindle allows to partially bond with the torch directed towards the roll, therefore avoiding direct contact with the non-combustible deck/substrate.
- The weight of the roll bar helps to evenly spread the bitumen flow across the roll. This will help to adjust and control the application speed of the membrane, achieving a neat, even, bitumen bead extrusion from all the lap joints.
- Unsightly foot marks in the newly laid and still hot material can be avoided by walking backwards (where safe to do so) in front of the membrane, rather than walking directly on the membrane being applied.



Important - MUST NOT be used in torch-free zones, only to be used in torch-safe zones. **MUST NOT** be torched directly onto any combustible decks/upstands.



Torch applied AVCL to field area



Torch applied AVCL to field area and upstands

4.4 Using an AVCL as temporary waterproofing

Membrane Type	Maximum length of time membrane can be left exposed
DS 1 DUO	4 months (2 weeks for re-activating bitumen stripes)
EVA 35	4 months
KSD FBS & Super AL-E	6 months
Bauder insists an inspection is carried out before installation of the next layer to ensure waterproofing integrity.	

5 Insulation

Bauder has a wide range of insulations in both flatboard and tapered format for specification within a bituminous system.

5.1 Tapered insulation schemes

This is a specialist project scheme for increasing or creating falls on a roof and requires a separate design and specification. For the installation of a BauderPIR FA G16 tapered scheme please refer to a separate document: Bauder FA Tapered Insulation Installation Guide, available from our Technical Department.

5.2 Flatboard insulation setting out

- **Long edges:** fully supported or for a metal deck - run at right angles to metal deck troughs.
- **End edges:** fully supported.
- **Side joints:** close butted together.
- **End joints:** stagger brick pattern.
- **Rebated edge boards:** these must interlock with each other.
- **Passivhaus:** any spacing between the boards would need to be reduced to maximum 3mm gaps where there is a 'Passivhaus' requirement. Boards may need to be 'shaved' to achieve this requirement along the full length/width of the board.

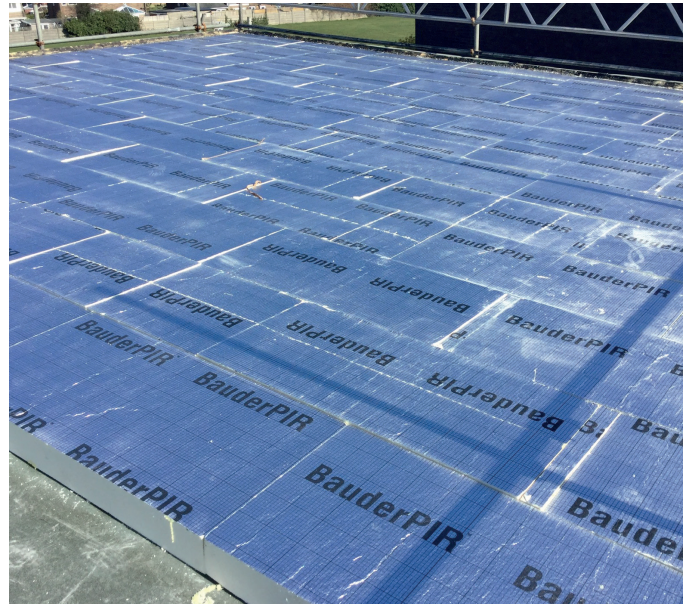
5.3 Mechanically fixing the insulation

Minimum quantity of fixings per board needs to meet wind load calculations for perimeter, corners, and field roof areas, and different quantities may be required for each zone and each project.

Project fixing plan should be provided by the fixing supplier to meet wind uplift loads for the project.

Installation

- Use insulation tubes and fastener type/length recommended by the supplier for the project.
- Install according to project fixing plan to the quantity required to meet wind uplift calculations for the different roof zones (perimeter, corners, field area).
- Always refer to the wind uplift calculations for number of fasteners per board.



FA-TE flatboard laid off-set and staggered



Fixings should meet the following criteria:

- A thermally broken sleeve to ensure the required U-value for the roof is achieved.
- Minimum 75mm diameter washer or a square stress plate of minimum dimension 70 x 70mm.
- Fastener of suitable type and length to penetrate board thickness and deck construction. For metal, plywood and OSB decks the fastener should penetrate through the substrate by 15 - 20mm.

Tips:

- The number of fasteners per board will be defined by the wind load calculation.
- For ease and speed of application, contractors may choose to install the stated number of fasteners required in the corner zones (high risk areas) across the entire roof area and thereby disregard the need for different fixing patterns in each zone.

5.4 Adhering insulation to bituminous AVCL

Specific adhesives are required to bond the different types of insulation to the AVCL, See page 21, 22, 23 or 24 as appropriate. Refer to table below for guidance on suitability.

Adhesive compatibility for bonding Bauder insulation to AVCLs (EVA35, KDS FBS, Super AL-E, DS 1 DUO)		
Insulation	PU Insulation Adhesive (Twin Cartridge) - Brown	PU Insulation Adhesive (Tin) - Brown
BauderPIR FA-TE (foil-faced flatboard)	✓	✓
BauderPIR FA G16 tapered (foil faced)	✓	✓
BauderPIR T G tapered (un-faced)	✓	✓
BauderVIP TE	✓	✓
BauderROCK	✓	✓*
BauderGLAS	✓	✓*

*Water spray over-mist required. Please refer to specific Technical Data Sheet for coverage rates and installation guidance.

Installation

- Close butted and staggered all boards in a 'brick pattern'.
- Bond each board to the AVCL with the specified adhesive, ensuring an adequate fix. The installation method and coverage rates are specific to the type of adhesive and the project wind uplift calculations.

Important:

- Always refer to the specification for the given roof area for the specific product and amount of adhesive to use.



Refer to the project specification to confirm type of adhesive to use. See table below for compatibility.

Use the correct adhesive as per specification along with the correct associated tooling, such as guns, hoses, rollers, etc.

Information regarding handling, storage and disposal of adhesive containers can be found on the latest version of the Technical/Safety Data Sheet, which must be consulted before use.



Bauder PU Insulation Adhesive - Twin Cartridge can be used for adhering all types of Bauder insulations to the AVCL and can also be used for foil to foil applications.

Cannot be used for bonding GFS G16 (ridge infills)/KFS G16 (valley infills) on PIR FA G16 Tapered schemes.

5.4.1 Installation of Bauder PU Insulation Adhesive - Twin Cartridge

- Apply in strips following the direction of the board length to give continuous and equally spaced adhesive beads within each board width. Refer to table below.
- Adhesive beads are applied 6mm wide and will then foam to 20mm wide.
- Immediately place board onto the adhesive and apply pressure to the board to ensure full contact.
- Allow to cure before waterproofing the insulation boards (10 mins at 20°C).

Number of recommended adhesive bead strips		
Board width (mm)	Field zone	Perimeter zone*
450, 500 or 600	2	3
800	3	4
1000 or 1200	4	6

Table 1

Note: *BS EN 1991-1-4 uses the following guidance to calculate perimeter zones. Buildings up to and including 10m in height have a perimeter zone of not more than 2m. Buildings over 10m, uses the calculation of $2 \times \text{the building height} \div 10$. These are general guidance rules and do not take into account all of the information used in a full wind uplift calculation, they are therefore superseded by a project specific calculation.

5 Insulation *continued*

5.4.1 PU Insulation Adhesive (Tin) - Brown



Used for bonding all Bauder warm roof insulations to the mica-faced AVCL.

MUST NOT be used for bonding insulations to insulations or AVCL's in foil to foil applications.

MUST NOT be used for bonding GFS G16 (ridge infills)/KFS G16 (valley infills) on PIR FA G16 Tapered schemes.

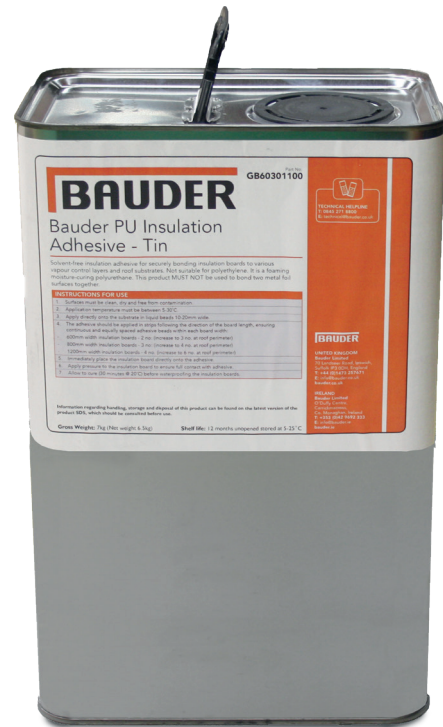
A spray water over mist to the wet adhesive must be used for bonding BauderROCK & BauderGLAS insulations to AVCL's and in a build-up incorporating more than one layer of these insulants.

Coverage rate of 40m² per tin.

- Apply in strips following the direction of the board length to give continuous and equally spaced adhesive beads within each board width.
- See Table 1 **Section 5.4**, for recommended number of bead strips for different board sizes.
- Ensure adhesive beads are 10 - 20mm wide
- Immediately place board directly onto the adhesive.
- Apply pressure to the board to ensure full contact. If the insulation board rocks (especially on the laps), then score the back of the board to fully adhere to the AVCL.
- Allow to cure enough so that the installation of the underlay does not affect the bond between the insulation and AVCL.

Important:

- Always refer to the specification for project specific adhesive and amount to use.
- During extreme heat, add a water over mist to the wet adhesive before bedding the PIR boards to help the curing process, avoid excessive over wetting.



