



# NBS J21 SPECIFICATION

## FOR

### FLEXIPHALTE TRIPLE PROTECTION ROOFING SYSTEM

By

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## **J21 MASTIC ASPHALT ROOFING/ INSULATION/ FINISHES**

To be read with Preliminaries/ General conditions.

### **TYPES OF COATING/ PAVING**

#### **125 FLEXIPHALTE TRIPLE PROTECTION INVERTED ROOF DECK COATING**

- Substrate: Float finish concrete deck laid dead flat or to achieve finished falls of 1:80 (by others)
  - Preparation: Primer – see clause 320
  - Primary Waterproofing Membrane: See clause 632.
- Coating: Mastic asphalt.
  - Manufacturer: Briggs Amasco.
  - Product reference: Flexiphalte Pommar.
  - Application: 15 mm nominal thickness in one coat or 20 mm in two coats.
- Isolating layer (loose laid): Geotextile fabric recommended by Briggs Amasco
- Insulation: Extruded polystyrene board as clause 440.
- Filter layer (loose laid): Min-k membrane.
- Securement: Precast concrete paving slabs as clause 465 or Stone ballast as clause 460.

#### **185 SKIRTINGS/ VERTICAL WORK – FLEXIPHALTE SKIRTINGS**

- Substrate: Concrete or brick/blockwork.
  - Preparation: Primer – See Clause 320.
- Separating layer: Not required.
- Keying: Not required.
- Coating: Mastic asphalt – see clause 750 for application.
  - Manufacturer: Briggs Amasco
  - Product reference: Flexiphalte modified roofing grade asphalt.
  - Application: 13 mm (nominal) in two coats
  - Height above finished roof level (minimum): 150 mm.
  - Fillet profile: 45° angle, 40 mm minimum width on face.
- Surface protection: Cementitious faced extruded polystyrene insulation board

#### **185A SKIRTINGS/ VERTICAL WORK – FLEXIPHALTE SKIRTINGS**

- Substrate: Timber
  - Preparation: Primer – See Clause 320.
- Separating layer: Black sheathing felt to BS 747, Type 4Aa with 50 mm minimum laps
- Keying: Expanded metal lathing to BS 8204-5, clause 5.4.
- Coating: Mastic asphalt – see clause 750 for application.
  - Manufacturer: Briggs Amasco
  - Product reference: Flexiphalte modified roofing grade asphalt.
  - Application: 20 mm (nominal) in three coats
  - Height above finished roof level (minimum): 150 mm.
  - Fillet profile: 45° angle, 40 mm minimum width on face.
- Surface protection: Cementitious faced extruded polystyrene insulation board

### **PERFORMANCE**

#### **210 ROOF PERFORMANCE**

- General: Secure, free draining and weathertight.

#### **220 VAPOUR CONTROL**

- Interstitial condensation risk of roof: Determine as recommended in BS 6229. Modify calculation method to conform to BS 5250.
- Basic design data:
  - Outdoor notional psychometric conditions, winter:
    - Temperature: -5°C.
    - Relative humidity: 90%.
    - Vapour pressure: 0.36kPa.
    - Duration: 60 days.
  - Outdoor notional psychometric conditions, summer:
    - Temperature: 18°C.
    - Relative humidity: 65%.

Vapour pressure: 1.34kPa.

Duration: 60 days.

– Indoor notional psychometric conditions:

Temperature: 20°C

Relative humidity: 40%

Vapour pressure: 0.93kPa

- Winter interstitial condensate:
  - Calculated amount (maximum): 0.35 kg/m<sup>2</sup>.
  - Calculated annual net retention: Nil.
- Vapour control layer: If calculated amounts of condensate exceed allowed maxima, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

#### 230 INSULATION

- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
  - Thermal transmittance of the roof (maximum): W/m<sup>2</sup>K.
  - Compressive strength of insulation (minimum) at 10% compression: 300 kN/m<sup>2</sup>
  - Finished surface: Suitably even, stable and robust to receive roof covering.
  - Insulation compliance: To a relevant British Standard, or Agrément certified.

