

# J42 Specification



Suggested Sarnafil J42 Specification for:

**Example - Paved Ballasted PVC Specification (G410-EL)**

Our Reference:

**Example - Paved Ballasted / PVC**

Date:

**N/A**

**SIKA LIMITED**

Project No: Example - Paved Ballasted / PVC

Date: N/A

## **J42 SINGLE LAYER POLYMERIC SHEET ROOF COVERINGS**

**To be read with preliminaries / general conditions and the Sarnafil project specific specification.**

The details contained within this proposal are based on information available at the time of writing. It covers the installation of Sarnafil materials and the preparation work necessary to provide a suitable substrate. Sika Limited cannot be held responsible for unknown site conditions or for the performance of materials within the system other than Sarnafil products or Sarnafil branded products.

A detailed method of work statement and programme of works should be agreed with the Sarnafil Registered Contractor before the commencement of the works.

The requirements of all relevant British Standards and Industry Codes of Practice should be complied with at all times. A bibliography is available upon request.

**Underlined sections of text require the addition of a description or selection from a choice of options. All clauses that are not applicable should be deleted.**

### **TYPES OF COVERING**

#### **110 WARM ROOF COVERING – Example – Paved Ballasted PVC Specification (G410-EL)**

- Substrate: In-situ concrete deck with Screed. The concrete should have a smooth, wood float or steel trowel finish free of nibs, ridges and hollows.
- Roof covering:
  - Manufacturer: Sika Limited, Watchmead, Welwyn Garden City, Hertfordshire, AL7 1BQ, T: 01707 394444, F: 01707 329129, [www.sarnafil.co.uk](http://www.sarnafil.co.uk)
  - Sika Sarnafil Technical Advisor: TBC
  - Vapour Control Layer: Sarnavap 1000E as clause 395 and 396B  
Manufacturer: Sika Limited, Watchmead, Welwyn Garden City, Hertfordshire, AL7 1BQ, T: 01707 394444, F: 01707 329129, [www.sarnafil.co.uk](http://www.sarnafil.co.uk)  
Laying: Loose lay and overlap all side and end laps by a minimum 100mm, seal with Sarnavap jointing tape. As clause 670A
  - Insulation: SarnaTherm insulation board, as clause 422B.
  - Attachment: As clause 687B
  - Waterproof membrane: Sarnafil G410-15EL Lacquered Reinforced PVC membrane  
Thickness: 1.5mm  
Colour: Light Grey  
Attachment: Loose Laid with perimeter restraint as clause 725B
  - Upper protective layer (loose laid): Sarnafil S-Felt T 300gms/m<sup>2</sup> polyester fleece
- Surface protection: Paving Slabs as clause 465A
  - Laying: As clause 840
- Accessories:
  - Drainage: SarnaDrain RWO or Double L Insulated RWO
  - Fall Arrest: Sarnafil Constant Force posts
  - Flashings: Sarnametal
  - Lightning Protection: Fit Sarnafil Heat Weldable Lightning Conductor Clips
  - Rooflights: SarnaLite Rooflights
  - Solar Accessories: Sarnafil Solar Panel Support post, Sarnafil 110 Cable Bend

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## PERFORMANCE

### 201B MANUFACTURER'S GUARANTEE

In order to comply with the **10** year Sarnafil insurance backed guarantee, the work is to be carried out by a Sarnafil Registered Contractor. See Sarnafil project specification for full details.

For ballasted and green roofs the Customer is responsible for all investigative works and related costs for any alleged waterproofing failure until it can be demonstrated that there is a fault with the Sarnafil membrane.

### 210 ROOF PERFORMANCE

- Roof covering: Secure, free draining and weathertight.

### 220 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS 6229.
- Basic design data:
  - Outdoor notional psychrometric conditions, winter:
    - Temperature: -5°C.
    - Relative humidity: 90%.
    - Vapour pressure: 0.36 kPa.
    - Duration: 60 days.
  - Outdoor notional psychrometric conditions, summer:
    - Temperature: 18°C.
    - Relative humidity: 65%.
    - Vapour pressure: 1.34 kPa.
    - Duration: 60 days.
  - Indoor notional psychrometric conditions:
    - Temperature: \_\_\_\_\_ .
    - Relative humidity: \_\_\_\_\_ .
    - Vapour pressure: \_\_\_\_\_ .
- Winter interstitial condensate (warm roof):
  - Calculated amount (maximum): 0.35 kg/m<sup>2</sup>.
  - Calculated annual net retention: Nil.
- Vapour control layer: If necessary, provide a suitable membrane or sealed deck so that damage and nuisance from interstitial condensation do not occur.