PU Tin adhesive applied in strips

5 Insulation *continued*

5.5 Adhering multi-layer insulation (bonding insulation to insulation)

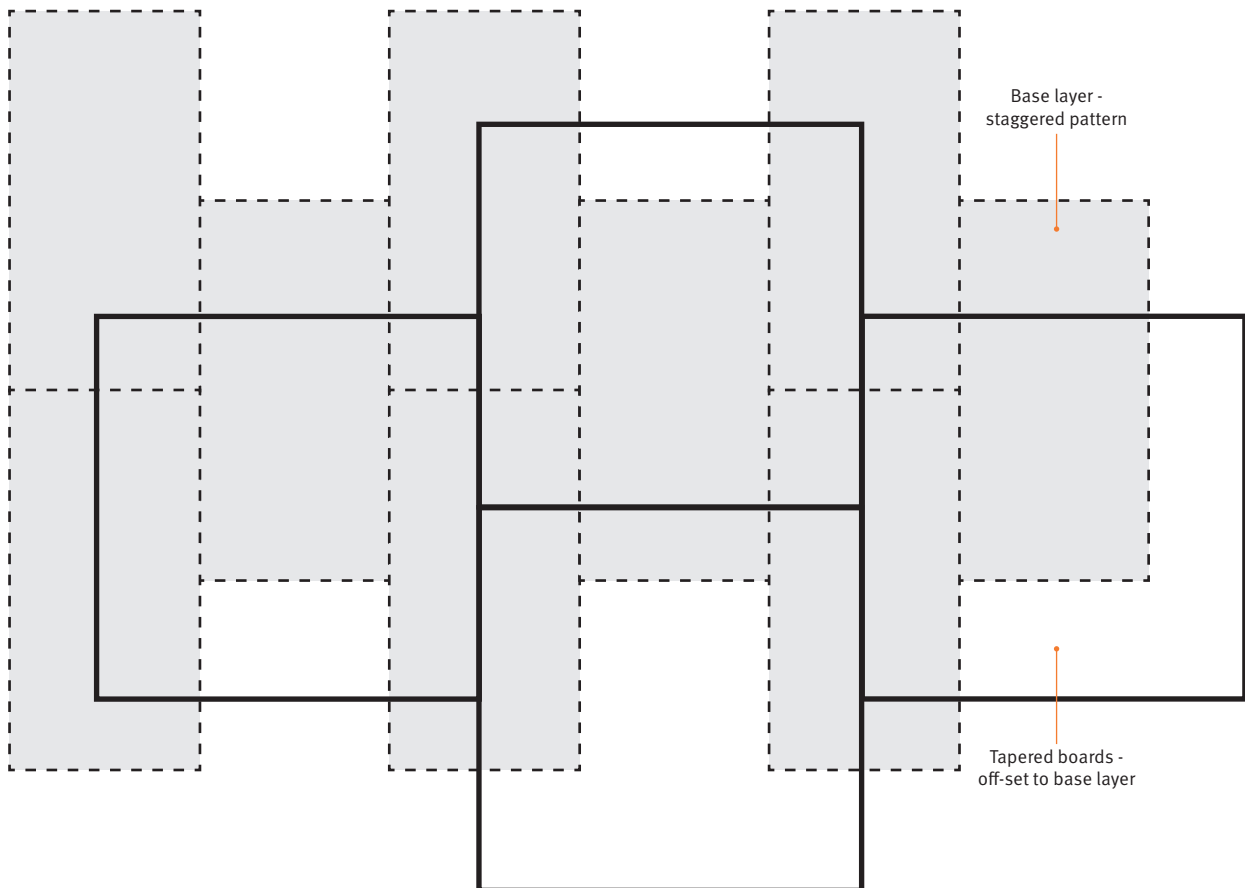
Installation

- Bond first layer of insulation boards to the AVCL using the specified adhesive and leave to cure, see **Section 5.4**
- Set out the next layer of insulation so that the boards are off-set and staggered, as per example image above.
- Use the specified adhesive to bond the second layer of insulation to the first. See **Section 5.1 and 5.5.1** as appropriate.



Additional layers of insulation boards should be bonded giving continuous and equally spaced adhesive beads within each board width.

The second layer of boards should be laid off-set and staggered.



5 Insulation *continued*

5.5.1 Bonding foil-to-foil insulation surfaces

When both layers of insulation are foil faced, i.e. FA-TE to FA-TE, FA G16 Tapered to FA-TE.

Installation with Bauder Activator-Primer (Canister) - Black

- Ensure the canister spray-system is spraying correctly and the spray-pattern is 150-200mm wide, depending upon insulation board size.
- Apply one coat of Bauder Activator-Primer to the top surface of the first layer, ensuring an even distribution of contact adhesive is achieved. Approximate coat weight 80g/m².
- Apply one coat of the Activator-Primer to the bottom surface of the second layer following the recommended spray pattern to achieve a 100% coverage in the perimeter zone and 50% coverage in the field zone, (please refer to note in **Section 5.4**) ensuring an even distribution of contact adhesive is achieved. Approximate coat weight 96g/m² for perimeter zones and field zones (approx. total of 144g/m² when a combination of 100% & 50% coverage is applied).
- N.B. The spray pattern is set in from the edge of the insulation board to allow consistent adhesion strips when staggering insulation layers.
- Allow the non-flammable solvent & propellant to evaporate from the primer for a minimum of 10 minutes at 20° C depending on temperature and wind speed.
- Avoid trafficking immediately after application of 3-5 minutes depending on ambient temperatures.
- Once the solvents have evaporated, the surfaces should appear tacky to the touch. Once this has been achieved, place the second insulation layer onto the first layer and apply pressure to the second layer to achieve contact.

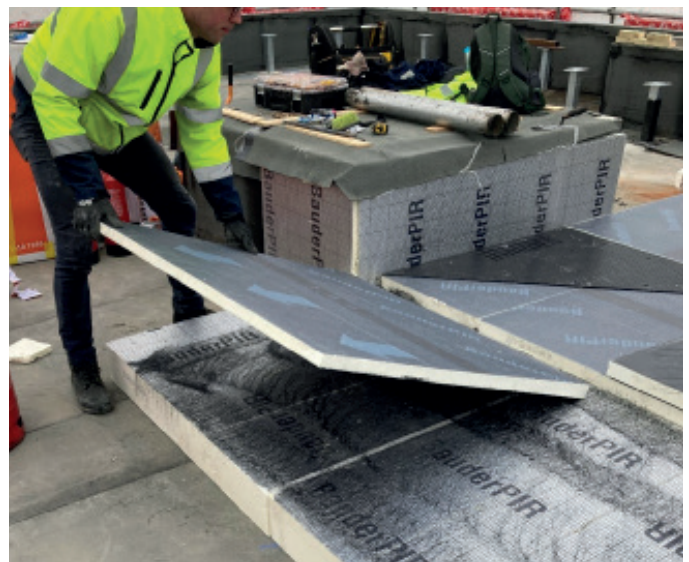
Tips:

- Avoid excessive spray as drying time will be increased.
- If there are undulations on the roof area, then the back of the insulation board will need to be spliced before application of the first and second layer of Activator-Primer.
- Use Bauder Spray Gun Nozzle Cleaner to remove material or over spray from the spray tip.



ONLY two adhesives are compatible for bonding foil-to-foil surfaces together.

- Bauder Activator-Primer (Canister) - **Black**
- Bauder PU Insulation Adhesive (Twin Cartridge), see **Section 5.4.1** for installation instructions.



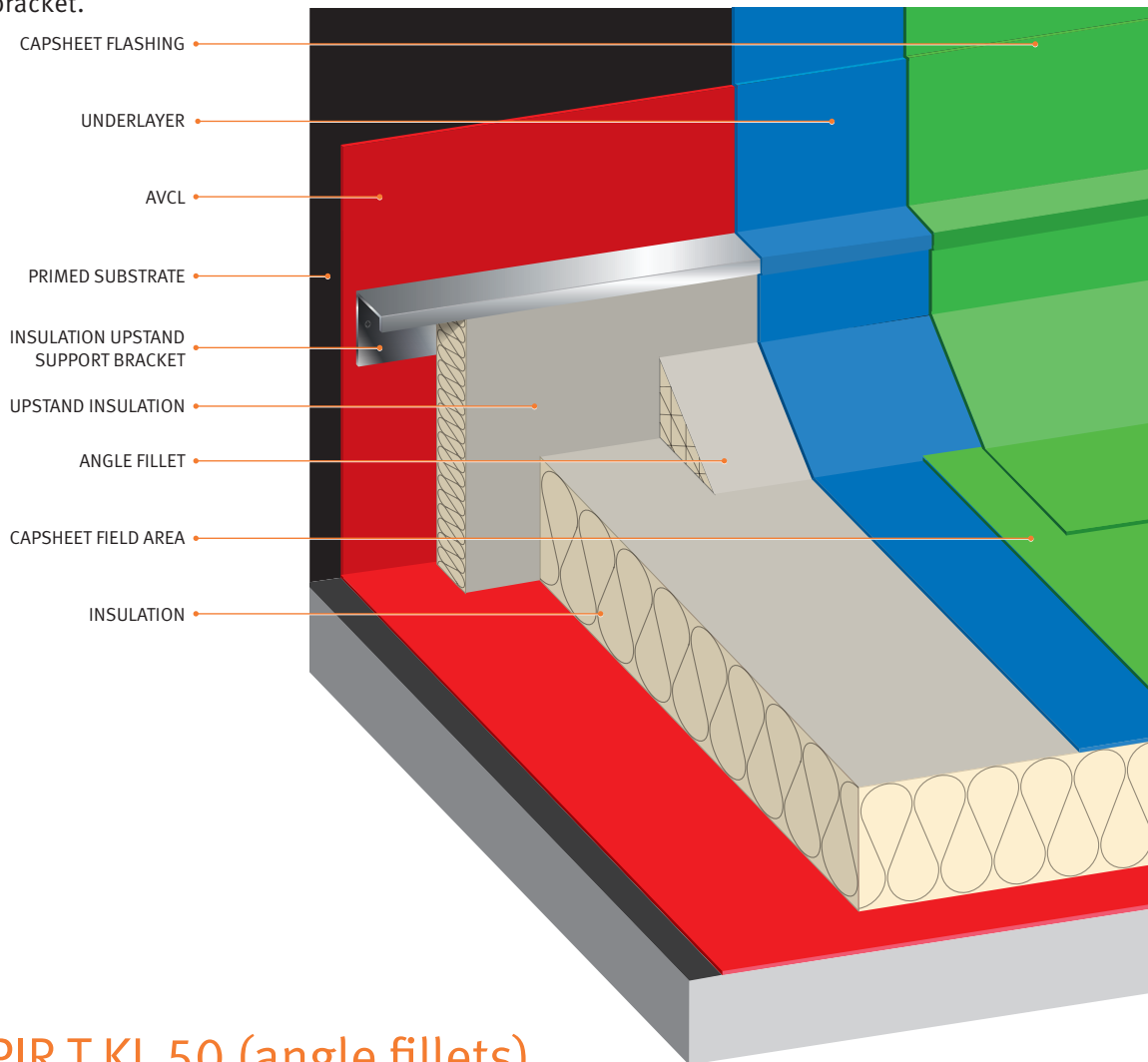
Spray pattern of Activator-Primer

Important:

- Always refer to the specification for the given roof area for the specific product and amount of adhesive to use.
- Activator-Primer **MUST NOT** be used for bonding insulation to mica faced AVCL's.
- Activator-Primer **MUST** be used for bonding GFS G16 (ridgeinfills)/KFS G16 (valley infills) on PIR FA G16 Tapered schemes.

