

## PRODUCT DATA SHEET

# Sarnafil® G 410-20 EL

Polymeric PVC membrane for adhered and ballasted roof waterproofing

### PRODUCT DESCRIPTION

Sarnafil® G 410-20 EL is a PVC, multi-layer, lacquered, matt finish, weldable sheet membrane for roof waterproofing. Contains a glass fibre reinforcing inlay, ultra-violet light stabilisers and flame retardants to provide a low maintenance and durable membrane. It can be quickly installed as a fully bonded system or as a loose laid ballasted system. Thickness 2,0 mm.

### USES

Sarnafil® G 410-20 EL may only be used by experienced professionals.

Waterproofing membrane for:

- Fully bonded, exposed roofs
- Ballasted roofs (e.g. Green roofs, Utility roofs, Inverted roofs, Gravel roofs)
- Enhancement of solar reflection of existing PVC roofs (~RAL 9016 SR)

### CHARACTERISTICS / ADVANTAGES

- Proven performance over decades
- Lacquer coated surface
- Various colours available
- Fast installation with Sarnacol® adhesives
- High reflectance properties for excellent cool roofing characteristics (relevant only for colour ~RAL 9016 SR).
- Resistant to UV exposure
- High dimensional stability from glass fleece inlay
- High water vapour permeability
- Resistant to all common environmental influences
- Resistant to mechanical influences
- Resistant to micro-organisms
- Resistant to root penetration
- Heat weldable

- Recyclable (Delete if recycling facilities or recycling offerings for roofing membranes are not available in local country)

### ENVIRONMENTAL INFORMATION

- Conformity with LEED v4 SSc 5 (Option 1): Heat Island Reduction - Roof (only traffic white (SR))
- Conformity with LEED v4 MRc 2 (Option 1): Building Product Disclosure and Optimization – Environmental Product Declarations
- Conformity with LEED v4 MRc 3 (Option 2): Building Product Disclosure and Optimization - Sourcing of Raw Materials
- Conformity with LEED v4 MRc 4 (Option 2): Building Product Disclosure and Optimization - Material Ingredients
- Conformity with LEED v2009 SSc 7.2 (Option 1): Heat Island Effect - Roof (only traffic white (SR), beige)
- BRE Environmental Product Declaration (EPD)

### APPROVALS / STANDARDS

- CE Marking and Declaration of Performance to EN 13956 - Polymeric sheets for roof waterproofing
- FM Approved, Certificate of Compliance, Sarnafil® G 410 EL, Approval Identification No. 3047304
- External fire performance tested according to ENV 1187 and classified according to EN 13501-5: BROOF (t4)

## PRODUCT INFORMATION

|                            |                                                                                                                                                                         |                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Declaration</b> | EN 13956 - Polymeric sheets for roof waterproofing                                                                                                                      |                                                                                                                                                                                                                             |
| <b>Chemical Base</b>       | Polyvinyl Chloride (PVC)                                                                                                                                                |                                                                                                                                                                                                                             |
| <b>Packaging</b>           | Standard rolls are wrapped individually in a blue PE-foil.                                                                                                              |                                                                                                                                                                                                                             |
|                            | Roll size                                                                                                                                                               |                                                                                                                                                                                                                             |
|                            | Length                                                                                                                                                                  | 15,00 m                                                                                                                                                                                                                     |
|                            | Width                                                                                                                                                                   | 2,00 m                                                                                                                                                                                                                      |
|                            | Weight                                                                                                                                                                  | 75,00 kg                                                                                                                                                                                                                    |
|                            | Refer to current price list for packaging variations.                                                                                                                   |                                                                                                                                                                                                                             |
| <b>Shelf Life</b>          | 5 years from date of production                                                                                                                                         |                                                                                                                                                                                                                             |
| <b>Storage Conditions</b>  | The Product must be stored in original, unopened and undamaged sealed packaging in dry conditions and temperatures between +5 °C and +30 °C. Always refer to packaging. |                                                                                                                                                                                                                             |
| <b>Appearance / Colour</b> | Surface                                                                                                                                                                 | matt                                                                                                                                                                                                                        |
|                            | Colours                                                                                                                                                                 |                                                                                                                                                                                                                             |
|                            | Top surface                                                                                                                                                             | light grey (nearest RAL 7047)<br>lead grey (nearest RAL 7012)<br>window grey (nearest RAL 7040)<br>copper brown (nearest RAL 8004)<br>copper patina (Sika colour no. 6525)<br>traffic white, solar reflective (RAL 9016 SR) |
|                            | Bottom surface                                                                                                                                                          | dark grey                                                                                                                                                                                                                   |
| <b>Visible Defects</b>     | Pass                                                                                                                                                                    | (EN 1850-2)                                                                                                                                                                                                                 |
| <b>Length</b>              | 15 m (-0 / +5 %)                                                                                                                                                        | (EN 1848-2)                                                                                                                                                                                                                 |
| <b>Width</b>               | 2 m (-0.5 / +1 %)                                                                                                                                                       | (EN 1848-2)                                                                                                                                                                                                                 |
| <b>Effective Thickness</b> | 2,0 mm (-5 / +10 %)                                                                                                                                                     | (EN 1849-2)                                                                                                                                                                                                                 |
| <b>Straightness</b>        | ≤ 30 mm                                                                                                                                                                 | (EN 1848-2)                                                                                                                                                                                                                 |
| <b>Flatness</b>            | ≤ 10 mm                                                                                                                                                                 | (EN 1848-2)                                                                                                                                                                                                                 |
| <b>Mass per unit area</b>  | 2.5 kg/m <sup>2</sup> (-5 / +10 %)                                                                                                                                      | (EN 1849-2)                                                                                                                                                                                                                 |