### 225 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS 5250, annex D.
- Vapour control layer: If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

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#### 240B ATTACHMENT OF ROOF COVERING INCLUDING INSULATION

- 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 EN 1991-1-4, UK National Annex Method
  - Basic wind speed ( $V_b$ ): (TBC) m/s (10 min.)
  - Altitude factor ( $C_{alt}$ ): (TBC)
  - Orography factor ( $C_o$ ): (TBC)
  - Exposure factor ( $\sqrt{C_e}$ ): (TBC)
  - Directional factor ( $C_{dir}$ ): (TBC)
  - Seasonal factor ( $C_{season}$ ): (TBC)
  - Probability factor ( $C_{prob}$ ): (TBC)
  - Size factor ( $C_s$ ): (TBC)

#### PRODUCTS

#### 312B ANCILLIARY PRODUCTS AND ACCESSORIES

- Types: Recommended by Sarnafil products to be used *where required*.
  - Drainage: Fit Sarnafil Double L fully insulated, high drainage capacity RWO, ensuring Part L compliance with air tightness and thermal insulation continuity at the deck opening. Alternatively where Double L outlets cannot be accommodated, use SarnaDrain Rigid rainwater outlets to allow a continuous weld of the membrane to the body of the outlet.
  - Fall Arrest: The Sarnafil Constant Force posts fall arrest/restraint system should be considered for rooftop safety.
  - Flashings: Sarnametal
  - Rooflights: Fit SarnaLite rooflights.
  - Solar Accessories: Sarnafil Solar Panel Support post, Sarnafil 110 Cable Bend
  - Green Roof Accessories: Sarnafil Green Roof Constant Force post, Sarnafil Inspection Chamber.

#### 330A TIMBER TRIMS, ETC

- Quality: Planed. Free from wane, pitch pockets, decay and insect attack except ambrosia beetle damage.
- Moisture content: Not exceeding 22% at time of covering.
  - Preservative treatment: To British Wood Preserving and Damp-roofing Association Commodity Specification C8.
  - Type: \_\_\_\_\_
  - If treated timber is in direct contact with Sarnafil membrane: only aqueous, salt-based preservative is to be used.

#### 345 PERIMETER TRIMS

- Type: Galvanised steel sheet with Sarnafil membrane factory laminated
- Manufacturer: Sika Limited.
  - Product reference: Sarnametal.
- Colour: Light Grey
- Size: \_\_\_\_\_

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355 MECHANICAL FASTENERS, WASHERS, PRESSURE PLATES, ETC.

- Type: In accordance with the current addition of the British board of Agrément MOAT 55 'UEAtc Supplementary guide for the assessment of mechanically fastened roof waterproofing' for Class 2 fasteners or a suitable alternative recommended in writing for use with Sarnafil systems.
- Manufacturer: SFS intec Ltd

380 PROTECTION LAYER

- Type: Polyester Fleece
- Manufacturer: Sika Limited
  - Product reference: Sarnafil S-Felt T Fleece

395 VAPOUR CONTROL LAYER

- Type: Polyethylene
  - Manufacturer: Sika Limited
  - Product reference: Sarnavap 1000E
  - Thickness: 0.20mm
  - Vapour resistance: >800MNs/g

396B VAPOUR CONTROL LAYER SPECIFICATION

In accordance with BS 5250 Code of Practice for control of condensation in buildings (Table D7) the suitability of the vapour control layer specified below is based on the Humidity Class **3**.

Should the specifier require a different Humidity Class to be used for this design, then Sika Limited should be notified. A change of Humidity Class will probably require a change to the specification for the vapour control layer.

**Vapour Control Layer (Sarnavap)**

Over the structural deck loosely lay a Sarnavap 1000E flame retarded, polyethylene vapour control layer. All side and end laps to be a minimum of 100mm and continuously sealed with Sarnavap jointing tape. To provide continuity of the vapour control layer the Sarnavap should have fully supported laps and is to be sealed to the abutment at the perimeter of the roof and around all penetrations. The surface of the abutment should be smooth to allow an adequate airtight seal of the Sarnavap.

For the Sarnafil guarantee to include the vapour control layer, the appropriate Sarnavap must be used.

