

NBS Specification

Supporting deck	Concrete
Type of roof	Warm
Application	Two-layer waterproofing with insulation
System reference	FORCE LINE

J41 Reinforced bitumen membrane roof coverings

To be read with Preliminaries/General conditions.

TYPES OF COVERING

110 BUILT-UP REINFORCED BITUMEN MEMBRANE WARM DECK ROOF COVERING

- Substrate: Concrete deck.
 - Preparation: Prime deck with Axter's VERNIS ANTAC quick drying primer, or contractor's choice, and allow to dry thoroughly.
- Vapour control layer: HYRANGER 25/25 TS polymer (SBS) modified reinforced bitumen membrane finished on the under surface with a thermo-fusible plastic film and on the surface with fine sand.
- Insulation: Rigid urethane foam board.
 - Attachment: Bonded in hot bitumen or Axter's cold applied MASTIC HYRENE or PU adhesive.
- Overlay to insulation: Not required.
- Waterproof covering:
 - System manufacturer: Axter Ltd, West Road, Ransomes Europark, Ipswich, IP3 9SX, Tel 01473 724056, Fax 01473 723263, email info@axterltd.co.uk, internet www.axter.co.uk.
 - First layer: THERMECRAN perforated membrane.
 - Attachment: Loose laid except for a strip to be 10% of the roof width around roof edges and all major penetrations.
 - Intermediate layer: HYRANGER 25/25 TS, a non-tissue glass reinforced SBS modified bitumen membrane (3.53 kg/m² nom.) with a sand finished top surface and thermo fusible film to the underside and selvedge.
 - Attachment: Torch-on bonding.
 - Top layer/ Capsheet: FORCE LINE 4.5 RE colour to choice, a combined polyester and glass fibre (180 gm/m²) reinforced self-finished membrane (5.40 kg/m² nom.), manufactured with a polymer (SBS) modified bitumen binder.
 - Colour: As requested.
 - Attachment: This layer must be fully bonded by torching and on all laps a 2 mm bitumen bead must be visible.
 - Flashings and detail work: FORCE LINE 4.5 as field sheet.
- Surface protection: Not required.
- Accessories: As required.

PRODUCTS

320 PRIMER

- Type: Bitumen cut back with volatile solvent.
- Characteristics when tested to BS EN 13357:
 - Volatile solvent content (minimum): 40% by mass.
 - Viscosity (maximum) (STV at 25°C, 4 mm orifice): 10s.

Axter. M1 Force Line Concrete Deck

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327 BONDING COMPOUND

- Type: Cold bonding bitumen or polyurethane adhesive.
- Manufacturer: Contractor's choice.
 - Product reference: as required.
- Restriction: For heat sensitive insulation materials, use cold bonding compound.

330 TIMBER TRIMS, ETC

- 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: As drawing _____

335 ANGLE FILLETS

- Material: As supplied by insulation manufacturer.
 - Size (minimum): min 50 x 50 mm, triangular in section.
- Restriction: Fillets under torch-on bitumen sheets to be non-combustible.

345 PERIMETER TRIMS

- Type: GRP.
- Manufacturer: Contractor's choice.
 - Product reference: as required.
- Colour: To choice.
- Size: As drawing _____
 - Lengths (maximum): 3 m.

420 RIGID URETHANE FOAM WARM DECK ROOF INSULATION

- Standard: Rigid polyisocyanurate foam (PIR) roofboard to BS 4841-3.
- Manufacturer: Contractor's choice.
 - Product reference: PUR/PIR.
- Grade: 28-36 kg/m³.
- Edges: Square.
- Thickness: To meet required U-value.
- Facing: Coated glass tissue.

480 PIPE COLLARS

- Manufacturer: Contractor's choice.
 - Product reference: as drawing no. _____
- Size: As drawings _____

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EXECUTION GENERALLY

515 ADVERSE WEATHER

- General: Do not lay coverings in high winds, wet damp conditions or in extremes of temperature unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry. Protect edges of laid membrane from wind action.

530 APPLYING PRIMERS

- Coverage per coat (minimum): 0.2 L/m².
- Surface coverage: Even and full.
- Coats: Fully bond. Allow volatiles to dry off thoroughly between coats.

SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION

610 SUITABILITY OF SUBSTRATES

- Substrates generally: Secure, clean, dry, smooth, and free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete including:
 - Grading to correct falls.
 - Formation of upstands, kerbs, box gutters, sumps, grooves, chases, expansion joints.
 - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability of substrate: Must not impair roof integrity.

670 LAYING VAPOUR CONTROL LAYER

- Attachment: Securely bond or nail to substrate.
- Side and end laps: 75 mm minimum, fully bitumen sealed.
- Joints in second layer (where applicable): Stagger by half a sheet.
- Penetrations: Fully seal using bonding or taping methods recommended by manufacturer.
- Edges of insulation at roof edges, abutments, upstands, kerbs, penetrations and the like: Enclose, with vapour control layer:
 - Dressed up sufficiently, providing 25 mm (minimum) seal when overlapped by the roof covering; or
 - Turned back 150 mm (minimum) over the insulation and sealed down.