## TECHNICAL INFORMATION

|                                             |                                 |                        |              |
|---------------------------------------------|---------------------------------|------------------------|--------------|
| Resistance to Impact                        | hard substrate                  | ≥ 1000 mm              | (EN 12691)   |
|                                             | soft substrate                  | ≥ 1500 mm              |              |
| Hail Resistance                             | rigid substrate                 | ≥ 28 m/s               | (EN 13583)   |
|                                             | flexible substrate              | ≥ 36 m/s               |              |
| Resistance to Static Load                   | soft substrate                  | ≥ 20 kg                | (EN 12730)   |
|                                             | rigid substrate                 | ≥ 20 kg                |              |
| Resistance to Root Penetration              | Pass                            |                        | (EN 13948)   |
| Tensile Strength                            | longitudinal (md) <sup>1)</sup> | ≥ 10 N/mm <sup>2</sup> | (EN 12311-2) |
|                                             | transversal (cmd) <sup>2)</sup> | ≥ 9 N/mm <sup>2</sup>  |              |
| <sup>1)</sup> md = machine direction        |                                 |                        |              |
| <sup>2)</sup> cmd = cross machine direction |                                 |                        |              |

|                                             |                                                                                             |         |                                                |                |                  |
|---------------------------------------------|---------------------------------------------------------------------------------------------|---------|------------------------------------------------|----------------|------------------|
| Elongation                                  | longitudinal (md) <sup>1)</sup>                                                             |         | ≥ 230 %                                        |                | (EN 12311-2)     |
|                                             | transversal (cmd) <sup>2)</sup>                                                             |         | ≥ 210 %                                        |                |                  |
|                                             | <div>1) md = machine direction</div> <div>2) cmd = cross machine direction</div>            |         |                                                |                |                  |
| Joint Peel Resistance                       | Failure mode: C, no failure of the joint                                                    |         |                                                |                | (EN 12316-2)     |
| Joint Shear Resistance                      | ≥ 600 N/50 mm                                                                               |         |                                                |                | (EN 12317-2)     |
| Dimensional Stability                       | longitudinal (md) <sup>1)</sup>                                                             |         | ≤  0,2  %                                      |                | (EN 1107-2)      |
|                                             | transversal (cmd) <sup>2)</sup>                                                             |         | ≤  0,1  %                                      |                |                  |
|                                             | <div>1) md = machine direction</div> <div>2) cmd = cross machine direction</div>            |         |                                                |                |                  |
| Solar Reflectance Index                     | Colour                                                                                      | Initial | 3-year aged                                    | Test Institute | (ASTM E 1980-01) |
|                                             | RAL 9016 SR                                                                                 | 111     | 99                                             | CRRC           |                  |
|                                             | RAL 9016                                                                                    | 106     | 77                                             | CRRC           |                  |
|                                             | Nr. 9525                                                                                    | 55      | -                                              | Sika           |                  |
|                                             | Nr. 9500                                                                                    | 4       | -                                              | Sika           |                  |
|                                             | CRRC tested products are listed in Cool Roof Rating Council (CRRC) product date base.       |         |                                                |                |                  |
| Foldability at Low Temperature              | ≤ -25 °C                                                                                    |         |                                                |                | (EN 495-5)       |
| Water Tightness                             | Pass                                                                                        |         |                                                |                | (EN 1928)        |
| Water Vapour Transimission                  | μ = 15 000                                                                                  |         |                                                |                | (EN 1931)        |
| Effect of Liquid Chemicals, Including Water | Resistant to many chemicals.<br>Contact Sika Technical Services for additional information. |         |                                                |                | (EN 1847)        |
| UV Exposure                                 | Pass (> 5 000 h / grade 0)                                                                  |         |                                                |                | (EN 1297)        |
| External Fire Performance                   | B <sub>ROOF</sub> (t4) 0° - 70° (subject to construction)                                   |         |                                                |                | (EN13501-5)      |
| Reaction to Fire                            | Class E                                                                                     |         | (EN ISO 11925-2, classification to EN 13501-1) |                |                  |