422B RIGID URETHANE FOAM WARM ROOF INSULATION

- Rigid urethane foam (RUF) roofboard to BS EN 13165
  - Manufacturer: Kingspan Insulation Ltd
  - Product reference: FM approved SarnaTherm G/S
  - Edges: Staggered bond pattern with lightly butted joints
  - Thickness: TBC mm to achieve the required U Value.
  - Facing: Mineral Glass Tissue/Foil

465A PRECAST CONCRETE PAVING SLABS

- Precast concrete: To BS 7263-1 hydraulically pressed

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- Manufacturer: \_\_\_\_\_
- Product reference: \_\_\_\_\_
- Colour: \_\_\_\_\_
- Finish: \_\_\_\_\_
- Size: 50 x 600 x 600 mm

#### 467 SUPPORT SYSTEM FOR PRECAST CONCRETE PAVING SLABS

- Manufacturer: Sika Limited.
- Product reference: Sarnapad Paving Supports
- Size: 180mm diameter
- Accessories: Levelling Shims

#### EXECUTION GENERALLY

#### 510 ADVERSE WEATHER

- General: Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry and protect edges of laid membrane from wind action.

#### 520A INCOMPLETE WORK

- End of working day: Provide temporary seal to prevent water infiltration.
- On resumption of work: Cut away tail of any contaminated Sarnafil membrane from completed area and remove from roof.

#### 550 CONTROL SAMPLES

- Type of covering: \_\_\_\_\_
- Sample area (minimum): \_\_\_\_\_
  - Location: \_\_\_\_\_
  - Features: \_\_\_\_\_
- Approval of appearance: Obtain before proceeding with remaining work.

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

#### 610 SUITABILITY OF SUBSTRATES

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

#### 640 FIXING TIMBER TRIMS

- Fasteners: \_\_\_\_\_
- Fixing centres (maximum): \_\_\_\_\_

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## 670A LAYING A NON BITUMINOUS VAPOUR CONTROL LAYER

- Laying: Sheets loose, flat and without wrinkles.
- Side and head laps: Seal using materials and method recommended by the vapour control layer manufacturer.
- Upstands, kerbs and other penetrations: Enclose edges of insulation. Fully seal at abutment by bonding or taping.

## 687B INSTALLING WARM ROOF SARNATHERM PIR INSULATION IN A BALLASTED SYSTEM

- Setting out:
  - Long edges: Fully support and run at right angles to structure.
  - End edges: Adequately support
  - Joints: Butted together
  - End joints: Staggered
  - **If the roof is to be ballasted immediately, the insulation can be laid loose in a staggered bond pattern (unless a rebated board is used), with boards lightly butt jointed and level.**
  - **However, should there be a delay in ballasting the roof, the insulation is to be laid in a staggered bond pattern with all board joints lightly butt jointed and level and then secured as follows –**

In order to maintain stability of the insulation (wind uplift acting on the roof has not been considered) either bond (when appropriate) the insulation boards in accordance with the recommendations for Sarnafil systems, or mechanically fasten the boards with Sarnafil SBIW-70x70 pressure plates and SBT telescopic screw fasteners.

For 600mmx1200mm board size, there should be a minimum of 4no. fasteners per board (5.56/m<sup>2</sup>) throughout the roof.

For 1200mmx2400mm board size there should be a minimum of 6no. fasteners per board (2.08/m<sup>2</sup>) throughout the roof.

All fixings and washers must be in an even pattern (see Sarnafil “Typical Fastener Layouts for PIR Insulation” drawing for further information) and located >50mm and <150mm from the edges and corners of the board and not overlap board joints.

**NB: Under green roofs, where mechanical fasteners are required to stabilise the insulation board, a polyethylene vapour control layer is not suitable.**

- Sarnafil thermally broken fasteners must be installed with the appropriate tooling.
- The specified ballast should be installed as soon as possible, once the protective layer is laid. Until the ballast is laid, the Sarnafil membrane will be vulnerable to wind uplift forces. If it is necessary to delay ballasting the roof, then temporary ballast, such as sleepers, bagged gravel or sand, should be strategically placed across the completed roof areas.
- Completion: Boards must be in good condition, well fitting and with no springing, flexing or rocking.

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## **WATERPROOF COVERINGS / ACCESSORIES**

### **725B LOOSE LAID WATERPROOF MEMBRANE ATTACHMENT**

#### **Membrane**

Loosely lay Sarnafil G410-15EL Light Grey glass fibre carrier roofing membrane with a minimum lap of 80mm.