#### 240 ATTACHMENT OF ROOFING

- Requirement: Determine methods of attachment to resist wind loads. Provide for relative movement of materials and effects of vapour pressure. Do not reduce performance of vapour control layer.
- Wind loads: Calculate to BS 6399-2, Standard Method.
  - Basic wind speed ( $V_b$ ): \_\_\_\_\_
  - Attitude factor ( $S_a$ ): \_\_\_\_\_
  - Direction factor ( $S_d$ ): \_\_\_\_\_
  - Seasonal factor ( $S_s$ ): 1.
  - Probability factor ( $S_p$ ): 1.
  - Terrain and building factor ( $S_b$ ): \_\_\_\_\_
  - Size effect factor ( $C_a$ ): 1.
  - External pressure coefficients ( $C_{pe}$ ): \_\_\_\_\_
  - Internal pressure coefficients ( $C_{pi}$ ): \_\_\_\_\_

### PRODUCTS

#### 320 PRIMER FOR BRICKWORK/CONCRETE

- Type: Adhesive primer.
- Manufacturer and product reference: As recommended by Briggs Amasco.

#### 325 BONDING COMPOUND

- Type: Bitumen to BS 3690.
- Manufacturer and product reference: As recommended by Briggs Amasco.

#### 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: Not required

#### 440 EXTRUDED POLYSTYRENE (XPS) INVERTED ROOF DECK INSULATION

- Standard: To BS EN 13164.
- Manufacturer: Dow Chemicals
  - Product Reference: Roofmate
- Grade: SL-
- Edges: Ship lapped
- Thickness: mm to achieve W/m<sup>2</sup> k U-value
- Integral topping: None – 10 mm cementitious topping to 50 mm vertical insulation only

#### 455 SAND FOR RUBBING

- Type: Clean, coarse sand from natural deposits, free from loam

– Size: Passing a 600 micrometre sieve and retained on a 212 micrometre sieve.

- 460 STONE BALLAST
- Type: Washed, rounded aggregate.
  - Supplier: As recommended by Briggs Amasco.
  - Size: Graded 20 – 40 mm, free from fines and sharps.
- 465 PRECAST CONCRETE PAVING SLABS
- Standard: To BS 7263-1 hydraulically pressed.
  - Manufacturer: As recommended by Briggs Amasco  
– Product Reference: As recommended by Briggs Amasco
  - Colour/ Finish: Standard Natural
  - Size: 600 x 600 x 50 mm
- 467 SUPPORT SYSTEM FOR PRECAST CONCRETE PAVING SLABS
- Manufacturer: As recommended by Briggs Amasco  
– Product Reference: As recommended by Briggs Amasco
  - Size: Nominal 5 mm high
  - Accessories: None
- 490 MINERAL/ METAL FACED CAPSHEET
- Manufacturer: As recommended by Briggs Amasco.  
– Product Reference: As recommended by Briggs Amasco
- 495 SOLAR REFLECTIVE PAINT
- Manufacturer: As recommended by Briggs Amasco.  
– Product Reference: As recommended by Briggs Amasco
  - Colour: White.

#### **EXECUTION GENERALLY**

- 510 ADVERSE WEATHER
- General: Do not lay mastic asphalt in wet or damp conditions unless effective temporary cover is provided over working area.
  - Unfinished areas of the roof: Keep dry.
- 520 INCOMPLETE WORK
- Daywork joints in warm roofs and edges of phased roofing: Adequately protected and fully weathertight.
- 525 PREPARING EDGES OF EXISTING MASTIC ASPHALT
- Single coat applications:  
– Cut edges: Soften and clean
  - Two coat applications:  
– Cut edges: Soften and remove half depth of softened material for minimum width of 75 mm.  
– Jointing: Lapped between new and existing material at prepared edges.
  - Timing: Immediately prior to laying mastic asphalt.
- 530 APPLYING PRIMERS
- Coverage per coat (minimum): 1 L/m<sup>2</sup>.
  - Surface coverage: Even and full.
  - Coats: Fully bonded. Allow volatiles to dry off thoroughly between coats.
- 540 APPLYING COMPOUNDS
- Roof sited boilers: Permitted
  - Temperature of compound: Suitable to achieve bond over the whole surface. Do not overheat.
  - Heat sensitive insulation materials: Use cold bituminous adhesive recommended by the insulation manufacturer.
- 550 CONTROL SAMPLES