5.6 Insulation to upstands

Insulation to upstand showing insulation support bracket.



5.7 PIR T KL 50 (angle fillets)

Bauder 50mm x 50mm PIR T KL 50 (angle fillets) for use with insulated and un-insulated upstands to reduce/soften a 90 degree internal angle between a horizontal and vertical intersection and make it easier to seal.

Installation

- Provisionally bonded in suitable Bauder PU Insulation Adhesive or Bauder Activator-Primer (Canister) - Black, to the upper surface of the insulation on the horizontal and the vertical surface of the upstand.
- Subsequently the angle fillet is retained when the underlay detailing is applied.



Must be used at all right-angled upstands. For different insulation types, the corresponding angle fillet must be used:

- PIR T KL 50 angle fillets for all forms of PIR Insulation & 2 layer waterproofing systems.
- BauderROCK Angle Fillets for all forms of ROCK insulation.
- BauderGLAS Angle Fillets for all forms of GLAS insulation.



Important:

Under no circumstances must fillets of an alternative material be incorporated (i.e. timber, cork, fibre, etc.) as this would invalidate the guarantee.

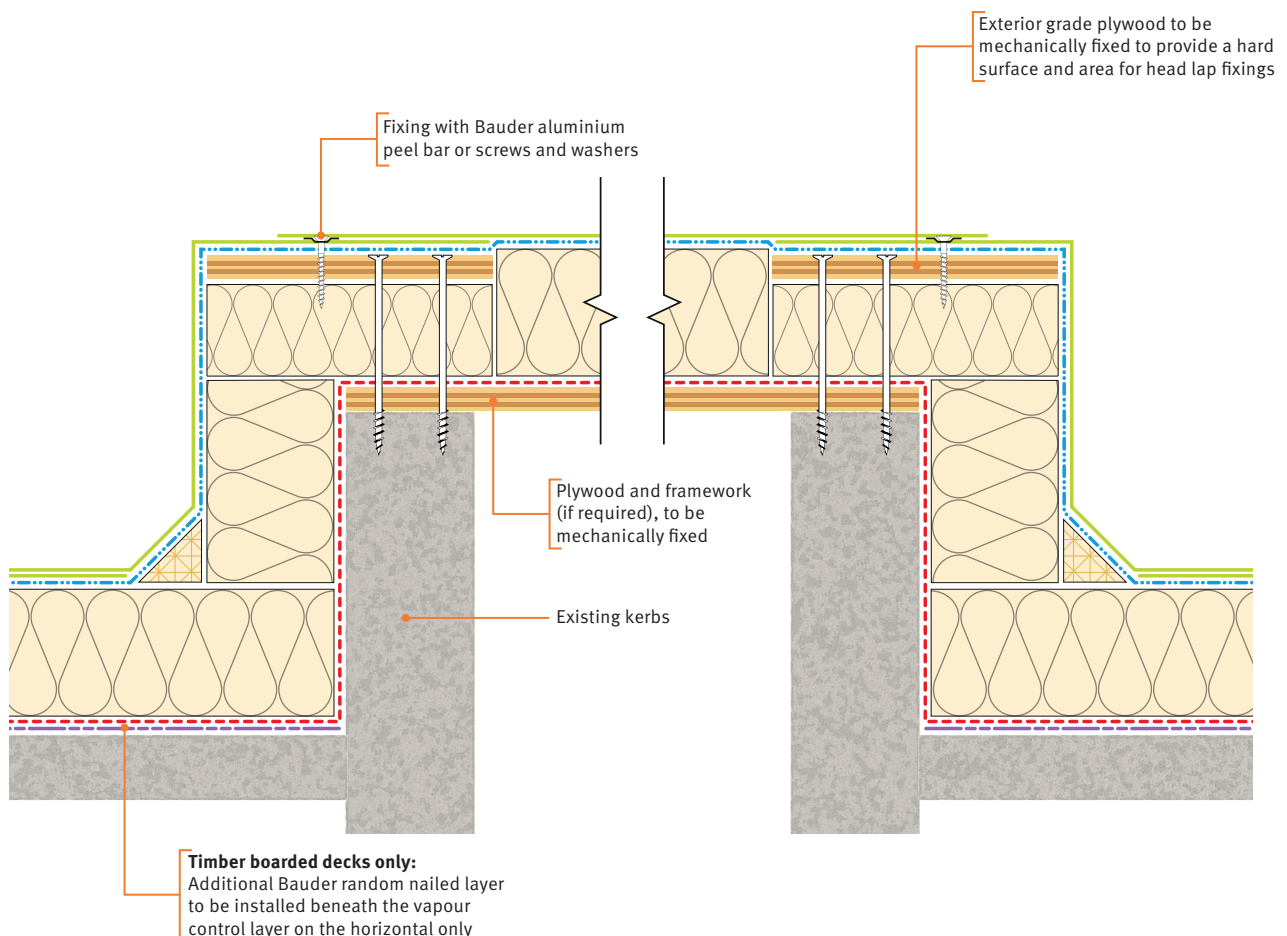
5.8 Hard edges to protect exposed edges of insulation

The creation of protection or hard edges to prevent mechanical damage to the insulation at gutter edges, drip edges etc. The dimensions of the hard edge protection will vary to accommodate the thickness of the insulation and waterproofing build-up in order to avoid the creation of a water check.

There are two types of protection:

- Timber hard edge – can be used in any location and **MUST** be used on external edges of buildings.
- Metal hard edges – To be used on internal gutters or sumps on warm roofs where the insulation from the flat area steps down. Can also be used on a change of level but must not be used on externals of buildings – A timber hard edge **MUST** be used in these locations. Step up details require ply protection when over 250mm high. Please refer to Insulated Upstands detail.

Change in level detail above 250mm high



5 Insulation *continued*

5.8.1 Timber hard edge

Quality: Planed, free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).

Moisture content at time of covering (maximum): 22%.

Preservative treatment: Please note organic solvent-based timber preservatives are not permitted, as these attack bitumen-based materials.

Protection to exposed edges of insulation: Reduced thickness treated timber batten (or equivalent plywood construction), a minimum width of 150mm and 10mm less in thickness than the insulation to accommodate the build-up of the waterproofing layers – all securely fixed to the deck.

Fixing method: Fasteners - type/length appropriate and suitable to particular deck substrate.

Fixing centres: 500mm (max)

Timber trims: Outer edges chamfered at changes in level.



5.8.2 Metal hard edge

Material: Galvanised mild steel.

Thickness: Minimum 1mm.

Dimensions: 50mm x 50mm.

Length: 3m max.

Preparation: Surface to be inspected and cleaned if necessary, using white spirit to remove any contaminants, dirt or dust & primed with the specified Bauder primer. Prepared material to be thoroughly dry before use.

Fixing method: Adhered using the specified Bauder primer.

Installation: The 50 x 50mm galvanised mild steel angle to be adhered to the exposed leading edge of the insulation to retain the metal in position and prevent post-installation movement whilst the detail is waterproofed.



Metal hard edge and insulation facing to be primed prior to installation of the underlayer.

6 Underlayers

Underlayer	Application
BauderTEC KSA DUO 35	Self-adhesive
BauderTEC KSA DUO	Self-adhesive
BauderTEC Sprint DUO	Self-adhesive
BauderFLEX G4E	Torch-applied
Bauder EGV 35 TF	Torch-applied



Important:

Form all details in such a way that a fully bonded 100mm lap is obtained between the air and vapour control layer and the underlayer – please see Bauder bituminous detail drawings.

Self-adhesive Underlayers - care should be taken to ensure adhesion when the temperature is below + 5° C.

6.1 General guidance for all underlayers

Side and end laps: Head laps to be 100mm and staggered, side laps to be 80mm, laid with all laps heat sealed to provide a continuous bitumen bead extrusion.

All laps to upstands, edge details, flashings, etc., to be a minimum 100mm. All laps torch sealed to provide a continuous bitumen bead extrusion. The underlayer must be taken up all upstands, edge details, in accordance with current British Standards and Bauder recommendations.

Penetrations: Fully seal using bonding methods recommended by Bauder. Please see Bauder bituminous detail drawings.

Exposed edges of insulation at roof perimeters, abutments, upstands, kerbs, outlets, penetrations:

Prevention of wind uplift (where required):

Mechanically fix as per the corresponding project specific wind load calculation, using appropriate thermally broken fasteners fixed through to the deck/substrate.

Upstands

Insulated upstands: Facing of insulation to receive a coating of Activator-Primer on all insulated upstands prior to the installation of the underlayer. This will ensure sufficient adhesion is achieved between the insulation and underlayer and will remove the need for mechanically fixing through the underlayer prior to installation of the capping sheet.

At ends of rolls: Underlay layer only, form with bitumen membrane carried up without using separate strip.

Layers of bitumen membrane: Carry in staggered formation up the upstand, with each layer fully bonded.

For cold roofs: The underlayer must be dressed up all upstands and to the full extent of the detail. This is to ensure that the detail is fully encapsulated to reduce the risk to exposed combustible materials.

6 Underlayers *continued*

6.2 Self-adhesive underlayers

Bauder membranes KSA DUO 35, KSA DUO & Sprint DUO are cold applied and fully bonded by removing the peel-off release film. All self-adhesive underlayers can be used in both torch-free and torch-safe zones.

Bond: Full over whole surface, with no air pockets. Cold applied and fully bonded by removing the peel off release film.

Side laps: To be 100mm and must be laid red over blue, and heat sealed/torched (depending on torch-free & torch-safe zones) and rolling with the Bauder Long Handled Lap Roller to extrude a continuous bead of bitumen.

Head laps: To be 100mm and staggered, and heat sealed/torched (depending on torch-free & torch-safe to extrude a continuous bead of bitumen.

Upstands: The underlayer must be taken up all upstands, edge details, in accordance with current British Codes of Practice and Bauder recommendations, and fully heat sealed/torched (depending on torch-free & torch-safe zones) with the air and vapour control layer by a minimum 100mm. oth torch-free and torch-safe zones.

Installation to field areas

- For self-adhesive membranes apply a coat of Bauder Activator-Primer (Canister)-Black to the insulation. **See Section 3.2** to ensure adhesion of the underlayer.
- Lay out the membrane and align so that the membrane runs straight.
- Roll back the membrane on the spindle to half the length of the roll and ensure it is wound tight onto the spindle.
- Using the straight-bladed knife, carefully cut across the release film to the full width of the roll.
- Pull the release film, so that the membrane unrolls onto the substrate.
- Roll out applying pressure to ensure adhesion to the substrate. Any air pockets should be rolled over with the long handle lap roller to remove them.
- Complete for the remaining half of the roll.
- Side laps – heat seal ensuring a continuous bitumen bead extrusion is achieved.
- Head laps – heat seal ensuring a continuous bitumen bead extrusion is achieved.