## SYSTEM INFORMATION

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System Structure</b> | <p>The following products must be considered for use depending on roof design:</p> <ul style="list-style-type: none"> <li>▪ Sarnafil® G 410-20EL sheet for detailing</li> <li>▪ Sarnafil® Metal Sheet</li> <li>▪ Sarnabar®</li> <li>▪ Sarna Seam Cleaner</li> <li>▪ Sarnacol® 2170 / 2172 Spray (contact adhesive)</li> <li>▪ Sarna Cleaner</li> </ul> <p>Ancillary products: wide range of accessories is available e.g. prefabricated parts, roof drains, scuppers, walkway pads and decor profiles</p> |
| <b>Compatibility</b>    | <p>Not compatible in direct contact with bitumen, tar, fat, oil, solvent containing materials and other plastic materials, e.g. expanded polystyrene (EPS), extruded polystyrene (XPS), polyurethane (PUR), polyisocyanurate (PIR) or phenolic foam (PF). These materials could adversely affect the product properties.</p>                                                                                                                                                                              |

## APPLICATION INFORMATION

|                                |                           |
|--------------------------------|---------------------------|
| <b>Ambient Air Temperature</b> | -20 °C min. / +60 °C max. |
| <b>Substrate Temperature</b>   | -30 °C min. / +60 °C max. |

## VALUE BASE

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## FURTHER DOCUMENTS

### Installation

- Application Manual

## LIMITATIONS

Installation work must only be carried out by Sika® trained and approved contractors experienced in this type of application.

- Ensure Sarnafil® G 410-20 EL is prevented from direct contact with incompatible materials (refer to compatibility section).
- Do not apply to wet, damp or unclean surfaces
- The use of some ancillary products such as adhesives, cleaners and solvents is limited to temperatures above +5 °C. Observe temperature limitations in the appropriate Product Data Sheets.
- Special measures may be compulsory for installation below +5°C ambient temperature due to safety requirements in accordance with national regulations.

## ECOLOGY, HEALTH AND SAFETY

Fresh air ventilation must be ensured, when working (welding) in closed rooms. Installation of RAL 9016 SR type requires the use of UV protection goggles.

### REGULATION (EC) NO 1907/2006 - REACH

REGULATION (EC) NO 1907/2006 - REACH: This product is an article as defined in article 3 of regulation (EC) No 1907/2006 (REACH). It contains no substances which are intended to be released from the article under normal or reasonably foreseeable conditions of use. A safety data sheet following article 31 of the same regulation is not needed to bring the product to the market, to transport or to use it. For safe use follow the instructions given in this product data sheet. Based on our current knowledge, this product does not contain SVHC (substances of very high concern) as listed in Annex XIV of the REACH regulation or on the candidate list published by the European Chemicals Agency in concentrations above 0.1 % (w/w).

## APPLICATION INSTRUCTIONS

### EQUIPMENT

#### Hot welding overlap seams

Electric hot air welding equipment, such as hand held manual hot air welding equipment and pressure rollers or automatic hot air welding machines with controlled hot air temperature capability of a minimum +600 °C.

Recommended type of equipment:

- Manual: Leister Triac
- Automatic : Sarnamatic 681

### SUBSTRATE QUALITY

The substrate surface must be uniform, smooth and free of any sharp protrusions or burrs, etc. Sarnafil® G 410-20 EL (CH\_CE) must be separated from any incompatible substrates / materials by an effective separation layer to prevent accelerated ageing. The supporting layer must be compatible to the membrane, solvent resistant, clean, dry and free of grease and dust. Metal sheets must be degreased with Solvent T 660 before adhesive is applied.

### APPLICATION

#### Installation procedure

Strictly follow installation procedures as defined in method statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

#### Adhered roof membrane and flashings

The membrane is bonded to the substrate and flashing by using Sarnacol® 2170 / 2172 Spray contact adhesive.

#### Ballasted roof membrane

The roof waterproofing membrane is installed by loose laying and covering with ballast. The weight of ballast required must be calculated in accordance with project specific calculations based on national standards. Mechanical fixing at the roof perimeter with Sarnabar® including S-Welding Cord must be used to keep the membrane in place. The membrane is then covered with a protective layer of S-Felt protective layer or Sarnafil® Protective Sheet which is then fully covered evenly with a minimum 50mm thickness of washed gravel (8-16 or 16-32 mm diameter).

#### Hot welding overlap seams

Overlap seams must be welded by electric hot welding equipment. Welding parameters including temperature, machine speed, air flow, pressure and machine settings must be evaluated, adapted and checked on site according to the type of equipment and the climatic conditions prior to welding. The effective width of welded overlaps by hot air must be minimum 20 mm.

#### Testing overlap seams

The seams must be mechanically tested with screw driver or steel needle to ensure the integrity/completion of the weld. Any imperfections must be rectified by hot air welding.

## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for the exact product data and uses.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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### Product Data Sheet

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