- Type of mastic asphalt: Inverted Triple Protection Roofing System
- Sample area:
  - Location: \_\_\_\_\_
  - Details: \_\_\_\_\_
- Approval of appearance: Obtain before proceeding

## **SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM ROOF DECK INSULATION**

### 610 SUITABILITY OF SUBSTRATES

- Substrates generally:
  - Secure, even textured, clean, dry and frost free.
- Preliminary work: Completed including
  - Chases (minimum): 25 x 25 mm.
  - External angles: Chamfered where required to maintain full thickness of mastic asphalt.
  - Formation of upstands and kerbs.
  - Grading to correct falls.
  - Movement joints.
  - Penetrations/ Outlets.
- Moisture content and stability of substrate: Must not impair integrity of roof.

### 632 MEMBRANE LAYER:

Material: Polymer modified bitumen coated membrane.

Manufacturer: Axter Limited  
 Cliff Road  
 Ipswich  
 Suffolk IP3 0AY  
 Tel No: 01473 217154  
 Fax No: 01473 232118

Reference: Flexiphalte Baryprene or Flexiphalte Baryprene Plus ( B3A ).

### 640 FIXING TIMBER TRIMS

- Fasteners: Sheradized steel screws
  - Fixing centres (maximum): 600 mm.

### 642 KEYING TO VERTICAL/ SLOPING DENSE CONCRETE

- Surface preparation: Remove mould oil, clean and apply proprietary high bond primer or proprietary keying mix of cement sand slurry incorporating a bonding agent.

### 644 KEYING TO NEW BRICKWORK/ DENSE BLOCKWORK

- Joints: Flush pointed.
- Surface protection: Apply proprietary high bond primer.

### 646 KEYING TO EXISTING BRICKWOR/ DENSE BLOCKWORK

- Joints: Sound and flush pointed.
- Surface protection: Clean and apply proprietary high bond primer.

### 648 KEYING TO METAL SURFACES

- Surface preparation: Clean and apply proprietary high bond primer.

### 649 APPLYING METAL LATHING TO VERTICAL/ SLOPING TIMBER

- Placing:
  - Long way of mesh: Horizontal.
  - Pitch of horizontal strands: Sloping upwards away from background.
- Butt joints: Wire tie between sheets at 75 mm centres.
- Method of fixing: Large head nails.
  - Perimeter edges: 75 mm centres.
  - General areas (maximum): 150 mm vertical and horizontal centres.

## **ASPHALTING**

- 710 DELIVERY
- Condition of mastic asphalt as delivered to site:
    - Hot prepared, do not remelt on site, or
    - Blocks: Remelt on site, mix thoroughly. Temperature of material (maximum), 200 °C.
- 730 TRANSPORTING
- Transport distances: Minimize to avoid excessive cooling of molten mastic asphalt.
  - Buckets, barrows or dumpers used for mastic asphalt: Line with minimum quantity of fine inert dust. Use silica or similar acid resisting dust where acid resisting mastic asphalt is being used.
- 735 LOCALIZED HEATING
- Blowlamps and gas torches: Use only types with controlled gradual heating during laying, removal and repair of mastic asphalt.
- 740 LAYING MASTIC ASPHALT
- Standard: To BS 8218.
  - Application:
    - In bays to even thickness.
    - Re-heated asphalt: Do not use.
  - External angles, junctions and tuck-ins: Maintain full thickness of asphalt.
  - Fillets at internal angles: Solid, fully fused to asphalt coating.
  - Previously laid coats: Protect whilst exposed.
  - Successive coats:
    - Timing: Apply without delay and within same working period.
    - Coats: Apply at right angles to preceding.
    - Stagger joints between bays in consecutive coats (minimum): 75 mm.
  - Condition of contact edges of previously laid bays: Warm and clean.
  - Blowing: Pierce and make good affected areas while mastic asphalt is still at working temperature.
  - Completion: During final floating operation, whilst asphalt is still warm, apply sand to horizontal surfaces and rub in well using wooden float. Remove surplus material.
  - Surface condition at completion: Firmly adhered, weatherproof and free draining.
- 750 MASTIC ASPHALT SKIRTINGS AND VERTICAL WORK
- Top edge: Tuck into 25 x 25 mm continuous splayed chase or groove.
  - External angles: Maintain full thickness of asphalt.
  - Splayed top: Form to shed water away from substrate.
- 785 FIXING PERIMETER TRIMS
- Separating layer: Terminate at trim. Do not carry under or over.
  - Trim:
    - Setting out (minimum): 3 mm from wall or fascia.
    - Fasteners: 50 mm aluminium countersunk wood screws.
    - Fixing: 30 mm from ends of trim 300 mm (maximum) centres.
    - Jointing sleeves: Fix one side only.
    - Expansion gap between ends of trim: 3 mm for aluminium; not required for GRP
    - Corner pieces: Purpose made.