The side laps are to be 100mm and must be laid red over blue and sealed with appropriate heat sources according to NFRC Safe2Torch guidelines:

- A hot air gun in torch-free zones.
- Gas torch in torch-safe zones.

A coat of Bauder Activator Primer (canister) -Black must be installed to all flat and vertical surfaces of the insulation prior to installing the self-adhesive underlayer to ensure adhesion of the underlayer. **See Section 3.2** for application instructions.

Acceptable alternative underlayers for systems are listed below:

- BTRS PLUS:** BauderTEC KSA DUO 35 can be replaced with BauderFLEX G4E (in torch-safe zones only)
- BTRS:** BauderTEC KSA DUO can be replaced with BauderFLEX G4E (in torch-safe zones only)
- Bauderflex:** BauderTEC Sprint DUO can be replaced with Bauder EGV 35 TF (in torch-safe zones only)

Installation at detailing

- Cut appropriately sized and shaped membrane pieces appropriate to the detail.
- Press the membrane into/around the detail to ensure it will fit. Carefully cut the release film halfway across the membrane piece.
- Remove one half of the release film and press the adhesive side into the detail, consolidate with a hand roller. Heat seal the laps ensuring a bitumen extrusion is achieved.
- Remove the remaining half of the release film and press the adhesive side into the detail, consolidate with a hand roller. Heat seal the laps ensuring a bitumen extrusion is achieved.



Important:

For detailing to un-insulated abutment upstands, where the waterproofing is to be applied to rough or uneven non-combustible surfaces i.e. brickwork or concrete, it is permissible to use an alternative Bauder torch-on underlayer appropriate to the specified system where this product is considered to be better for application to these surfaces.

For all other situations, and particularly to vertical insulation, the Bauder self-adhesive underlayer appropriate to the specified system must be used.

6 Underlayers *continued*

6.3 Torch-on underlayers

The Bauder torch applied underlayers are G4E and EGV 35 TF and used in torch-safe areas.

Bond: Partially bonded.

NB: Where surface is uneven or not suitable for a self-adhesive membrane and where the surface is of a non-combustible material and is not required to be a torch-free zone – it is permissible to use a torch-applied underlayer, so long as the product is a recognised component of the system specified.

Bitumen Underlayers used as temporary waterproofing - guidance	
Membrane Type	Maximum length of time membrane can be left exposed
KSA DUO 35, KSA DUO & Sprint DUO	2 months
EGV 35 TF	4 months
FLEX G4E	6 months

Bauder insists an inspection is carried out before installation of the next layer to ensure waterproofing integrity.

6.4 Underlayer at upstands

At ends of rolls: Underlay layer only, form with bitumen membrane carried up without using separate strip.

Layers of bitumen membrane: Carry in staggered formation up the upstand, with each layer fully bonded.

For cold roofs: The underlayer must be dressed up all upstands and to the full extent of the detail. This is to ensure that the detail is fully encapsulated to reduce the risk to exposed combustible materials.

Cap sheet cover flashing: A separate flashing of capping sheet will be required to cover the fixings. **See Section 9.1.**



Important:

Torch-on underlayers **must not** be used:

- In torch-free zones (**see Section 1.2**).
- On foil-faced insulations, (FA-TE and FA Tapered).

Torch-on underlayers can only be used on glass tissue or bitumen faced insulation or to a non-combustible substrate in torch-safe zones.



Underlayer shown with a separate flashing to the upstands with the GRP Trim mech fixed through it.



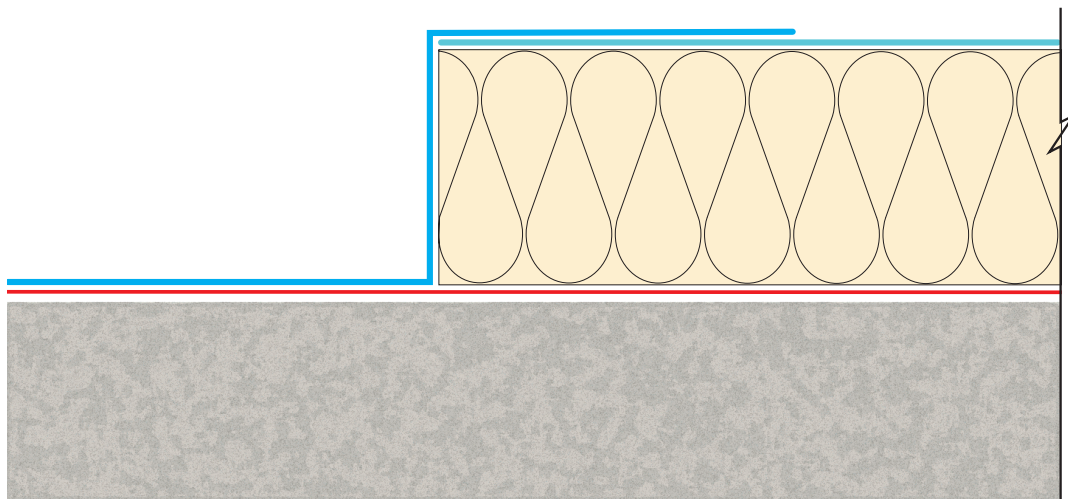
7 Night Seals

7.1 Creating a night seal

At the end of each working session, the new waterproofing should be terminated with a secure and waterproof temporary seal, which can be left in-situ, utilising self-adhesive underlayer material (e.g. BauderTEC Sprint DUO) to create the seal.

The self-adhesive underlayer should be extended on to the flat AVCL by a minimum of 200mm from the exposed edge of the insulation and heat activate to ensure a satisfactory seal.

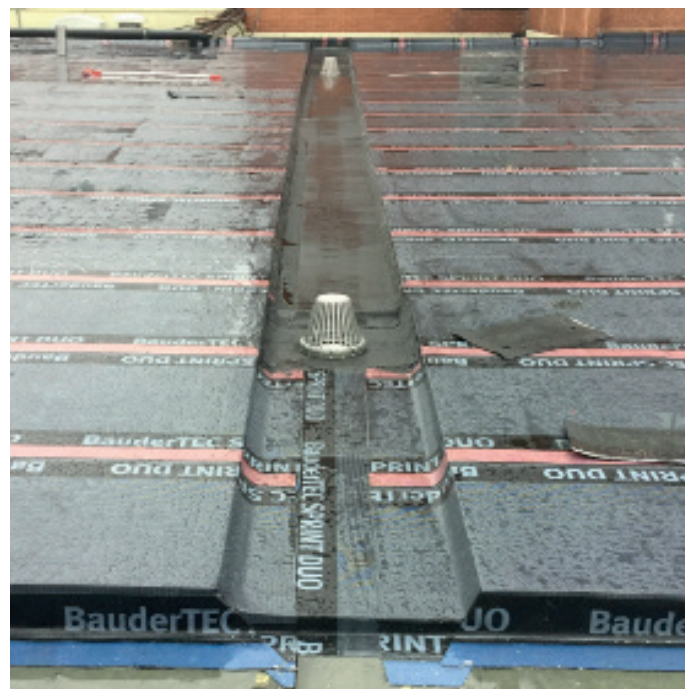
To ensure that no moisture contamination of the system can occur between each working period, it is essential that the night seal is properly and securely bonded.



Detail drawing showing suitable night seal



The image above shows an example of a suitable night seal



SPRINT DUO on main field area

8 Capping Sheets

Capping Sheet	Application
BauderKARAT	Torch-on
Bauder K5K	Torch-on
BauderFLEX K5E	Torch-on
BauderFLEX K4E	Torch-on
Bauder PYE PV 200 S4	Torch-on
BauderTHERM SL500	Torch-on
BauderTEC KSO-P SN	Self-Adhesive
BauderTEC KSO SN	Self-Adhesive
BauderTEC KSO ALP SN	Self-Adhesive



Important:

Cap sheet should run in the same direction as the underlayer, and be offset from the underlayer, so as not to impede drainage/falls. No small sections should be used.

8.1 General guidance for all capping sheets

All laps: Heat sealed to provide a continuous bitumen bead extrusion.

Head laps: 100mm and staggered by minimum of one metre to the adjacent sheet.

Side laps: 80mm.

All laps to upstands, edge details, flashings etc: a minimum 100mm.

Penetrations: Fully seal using bonding methods recommended by Bauder. Please see Bauder bituminous detail drawings.

8.2 Torch-on fully bonded capping sheets

KARAT, K5K, K5E, K4E & PYE PV 200 S4.

Bond: Full over whole surface, with no air pockets.

Laying top layer: Fully bonded to the underlayer by torching.

Important:

Cannot be used in torch-free zones.



Important:

Cap sheet should run in the same direction as the underlayer, and be offset from the underlayer, so as not to impede drainage/falls. No small sections should be used.



8 Capping Sheets *continued*

8.3 Torch-on fully bonded root resistant capping sheets

PLANT E 42, PLANT E and SMARAGD.

Bond: Full over whole surface, with no air pockets.

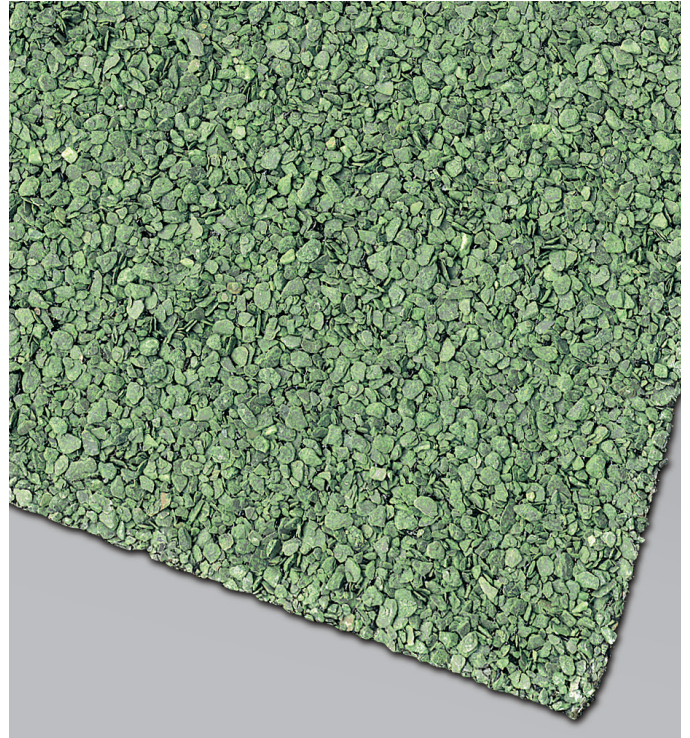
Laying top layer: Fully bonded to the underlayer by torching.