Sarnafil reinforced membranes are manufactured by extrusion coating at a state of the art manufacturing plant in Switzerland to ISO 9001 & 14001. Manufactured with a dirt repellent lacquered top coat and treated with fire retardants, it provides a self-extinguishing, dimensionally stable and vapour permeable waterproofing membrane certified by the BBA as having a 'life expectancy in excess of 40 years - see BBA for details.

Prior to welding, the leading edges of all transverse/cross joints are to be chamfered (for membrane  $\geq$  1.8mm thick). Hot air weld all side and end laps, Sarnamatic machine weld where possible.

Install a 6/15 Sarnabar with 15mm dia.holes and G/S welding cord to the perimeter of the roof, at all internal angles and around all roof penetrations. The Sarnabar to be fastened, where possible into the abutment, with a minimum of **(TBC)**no appropriate thermally broken SBT screw fasteners per linear metre. If the insulation is >120mm thick the Sarnabar should be fastened with 6.66no. fasteners per linear metre.

Sarnafil thermally broken fasteners must be installed with the appropriate tooling and the membrane must be pre-punched with the Sarnafil SMP tool.

On large roofs or when the membrane is not to be immediately covered with the rest of the build up the Sarnafil should have a temporary ballast.

### **732B WELDED JOINTING**

- Side and end joints:

- Laps (minimum): 80mm.

Preparation: Clean and dry surfaces for full width of joint. The leading edges of all transverse membrane joints are to be chamfered.

- Sealing: Heat weld together.

- Condition at completion: Fully sealed and watertight.
- Accessories: Not required.

### **762B PERIMETER OF SARNAFIL MEMBRANE**

- General: Secure Sarnafil membrane with a Sarnabar and PVC cord at roof edge conditions, changes of plane, curb flashings, upstands to roof lights, etc. with Sarnafil approved mechanical fasteners.

### **772B PERIMETER DETAILS**

- Upstands, edge trims, drips, kerbs, etc: Form flashings from Sarnafil waterproof membrane material. Edge trims and drips to be formed from Sarnametal.



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- Roof membrane: Terminate Sarnafil membrane in horizontal plane immediately adjacent to change in direction and secure with a Sarnabar and PVC cord.
- Flashings: Dress Sarnafil membrane flashing over the Sarnabar. Overlap horizontal Sarnafil roof membrane beyond the Sarnabar by (minimum): 50mm.
- Sealing: Hot air weld the overlap.

## **SURFACING**

### **840 LAYING PRECAST CONCRETE PAVING SLABS**

- Condition of substrate: Clean.
- Setting out: Minimize cutting.
- Joints: Open.
  - Width: Predetermined by SarnaPad support system
  - Perimeter / Upstand margins: Minimum 150mm
- Completion: Slabs must be level and stable.

## **COMPLETION**

### **910A INSPECTION**

Inspection of the roof installation whilst in progress and/or on completion must be made by the Sika Roofing Field Technician. Copies of Sarnafil site reports of interim and final inspection to be made available if required and previously agreed with Sarnafil Registered Contractor.

Immediately prior to covering the Sarnafil membrane a Sika Roofing Field Technician must be given the reasonable opportunity (min.5 days notice) to inspect the roof, this is one pre- issue of the Sarnafil guarantee.

**NB:** This may require chargeable phased inspections by the Sika Roofing Applications Department.

### **920 ELECTRONIC ROOF INTEGRITY TEST *(If required)***

- Testing authority: \_\_\_\_\_
- Timing of test: \_\_\_\_\_
- Condition of roof prior to testing:
  - Sarnafil membrane complete to a stage where integrity can be tested.
  - Surface: Clean.
- Test results: Submit.
- Waterproof integrity certificate: On completion of testing, submit.

### **930 FLOOD TEST \_\_\_\_\_ *(If required)***

- Condition of roof prior to testing:
  - Sarnafil membrane complete to a stage where integrity can be tested.
- Outlets: Externally cover and seal. Protect against damage from water pressure using temporary kerbs. Do not use plugs to seal outlets.
- Flood levels: Submit proposals. In no case higher than kerbs.
- Flood duration: \_\_\_\_\_ days
- Inspection: Regular, to detect leaks.
- Completion of test: Slowly drain roof. Do not overload or flood outlets.

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- Test results and warranty: Submit on completion of testing.

**940A 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 against damage from traffic and adjacent or high level working.
- Request the Sarnafil Guarantee.
- The roof has to be finally inspected by the Sika Roofing Applications Department and is to be to their satisfaction.