

# Specification

***Suggested For:***

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

Our Reference:

**NA**

Date:

**NA**



**Sika Limited**, Robberds Way, Bowthorpe, Norwich, NR5 9JF.  
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**Sarnafil**®

## **J42 SINGLE LAYER POLYMERIC SHEET ROOF COVERINGS G410**

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 Ltd 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.

### **TYPES OF COVERING**

- 110 **WARM ROOF COVERING – Example Paved Ballasted PVC Specification (G410-EL)**
- Substrate: Insitu Concrete deck with screed. Concrete have a smooth, wood float or steel trowel finish free of nibs, ridges and hollows.
  - Roof covering:  
Manufacturer: Sika Ltd, Sika Sarnafil, Robberds Way, Bowthorpe, Norwich, NR5 9JF, Tel 01603 748985, Fax 01603 743054
    - Vapour Control Layer: Sarnavap 1000E as clause 395 and 396B  
Manufacturer: Sika Ltd, Sika Sarnafil, Robberds Way, Bowthorpe, Norwich, NR5 9JF  
Laying: Loose lay and overlap all side and end laps by a minimum 100mm, seal with Sarnavap jointing tape. As clause 670A
    - Insulation: Polyisocyanurate Rigid Insulation as clause 420A  
Attachment: As clause 685B and in accordance with the manufacturer's recommendation.
    - 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: Double L Insulated RWO  
Fall Arrest: Sarnafil Constant Force posts  
Flashings: Sarnametal  
Lightning Protection: Fit Sarnafil Heat Weldable Lightning Conductor Clips  
Rooflights: SarnaLite Rooflights



## **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.

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.



**240A 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 6399-2 incorporating Amendment 1, Hybrid Method.
  - Basic wind speed ( $V_b$ ): (TBC) m/s
  - Altitude factor ( $S_a$ ): (TBC)
  - Direction factor ( $S_d$ ): (TBC)
  - Seasonal factor ( $S_s$ ): 1.000
  - Probability factor ( $S_p$ ): 1.000
  - Terrain and building factor ( $S_b$ ): (TBC)
  - Size effect factor ( $C_a$ ): 1.000

**PRODUCTS**

**310A ANCILLIARY PRODUCTS AND ACCESSORIES (where applicable)**

- 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
  - Fall Arrest: The Sarnafil Constant Force posts fall arrest/restraint system should be considered for rooftop safety.
  - Flashings: Sarnametal
  - Rooflights: Fit SarnaLite rooflights.

**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 Ltd.
  - Product reference: Sarnametal.
- Colour: Light Grey
- Size: (TBC)

**355 MECHANICAL FASTENERS, WASHERS, PRESSURE PLATES, ETC.**

- Type: In accordance with the current addition of the British board of Agrèment 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 Ltd
  - Product reference: Sarnafil S-Felt T Fleece
- Grade: \_\_\_\_\_



**395 VAPOUR CONTROL LAYER**

- Type: Polyethylene
- Manufacturer: Sika Ltd  
Product reference: Sarnavap 1000E
- Thickness: 0.22mm
- Vapour resistance: > 800 MNs/g.

**396B VAPOUR CONTROL LAYER SPECIFICATION**

In accordance with BS 5250:2002 Code of Practice for control of condensation in buildings (Table B5) 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 Ltd 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.

**420A RIGID URETHANE FOAM WARM ROOF INSULATION**

- Rigid urethane foam (RUF) roofboard to BS EN 13165
- Manufacturer: Kingspan Insulation Ltd / Celotex Ltd / Recticel Insulation Ltd
- Product reference: LPC/FM approved Thermarof TR26/TR27 / Celotex EL3000 / Celotex TA3000 / Powerdeck F / Powerdeck
- Edges: Staggered bond pattern with lightly butted joints
- Thickness: (TBC to achieve the required U Value) mm
- Facing: Mineral Glass Tissue/Foil

**460 STONE BALLAST**

- Type: Washed, round aggregate
- Supplier: \_\_\_\_\_
- Size: Graded 20 - 32 mm, free from fines and sharps
- Colour: \_\_\_\_\_

**465A PRECAST CONCRETE PAVING SLABS**

- Precast concrete: To BS 7263-1 hydraulically pressed
- Manufacturer: \_\_\_\_\_
- Product reference: \_\_\_\_\_
- Colour: \_\_\_\_\_
- Finish: \_\_\_\_\_
- Size: 50 x 600 x 600 mm



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

- Manufacturer: Sika Ltd.
- Product reference: Sarnapad Paving Supports
- Size: 180mm diameter
- Accessories: Levelling Shims / Lay a filter/cushion/protection layer under the paving and support pads

**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 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): \_\_\_\_\_

**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.



#### 685B INSTALLING GENERIC WARM ROOF PIR INSULATION

- Setting out:
  - Long edges: Fully support and run at right angles to structure.
  - End edges: Adequately support
  - Joints: Butted together
  - End joints: Staggered
  - Completion: Boards must be in good condition, well fitting and with no springing, flexing or rocking.
  - **The insulation is to be laid in accordance with the manufacturer's instructions.**
  - The specified ballast should be installed immediately, once the protective layer is laid. Until the ballast is laid, the Sarnafil system may be vulnerable to wind uplift forces. If it is necessary to delay ballasting the roof, then temporary ballasting of the roof may be required. Bagged gravel or sand, should be strategically placed across the completed roof areas.

### **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.

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 5 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.

#### 730A 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.

#### 760A 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.



#### 770A PERIMETER DETAILS

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

#### 780A ROOF PENETRATIONS THROUGH THERMOPLASTIC MEMBRANES

- Sarnafil roof membrane: Cut Sarnafil membrane around penetrations and secure to deck with a Sarnabar and PVC cord.
- Flanged sleeve:
  - Type: Form from Sarnafil membrane complete with base flange.
  - Dress Sarnafil membrane flashing over and around penetration.
  - Sealing: Weld flange to roof membrane.
  - Protection to top edge of sleeve: Flashing or compatible weathering cravat.

### **SURFACING**

#### 820 LAYING STONE BALLAST

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

#### 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 (roof must be inspected prior to the ballasting with stone/paving/inverted insulation) and 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.



**Project No: NA**  
**Date: 17/03/2010 NA**

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

- 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.
- 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.