Important:

Cannot be used in torch-free zones, unless hot air welding.



Only to be used in torch-safe zones. **See Section 1.5**



8.4 Self-adhesive capping sheets

KSO SN, KSO ALP SN and KSO-P SN, hot air welded.

Bond: Full over whole surface, with no air pockets.

Laying top layer: Cold applied and fully bonded to the underlayer by hot air welding.



Important:

Bauder Activator-Primer (Canister), must be applied to the underlayer prior to installation of the self-adhesive capping sheet.

Must be used in torch-free zones and can be used in torch-safe zones.



8 Capping Sheets *continued*

8.5 SL500 (partially bonded)

Torch-on partially bonded capping sheet

Partially bonded over existing felt or asphalt – SL500

Bond: 50% bonded to the existing felt or asphalt and fully bonded to the Bauder perimeter upstand flashings, by torching the heat dispersible film.

Important:

- Care should be taken not to overheat the material.
- When sealing to the existing system or the Bauder underlayer with SL500 capping sheet head laps, ensure sufficient heat is applied so that a full bond is achieved and the ‘Stripes’ profile to the underside is fully sealed off.



SL500 cap sheets can only be used in torch-safe zones.
See Section 1.5.



9 Mechanical Fixing of Bitumen Membranes

9.1 Mechanical fixing of bitumen membranes on upstands

Terminating capping sheet on the vertical

To terminate the capping sheet on the vertical, a Bauder aluminium peel bar is to be used along with appropriate fixings (depending upon substrate) at 150mm centres. Where it is terminated on the vertical it will need to be covered with the specified flashing material dressed over the top to ensure waterproofing integrity. Should a traditional lead cover flashing be used, then a separating tape will need to be used between the aluminium bar and lead flashing.

Note: A Bauder termination bar is not to be used in this scenario unless it has been specified by Bauder.

Mechanically restraining the capping sheet on the horizontal

To mechanically restrain the capping sheet when the capsheet is taken onto the horizontal on top of the parapet, Bauder aluminium peel bar (at 150mm centres) or screws and washers will be specified used along with appropriate fixings (depending upon substrate). Please refer to table.

Note:

Cap sheet cover flashing - A separate flashing of capping sheet will be required to cover the fixings (please see Bauder detail drawings).

Bauder aluminium peel bar

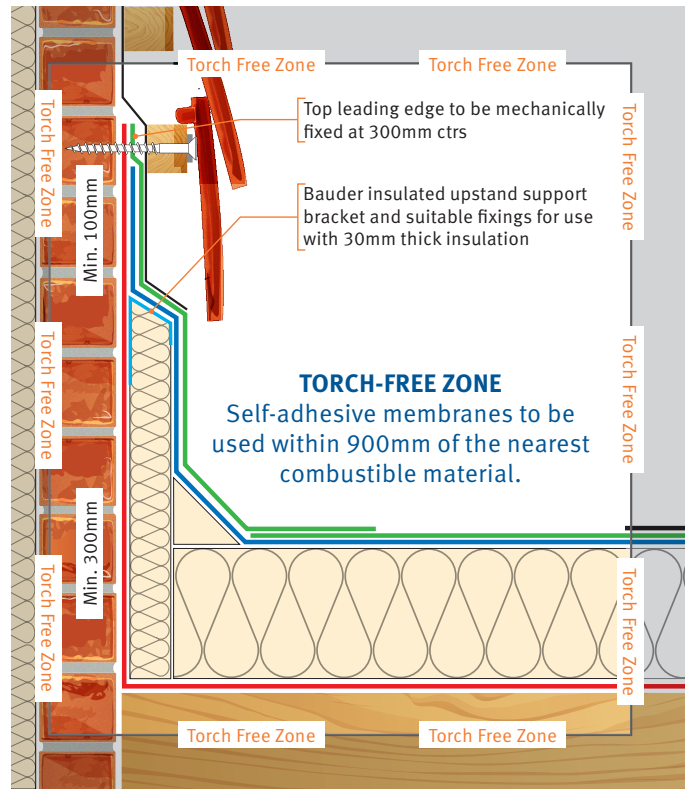
Pre-drilled hole size 6.5mm to suit fasteners up to 6.3mm diameter. Not suitable for tube washers.

Installation

- Align on the vertical.
- With appropriate fixings, fasten through the Bituminous system at 150mm centres.
- Leave a 10mm wide gap between each section of peel bar to allow for expansion and contraction.

Notes for mech fixing insulation on upstands:

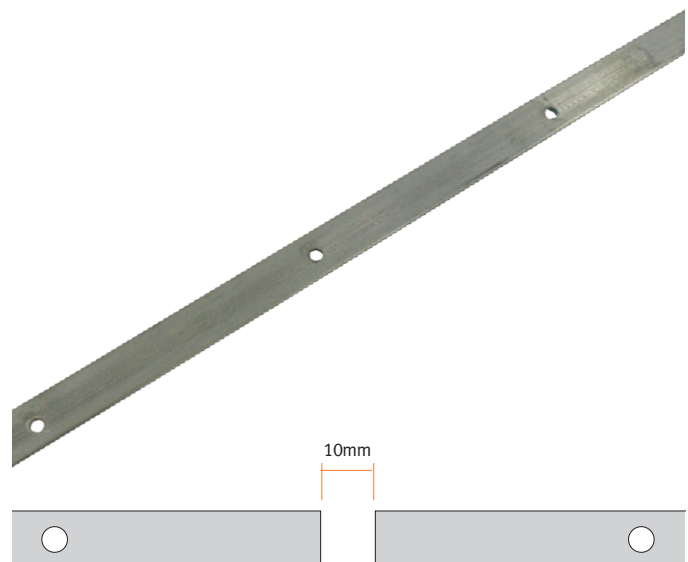
- 5 fixings for BauderPIR FA-TE – one in each corner and one in the centre.
- 1 fixing for BauderROCK – in the centre of the board. BauderROCK should always be mech fixed with one fixing, even when adhering due to the weight of the board.



Bitumen insulated upstands

Fixings required for Bauder insulations & capping sheets in accordance with BS 8217 & Bauder recommendations

Upstand height	Between 250mm & up to 500mm	500mm	600mm	600mm to 900mm	Up to 1100mm
Insulation attachment	Follow specification for fixing method.				
Insulation facing	Coated with Bauder Activator-Primer - Black .				
Capping sheet fixing on the vertical face	Yes – top leading edge using Bauder aluminium peel bar. Fixings at 150mm centres.				
Capping sheet fixing on the horizontal face	Yes – top leading edge using Bauder aluminium peel bar. Fixings at 150mm centres. Alternatively, screws and washers, 5 no. fixings per sheet width.				



9 Mechanical Fixing of Bitumen Membranes *continued*

Important:

Anything above 1100mm (this includes mansard and dormer side panels):

Upstands exceeding approximately 1100mm should be checked with Building Control due to consideration of the fire regulations (Building Control may advise a lower max. height).

For upstands using only self-adhesive membranes, these will need to be mechanically fixed at the top leading edge of the membrane with Bauder aluminium peel bar regardless of the upstand height. This will be for System Airtech and for areas referred to as torch-free zones.

Tips:

Fixing pattern using 5 fixings per linear metre:
Set two fixings, one either side of the sheet set in 50mm from each edge. The three remaining fasteners equally spaced in between.

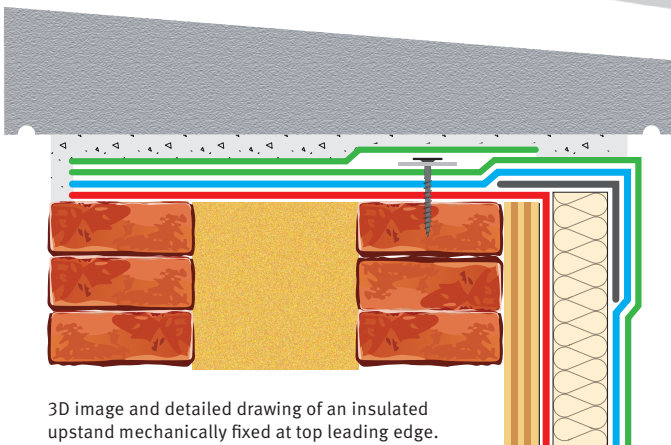
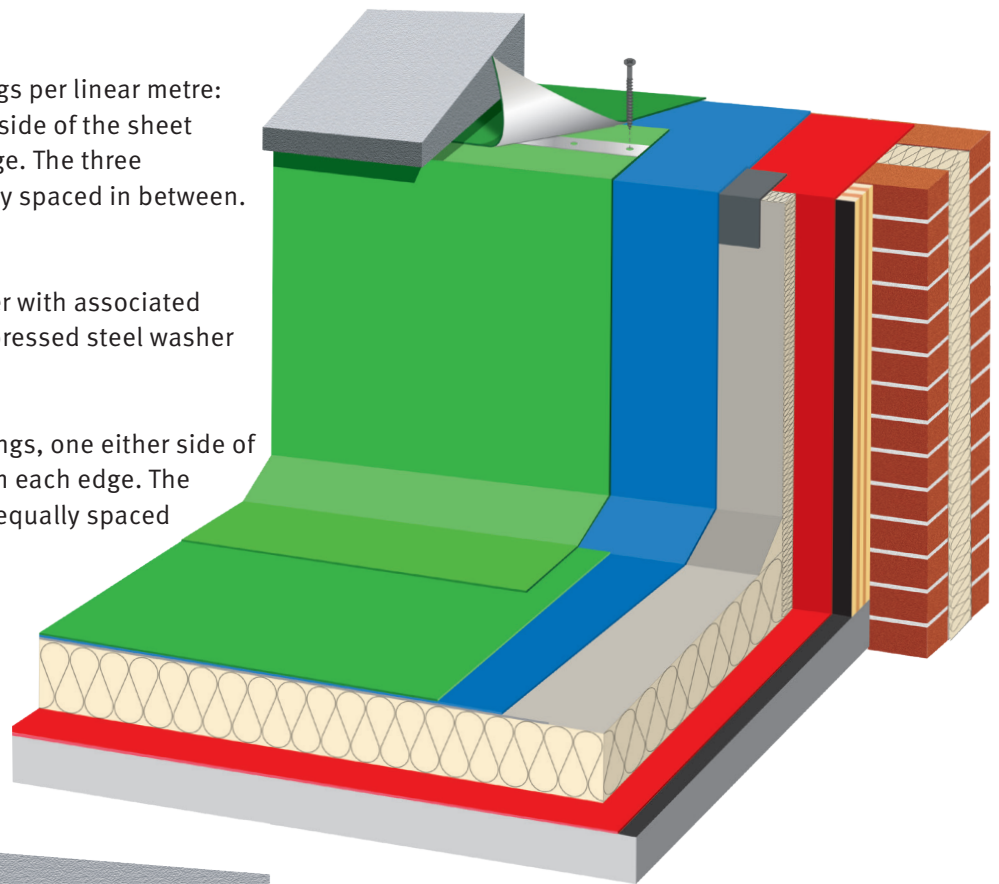
Screws and washers:

IWF-5.2x35 screws together with associated IFC/IW-82x40 galvanised pressed steel washer plates.