## **SURFACING**

- 810 LAYING INVERTED ROOF INSULATION
- Condition of substrate: Clean
  - Setting out: Loose lay with stagger joints. Minimize cutting and avoid small cut pieces at perimeters and penetrations.
    - Joints: Butt together.
  - Projections, upstands, rainwater outlets, etc: Cut insulation cleanly and fit closely around.
  - Completion:
    - Boards must be in good condition, well fitting and stable.
    - Cover to prevent wind uplift and floatation as soon as practicable.
- 820 LAYING STONE BALLAST

- Condition of substrate: Clean
- Gravel guards: Fit to outlets.
- Previously laid materials: Protect during laying of ballast.
- Laying: Spread evenly. Do not pile to excessive heights.
  - Depth (minimum): 50 mm.

840 LAYING PRECAST CONCRETE PAVING SLABS

- Condition of substrate: Clean
- Setting out: Minimize cutting.
- Laying: On proprietary support system.
- Joints: Open.
  - Width: Predetermined by support system.
- Perimeter/ Upstands: Gravel margin infill.

880 APPLYING SOLAR REFLECTIVE PAINTS

- Number of coats: 2
  - Coverage per coat: 7 m<sup>2</sup>/L.
- Surface coverage: Even and full.
- Coats: Fully bonded.

**COMPLETION**

910 INSPECTION

- Interim and final roof inspections: Submit reports.

920 ELECTRONIC ROOF INTEGRITY TEST

- Testing authority: Independent tester
- Timing of test: Before laying insulation and ballast.
- Condition of roof prior to testing:
  - Complete to a stage where integrity can be tested.
  - Surface: Clean.
- Test results and waterproof integrity certificate: Submit on completion of testing.

940 COMPLETION

- Roof areas: Clean.
  - Outlets: Clear.
- Work necessary to provide a watertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed mastic asphalt roof coating: Do not damage. Protect from petroleum based solvents and other chemicals, traffic and adjacent or high level working.

950 SUBCONTRACTOR EMPLOYED:

- Briggs Amasco will be held responsible for the performance of the Flexiphalte Triple Protection Roofing specification and for the execution of all works including all waterproofing, insulation and any vapour control layer.
- Briggs Amasco shall design all details which shall be approved by the Main Contractor and CA. Briggs Amasco so employed by the Main Contractor shall have professional indemnity cover of 10m Euros.

960 GUARANTEE:

- A guarantee is required on the installation
- Such guarantee must include the following:
  1. Completely undivided responsibility between asphalt manufacturer and installer.
  2. Cover for defects in design as well as workmanship and materials.
  3. Cover for consequential damage in the event of water ingress being proved to be due to defective design, workmanship or materials in the Flexiphalte Triple Protection System.
  4. Guarantee period for 20 years.

970 ANNUAL MAINTENANCE:

- As with all waterproofing and surfacing systems, proper maintenance is essential to obtain maximum performance and ensure the longest life expectancy for the Flexiphalte system as a whole.
- It is an integral part of the guarantee. Any deficiencies should be reported immediately to Briggs Amasco.
- BS 6229: 2003 gives guidance on the content of maintenance manuals and the scope and frequency or routine maintenance inspections applicable to flat roofing. All Flexiphalte installations should be inspected at least once each year.
- Ideally, there should be inspections in Spring and Autumn, to enable the effects of annual extremes of weather to be checked. Roofs exposed to high levels of pollution or in close proximity to trees require more frequent inspection.
- An inspection/maintenance Contract can be arranged with the installing Branch of Briggs Amasco following the defects liability period.