680 LAYING WARM DECK ROOF INSULATION

- Setting out:
 - Long edges: Fully support and run at right angles to structure.
 - End edges: Adequately support.
 - Joints: Butt together.
 - End joints: Stagger.
- Bedding: Full bed of bonding compound.
- Mechanical fixing: Not required.
- Protection to exposed edges of insulation: Reduced thickness treated timber batten, outer edge chamfered at changes in level.
- Completion: Boards must be in good condition, well fitting and stable.

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WATERPROOF MEMBRANES/ ACCESSORIES

710 LAYING REINFORCED BITUMEN MEMBRANE GENERALLY

- Direction of laying: Unrolled up the slope.
 - Where practicable, install so that water drains over and not into laps.
- Side and end laps: As recommended by bitumen membrane manufacturer.
- Head and side laps: Offset.
- Intermediate and top layer/ capsheet: Fully bond.
- Successive layers: Apply without delay. Do not trap moisture.
- Strips of bitumen for 'linear' details: Cut from length of roll.
- Completed coverings: Firmly attached, fully sealed, smooth, weatherproof and free draining.

715 LAYING REINFORCED BITUMEN MEMBRANE ON ROOFS PITCHED MORE THAN 5°

- Timber battens: Fix flush with surface in substrates that will not securely accept nails.
 - Locations: To BS 8217, table 5.
 - Size: 50 mm wide x thickness of insulation.
- Setting out: Parallel to roof slope, with successive layers carried over ridges.
 - Lengths (maximum): As recommended by bitumen membrane manufacturer.
 - End laps: Half stagger and align on alternate bitumen membranes.
- Additional fixing of bitumen membranes: As recommended by bitumen membrane manufacturer.

730 PARTIAL BONDING OF REINFORCED BITUMEN MEMBRANE

- Venting first layer: Loose lay, align and cut to length. Do not carry up angle fillets and vertical surfaces or through details.
 - Long edges: Overlap minimum 50 mm.
 - Ends: Butt together.
- Intermediate layer: Fully bond to first layer and through to substrate.

740 TORCH-ON BONDING OF REINFORCED BITUMEN MEMBRANES

- Bond: Full over whole surface, with no air pockets.
- Excess compound at laps of top layer/ capsheet: Leave as continuous bead.

750 LAYING MINERAL FACED REINFORCED BITUMEN MEMBRANES

- Lap positions and detailing of ridges, eaves, verges, hips, abutments, etc: Submit proposals.
- Setting out: Neat, with carefully formed junctions.
- Lap bonding: Carry out only at prefinished margins or prepared 'black to black' edges.
- Excess bonding compound at laps: Remove whilst still warm.

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775 SKIRTINGS AND UPSTANDS

- Angle fillets: Fix by bitumen bonding or nailing.
- Venting first layer of bitumen membrane: Stop at angle fillet. Fully bond in bitumen for 300 mm around perimeters. Overlap onto upstand with strips of BS 8747, class S1P1 bitumen membrane, fully bonded.
- Other layers of bitumen membrane: Carry in staggered formation up upstand, with each layer fully bonded. Where practicable, carry top layer over top of upstand.
- Upstands:
 - At ends of rolls: Form with bitumen membrane carried up without using separate strip.
 - Elsewhere: Form with matching strips of bitumen membrane, maintaining laps.
 - Additional fixing of bitumen membranes: Not required.

780 WELTED DRIPS

- Material: as top layer.
 - Length: Form using maximum length strips.
 - Height at external gutter (minimum): 75 mm.
- Welt tail: Nail to face of drip batten. Fold neatly.
- Welt: Bond together, carry minimum 100 mm onto roof. Overlap with top bitumen membrane.

785 FIXING PERIMETER TRIMS

- First/ Intermediate layers bitumen membrane: Lay over roof edge upstand. Project free edge 25 mm from wall or fascia.
- Trim:
 - Setting out (minimum): 3 mm clear from wall or fascia.
 - Fasteners: ____mm stainless steel countersunk wood screws to BS 1210.
 - Fixing: 30 mm from ends and at 300 mm (maximum) centres.
- Jointing sleeves: Fix one side only.
- Corner pieces: Purpose made.
- Completion:
 - Contact surfaces: Prime.
 - Joints: Cover with 150 mm long pads of bitumen membrane, bonded to trim.
- Completion of bitumen membrane:
 - Top layer/ Capsheet: Butt joint to rear edge of trim.
 - Cover strip: Fully bond to trim and top layer/ capsheet of bitumen membrane. Carry over roof edge upstand and lap 75 mm onto roof.
Cover strip material: As top layer/ cap sheet bitumen membrane.

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COMPLETION

910 INSPECTION

- Interim and final roof inspections: Submit reports.

940 COMPLETION

- Roof areas: Clean.
- Outlets: Clear.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed membrane: Do not damage. Protect from chemicals, traffic and adjacent or high level working.

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