Fixing pattern: Set two fixings, one either side of the sheet set in 50mm from each edge. The three remaining fasteners equally spaced in between.

Bitumen un-insulated upstands - Fixings required for Bauder Underlayers & Capping Sheets in accordance with BS 8217 & Bauder recommendations

Upstand height	Between 250mm & up to 500mm	500mm	600mm	600mm to 900mm	Up to 1100mm
Substrate	Coated with specified primer.				
Capping sheet fixing on the vertical face	Yes – top leading edge using Bauder aluminium peel bar. Fixings at 150mm centres.				
Capping sheet fixing on the horizontal face	Yes – top leading edge using Bauder aluminium peel bar. Fixings at 150mm centres. Alternatively, screws and washers, 5 no. fixings per sheet width.				



3D image and detailed drawing of an insulated upstand mechanically fixed at top leading edge.

9.2 Mechanical fixing of bitumen membranes on slopes above 5 degrees

18mm WBP plywood or OSB/3 capping sheet retention plate

When insulation is to be incorporated within the system, the retention plate should be installed to allow provision for mechanical fixing of the top leading edge of the capping sheet. The plate should run continuously across the roof slope coinciding with where the top leading edge of the capping sheet occurs.

A continuous run of the retention plate will be required for each row where the cap sheet head laps are staggered. Head laps should not be fixed in a continuous line, unless the roof is less than the length of the roll from the ridge to the gutter eaves.

Retention plate to be installed in accordance with the relevant Bauder guidance sheet. Size: 18mm x 300mm x 2400mm.

■ **Insulation thickness:** Where the mechanical retention plate is to be incorporated, the insulation below needs to be 20mm thinner to ensure the plate finishes virtually flush with the main area insulation. Mechanically fix the plate through to the deck using the specified thermally broken fasteners.

■ **Priming:** Bauder Activator-Primer (Canister), APR01-Black, to seal and prepare the surface of the mechanical retention plate prior to the application of Bauder membranes.

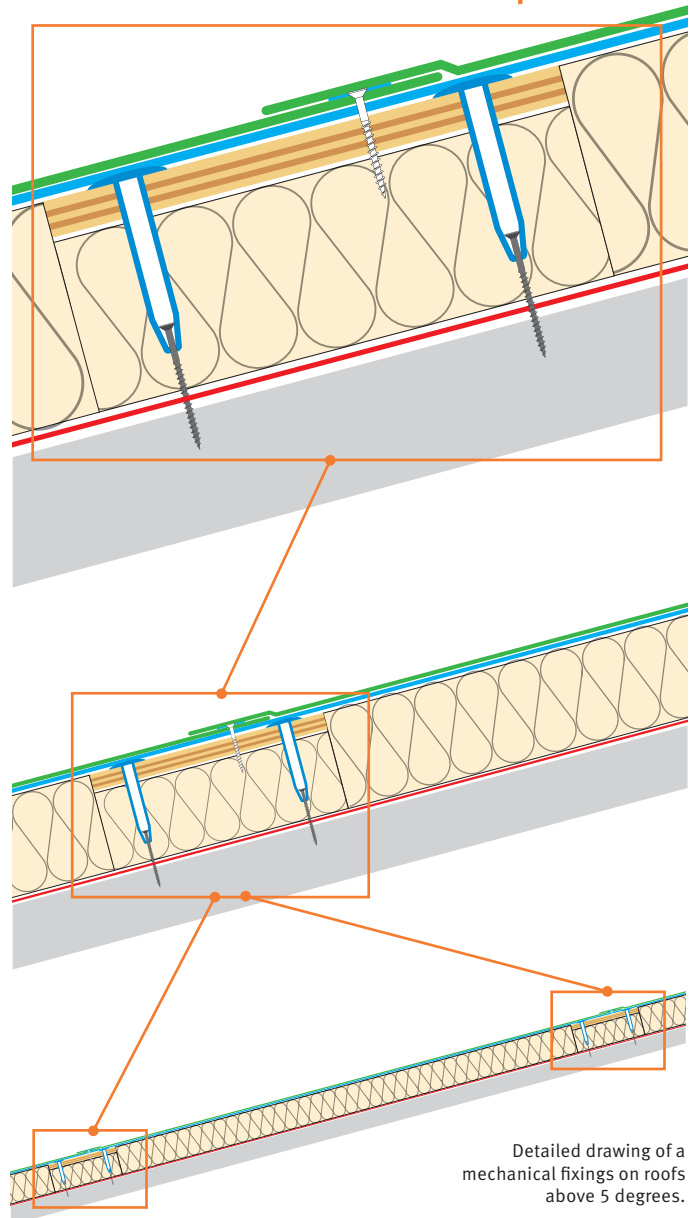
■ **Setting out of membranes:** Parallel to roof slope, with successive layers carried over ridges.

- **Lengths (maximum):** As per roll length.

- **End laps:** Half stagger and align on alternate bitumen membranes.

■ **Additional fixing of bitumen membranes:**

Fixing pattern using 5 fixings per linear metre: Set two fixings, one either side of the sheet set in 50mm from each edge. The three remaining fasteners equally spaced in between.

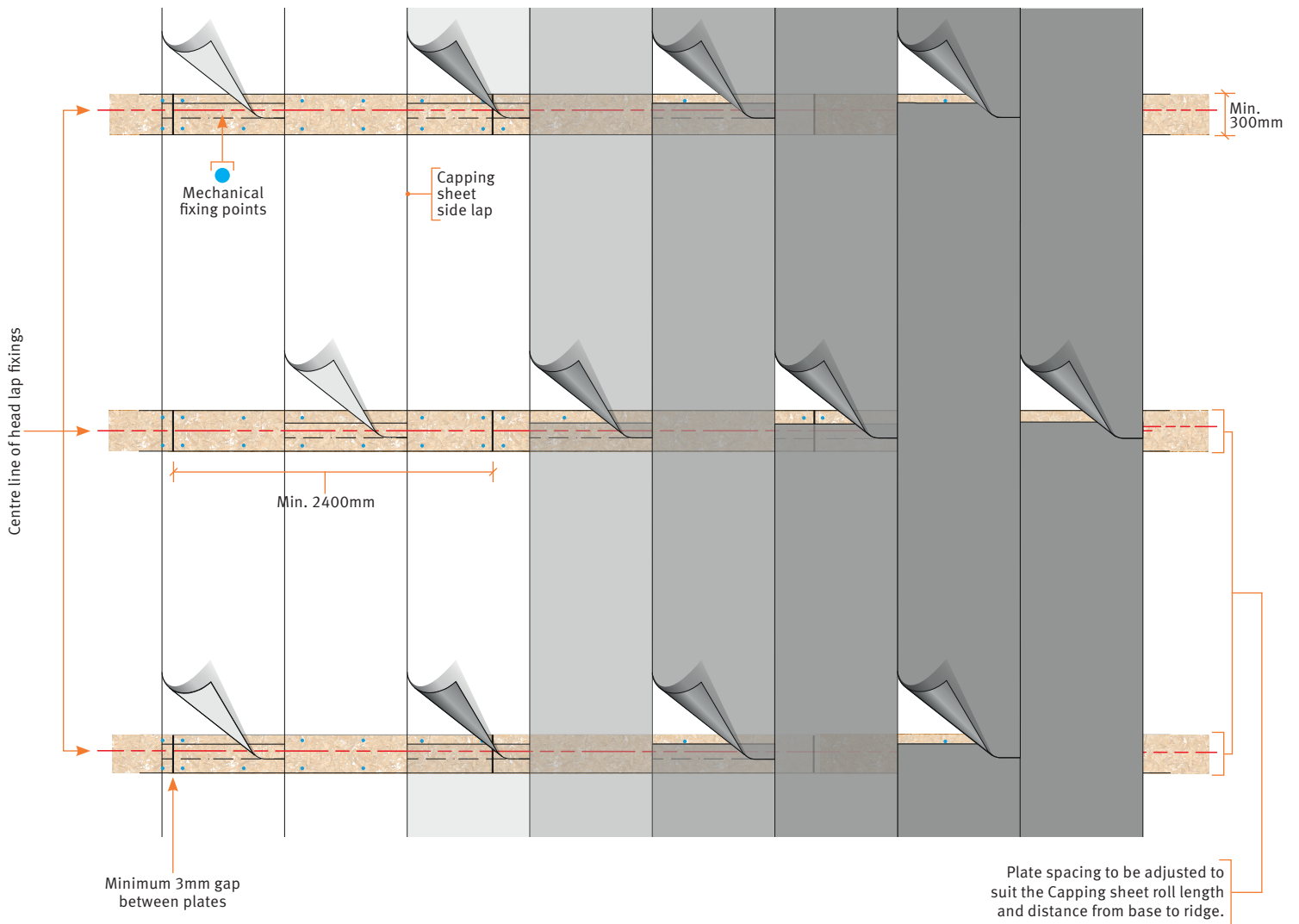


Detailed drawing of a mechanical fixings on roofs above 5 degrees.

■ **Screws and washers:** IWF-5.2x35 screws together with associated IFC/IW-82x40 galvanised pressed steel washer plates.

■ **Fixing pattern:** Set two fixings, one either side of the sheet set in 50mm from each edge. The three remaining fasteners equally spaced in between.

9 Mechanical Fixing of Bitumen Membranes *continued*



10 Accessories

10.1 Perimeter trims

Bituminous membranes

- The first layer of membrane must be self-adhesive and dressed to the full extent of the detail using torch-free methods. This is to ensure that the detail is fully encapsulated to reduce the risk of fire to exposed combustible materials.
- Dress the underlayer up and over the perimeter detail to provide a 25mm overhang.
- Please refer to Bauder standard detail drawings.

Trim

- **Setting out:** 10mm gap between the back edge of the bottom of the drip to the fascia/wall and 3mm gap between abutting lengths of trim.
- **Fasteners:** Screw fasteners of type appropriate to kerb or deck substrate. Nail fixing is not permitted.
- **Fixing:** 30mm from ends and at 300mm (maximum) centres, stagger fixed. Can be used to retain the capping sheet where the capping sheet is taken to the full extent of the detail – please see Bauder detail drawing.
 - 150mm deep trims (type 6) – 3no. additional fixings per length of trim. The fixings are to be face fixed with screws and positioned 75mm down from the top edge, one fixing 100mm in from each end and one in the centre and capped with coloured matched plastic weathering caps.

Note: A fixed timber packer will be required behind the face of the trim to help facilitate ease of fixing.

- **Jointing sleeves/bridging piece:** All lengths should be close but jointed using an internal jointing sleeve. This must be provided to each joint.
- **Corner pieces:** Purpose made.

Completion of bitumen membrane

- **Contact surfaces:** Prime with Bauder Primer.
- **Joints:** Cover with 200mm long pads of bitumen membrane, bonded to trim.
- **Top layer/capping sheet:** Butt joint to rear edge of trim.
- **Cover strip:** Fully bond to trim and top layer/capping sheet of bitumen membrane. Carry over roof edge upstand and lap 100mm onto roof. The capping sheet is to be dressed tightly into the top lip of the trim, ensuring a bead of bitumen extrudes at the edge. Please see Bauder detail drawing.
- **Wall/kerb joints:** The new trim must cover any open joint that may exist at the top of the kerb or wall, by a minimum distance of 20mm.



Image showing GRP trim to perimeters

10 Accessories *continued*

10.2 Water check trims

Bauder GRP Water Check Trim to be used on parapets and perimeter kerbs over 200mm in width – must not be used on its own as a check kerb.

Bituminous membranes

- The first layer of membrane must be self-adhesive and dressed to the full extent of the detail using torch-free methods. This is to ensure that the detail is fully encapsulated to reduce the risk of fire to exposed combustible materials.
- Dress the underlayer up and over the perimeter detail to provide a 25mm overhang.

Please refer to Bauder standard detail drawings.

Trim

- **Setting out:** The bottom inside lip of the drip to sit flush with the fascia/wall, leaving a 3mm gap between abutting lengths of trim.
- **Fasteners:** Screw fasteners of type appropriate to kerb or deck substrate. Nail fixing is not permitted.
- **Fixing:** 30mm from ends and at 300mm (maximum) centres, stagger fixed. Can be used to retain the capping sheet where the capping sheet is taken to the full extent of the detail – please see Bauder detail drawing.
- **Jointing sleeves/bridging piece:** All lengths should be close butt jointed using an internal jointing sleeve. This must be provided to each joint.
- **Corner pieces:** Purpose made.

Completion

- **Contact surfaces:** Prime with Bauder Primer.
- **Joints:** Cover with 200mm long pads of bitumen membrane, bonded to trim.

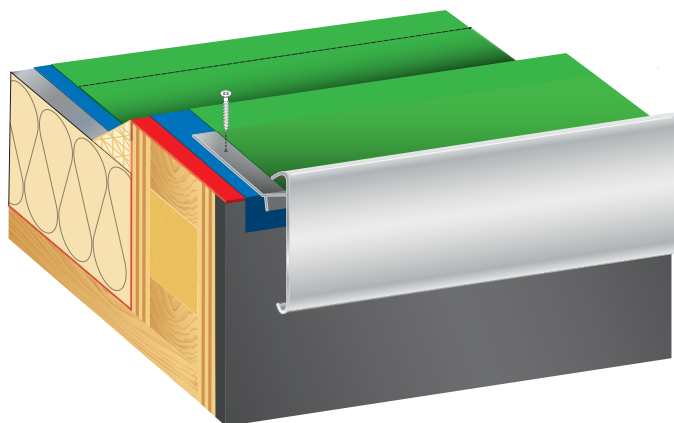
Completion of bitumen membrane

- **Top layer/capping sheet:** Butt joint to rear edge of trim.
- **Cover strip:** Fully bond to trim and top layer/capping sheet of bitumen membrane. Carry over roof edge upstand and lap 100mm onto roof. The capping sheet is to be dressed tightly into the top lip of the trim, ensuring a bead of bitumen.
- **Wall/kerb joints:** The new trim must cover any open joint that may exist at the top of the kerb or wall, by a minimum distance of 20mm.

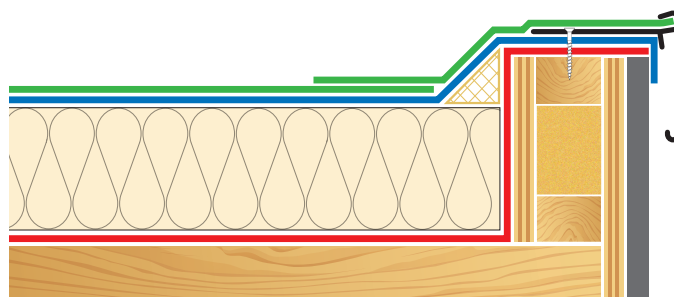


Important:

Where the top of the parapet is installed flat or has no inward fall, we would suggest using the GRP Water Check Trim to avoid any standing water being blown over the trim and staining the brickwork.



3D image and detailed drawing of GRP trim



10 Accessories

Tip:

Run a penny roller along the length of the membrane flashing as close to the lip of the trim as possible, to ensure adhesion is achieved.

Using a hand roller, remove any trapped air/gas by applying pressure on the membrane with the roller, at the same time extracting a neat 5-10mm bead of bitumen.



10.3 Welthed drips

- **Material for torch-free:** Bauder KSO SN or Bauder KSO-P SN, using torch-free methods.
- **Material for Safe2Torch:** Torch applied Bauder slate finished capping sheet, using Safe2Torch methods. Please refer to Bauder standard detail drawings for Welthed Drip.
 - **Length:** Form using maximum width strips.
 - **Height at external gutter (minimum):** 7mm.
- **Welt tail:** Nail to face of drip batten. Fold neatly around a pre-primed suitable former.
- **Welt:** Bond together; carry minimum 150mm onto roof. Overlap with bitumen membrane capping sheet.
- **Mansard roofs:** A new lead flashing is to be installed behind the batten and dressed down over the top mansard tiles prior to installing the welthed drip detail.

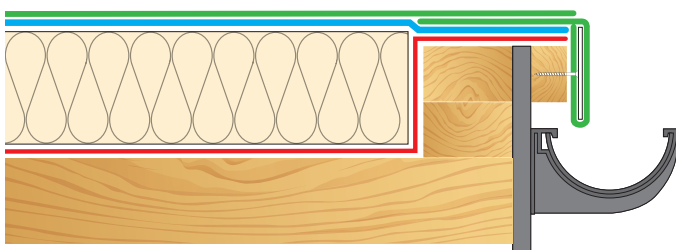


Important:

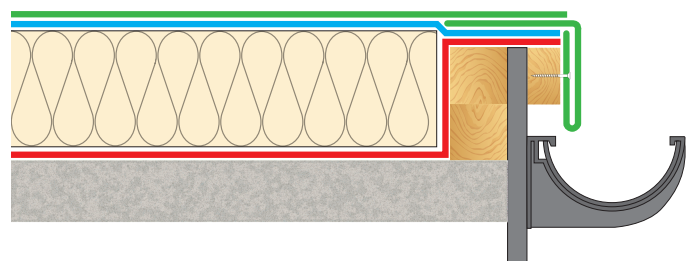
Self-adhesive bitumen is affected by UV exposure. Slide drip flashing behind the former, then fix and dress each flashing consecutively. Do not hang all flashings before fixing, otherwise they will only adhere by torch activation.



Image of welthed drip to external gutter



2D section detail of welthed drip to external gutter which incorporates a suitable former within the drip detail: Torch-Free



2D section detail of welthed drip to external gutter: Torch-safe

10 Accessories

10.4 Outlets

The components that form part of the Bauder waterproofing system, and for guarantee reasons, should only be installed by Bauder approved contractors. Connectivity to below deck drainage pipework to be the responsibility of the plumbing contractor.

Bauder Vertical Outlets installation requirements

- **Fixing** – The outlet is to be secured through the rim to the structural deck by a minimum of four fasteners appropriate to obtain an adequate attachment to the deck substrate material. Some deck structures require preparatory works before the outlets can be installed.
- **Concrete decks** – the opening for the vertical outlet(s) to be either pre-cast or core-drilled so that the outlet can be installed at the same time as the air and vapour control layer/ underlayer. Provision for a 250mm diameter opening is required.
- **Profiled metal decks** – these require a 250mm diameter. Opening cut into the decking, but in addition will require a 600 x 600 x 1.25mm galvanised steel reinforcing plate secured to the deck before the outlet can be installed. This item has a pre-cut 250mm diameter hole and is available from Bauder.
Note: For detailed information and for further information on vertical and refurbishment outlets, please refer to the specific Bauder Technical Data Sheet.

10.5 LiquiPOCKET Detailing Kit

Preparation: Ensure that the surface receiving the Bauder LiquiPOCKET is clean, dry and free from dust, laitance, grease, oil, and any other contaminants.

Protection: Cover the completed waterproofing membranes with a clean tarpaulin to protect from any spills and splashes.

Metal: All flaking paint should be removed back to clean metal. Any rust should be treated with a suitable rust inhibitor strictly in accordance with the manufacturer's instructions.

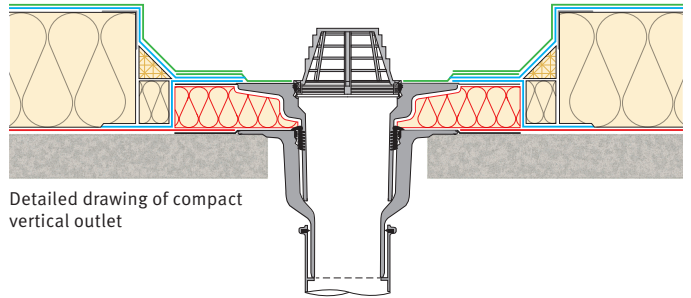
Plastics: Roughen surface with sandpaper to provide a key.

Application: Create frame and apply Bauder LiquiPOCKET to specified areas, in strict accordance with the Bauder application instructions and drawings provided within each kit. Application is straightforward, but Bauder will provide on-site training in the use of this product on request.



Important:

All outlets should have a separate flashing of AVCL/ underlayer to isolate the outlet from the system, as per standard detail drawings.



Detailed drawing of compact vertical outlet

For further outlet information, please refer to the Bauder Outlets Overview Document



Important:

The product must not be used in any areas of Bauder roof systems without prior consent of Bauder Limited. Where this product is used, it will be covered under separate guarantee terms and conditions.

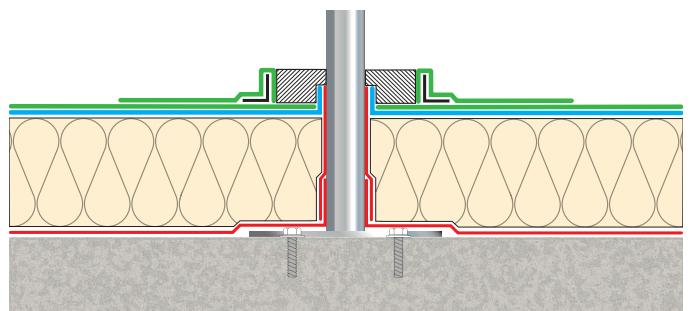


Image showing frame and contents of liquid pocket

10 Accessories

10.6 SVP Cover

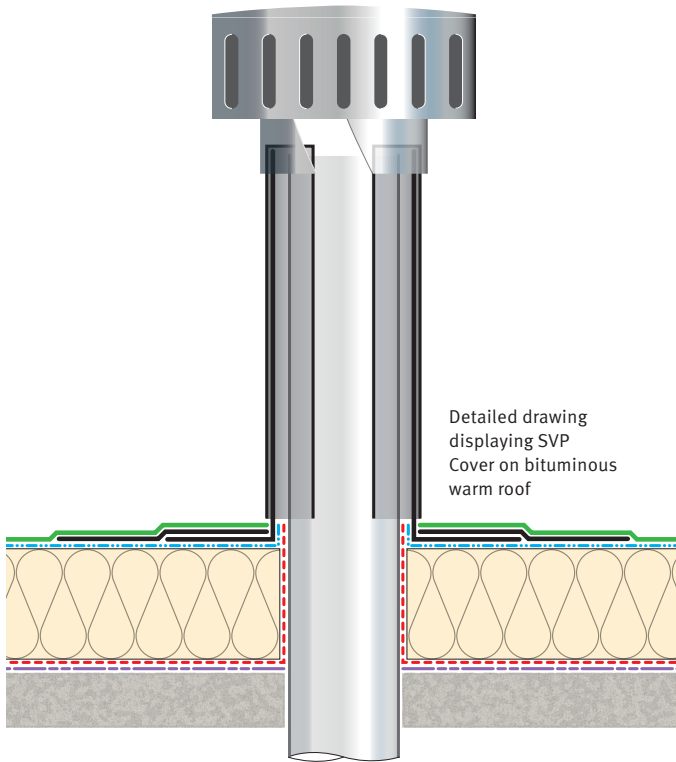
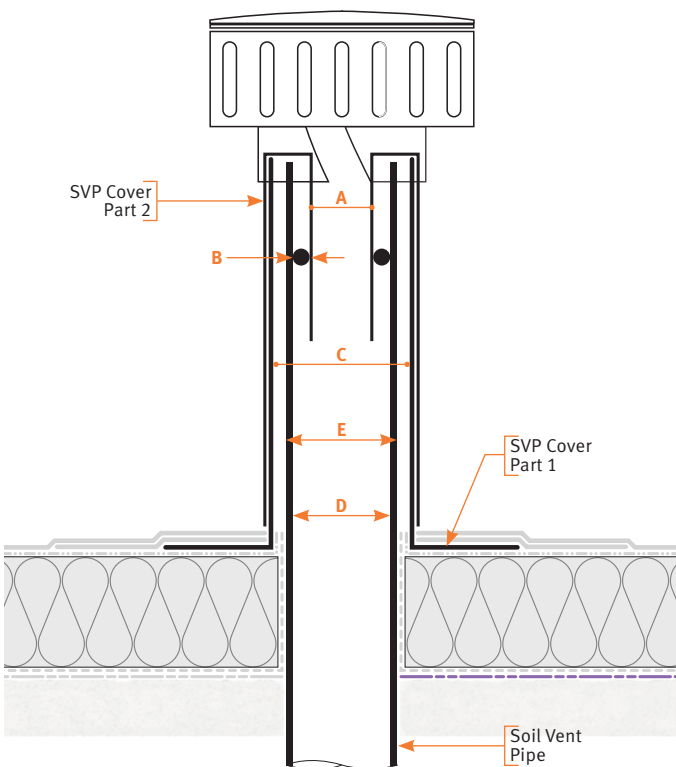


Image displaying SVP cover on bituminous roof



Flange Material	Part Code	Product Dimensions			To suit vent pipe		
		Part 2	O-Ring Dia.	Part 1	Internal Dia.		Outer Dia. maximum
		A	B	C	Max.	Min.	
RBM	RBM 110 = GB14109100	85	12	125	109	87	110
	RBM 250 = GB14109250	90	8	250	108	92	248
			10		110		
RBM 160 = GB14109160	145	8	180	181	147	165	

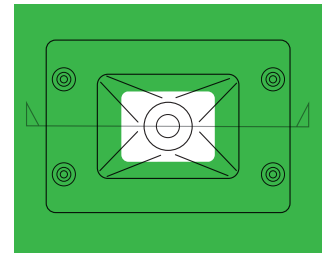
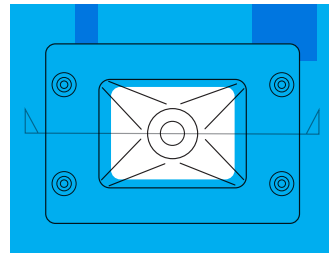
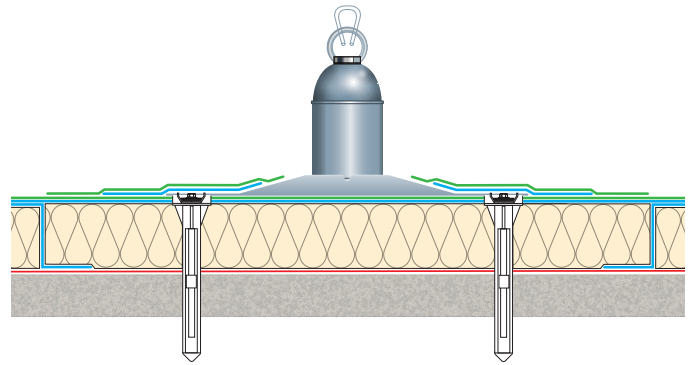
11 Approved Third Party Accessories

11.1 Latchways Mansafe® Constant Force® Posts

The system used must be in accordance with the client's requirements and follow the installation guidelines agreed by Bauder Ltd and provided by MSA Safety (Latchways).

The correct Latchways base plate suitable for use with bituminous Bauder systems is part number 65690-00 and coloured 'black' for ease of identification. These are unique to our system.

The installation of the baseplates must be carried out in the presence of the Bauder approved contractor in order to maintain waterproofing integrity. The waterproofing to the baseplates is to be carried out in strict accordance with Bauder instructions and detail drawing supplied.



Detailed drawing of Latchways post

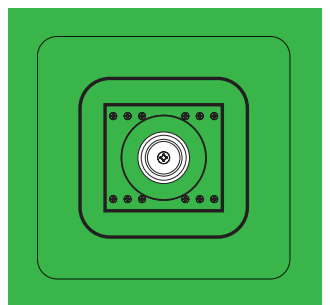
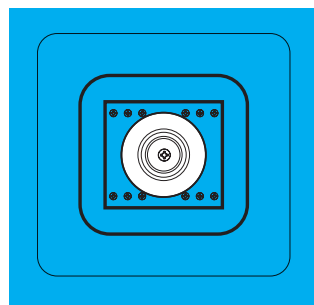
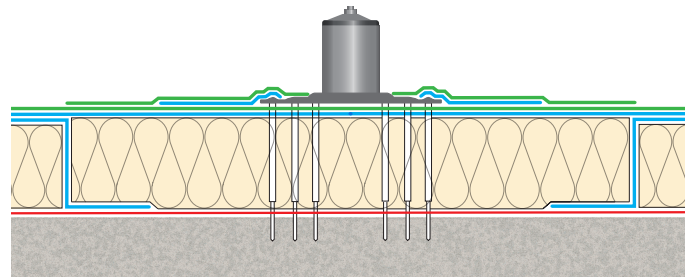
11.2 SFS Soter II post

The system used must be in accordance with the client's requirements and follow the installation guidelines agreed by Bauder Ltd and provided by SFS Fall Protection.

The correct Soter II post suitable for use with bituminous Bauder systems comprises the following parts (subject to the system layout)

Multi hole base plate - mill finished. Part number 1665988 (FP-BP-MH) Bauder high load module. Part number 1687130 (FP-BAU-FTH) or Bauder intermediate load module. Part number 1687132 (FP-BAU-FTI) The installation of the base plates must be carried out in the presence of the Bauder approved contractor in order to maintain the waterproofing integrity.

The waterproofing to the base plate is to be carried out by the Bauder approved contractor in strict accordance with Bauder instructions and detail drawing supplied.



Detailed drawing of SFS Soter II Post

Summary of measurements

Membranes	
Air and vapour control layer (AVCL) - end laps	100mm minimum
Air and vapour control layer (AVCL) - side laps	100mm minimum
Details - lap between AVCL & underlayer	100mm minimum
Underlayer - end laps	100mm minimum
Torch-on underlayer - side laps	80mm minimum
Self-adhesive underlayer - side laps	100mm minimum
Capping sheets - end laps	100mm minimum
Capping sheets - side laps	80mm minimum
Underlayer & capping sheets - all laps to upstands, edge details, flashings, etc.,	100mm minimum
Adhesives and accessories	
PU tin adhesive bead width	10-20mm
Bauder Peel Bar - fixed at 150mm centres	10mm gap between lengths
GRP Trim	3mm gap between lengths
GRP Trim	cover joints in trim with 200mm long pads of bitumen membrane, bonded to the trim.
Timber hard edge	to be 10mm less than insulation thickness.

UNITED KINGDOM

Bauder Limited
70 Landseer Road, Ipswich, Suffolk
IP3 0DH, England
T: +44 (0)1473 257671
E: info@bauder.co.uk
bauder.co.uk

IRELAND

Bauder Limited
O'Duffy Centre, Carrickmacross,
Co. Monaghan, Ireland
T: +353 (0)42 9692 333
E: info@bauder.ie
bauder.ie

Respecting the planet

Reducing use of materials



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