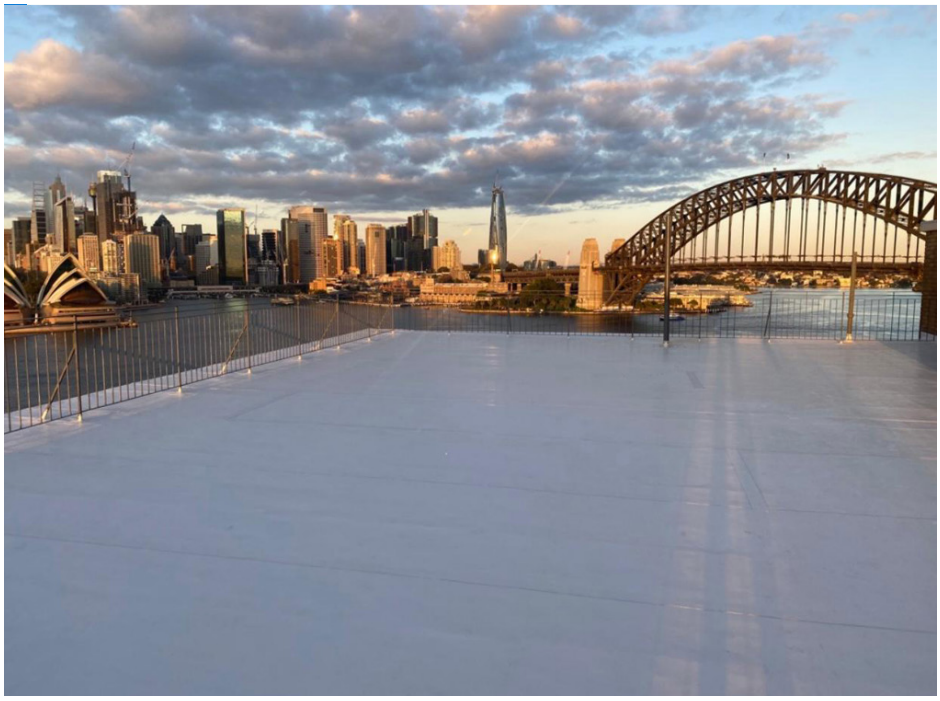
BRANZ Appraised

Appraisal No. 1193 [2022]

SOPREMA FLAGON PVC ROOFING MEMBRANE SYSTEM



Appraisal No. 1193 (2022)

Amended 13 July 2023

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Soprema Flagon PVC Roofing Membrane System is a range of flexible synthetic PVC-P waterproofing reinforced membranes designed to be used on roofs and decks.

Scope

2.1 Soprema Flagon PVC Roofing Membrane System has been appraised for use as roof and deck waterproofing membranes on buildings designed within the following scope:

- with building structures designed and constructed to meet the requirements of the National Construction Code (NCC); and,
- with roof and deck supporting structures of timber framing with substrates of plywood or compressed fibre cement; and,
- with substrates of suspended concrete slab; and,
- subjected to maximum wind pressures; and,
- with the weathertightness design of all junctions being the subject of specific design by the designer. *(Note: The design of these junctions has not been appraised by BRANZ and is outside the scope of this Appraisal.)*

2.2 Roofs and decks waterproofed with Soprema Flagon PVC Roofing Membrane System must be designed and constructed in accordance with the following limitations:

- nominally flat, curved or pitched roofs constructed to drain water to gutters and drainage outlets complying with the NCC; and,
- where decks are designed and constructed such that deflections do not exceed 1/360th of the span; and,
- when protected from ultraviolet (UV) exposure and physical damage; and,
- constructed to suitable falls; and,
- with no multi function roofs or integral roof gardens.

2.3 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.4 The membranes must be installed by Soprema Australia Pty Ltd certified applicators.

Building Regulations

National Construction Code (NCC)

3.1 **In the opinion of BRANZ, Soprema Flagon PVC Roofing Membrane System, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NCC:**

NCC 2022 Volume One - Building Code of Australia

Part F3 ROOF AND WALL CLADDING: Performance F3P1. Soprema Flagon PVC Roofing Membrane System meets this requirement. See Paragraphs 13.1–13.8.

NCC 2022 Building Code of Australia - Volume Two

Part H2 DAMP AND WEATHERPROOFING: Performance H2P2. Soprema Flagon PVC Roofing Membrane System meets this requirement. See Paragraphs 13.1–13.8.

Technical Specification

4.1 FLAGON PVC Membranes are flexible, synthetic PVC-P waterproofing membranes obtained by cast or co-extrusion process. They are reinforced with a polyester mesh or glass fibre veil and can be coupled to a 200 g/m^2 non-woven polyester felt support.

4.2 FLAGON PVC Membranes can be fully-adhered, mechanically-fixed, loose-laid and ballasted to the substrate. The overlaps are heat welded using a leister automatic welder or a hot air gun.

4.3 FLAGON PVC Membranes can be supplied in any RAL colour to suit specific aesthetic design requirements. They can also be supplied in copper and silver finishes (FLAGON PVC COPPER/SILVER ART) and special white pigments providing a high solar reflection index (FLAGON PVC ENERGY PLUS SRI).

4.4 Materials supplied by Soprema Australia Pty Ltd are as follows:

FLAGON PVC Membranes

- **FLAGON SR** - a PVC membrane with a polyester reinforcement and a signal layer on the surface. Designed for horizontal applications, it must be mechanically fastened. It is supplied as a roll 1.2, 1.5, 1.8 and 2 mm thick, 2.1 m wide and 20 m long.
- **FLAGON SV** - a PVC membrane with a glass fibre reinforcement and a signal layer on the surface. Designed for horizontal applications, it is ballasted or loose laid. FLAGON SV can also be applied on vertical surfaces with FLEXOCOL V adhesive. It is supplied as a roll 1.2, 1.5, 1.8 and 2 mm thick, 2.1 m wide and 20 m long.
- **FLAGON SRF** - a PVC membrane with a polyester reinforcement, a signal layer on the surface and coupled to a 200 g/m^2 non-woven polyester felt support. Designed for horizontal applications, it can be mechanically fastened or a mixture of mechanically fastened and fully adhered. It is supplied as a roll 1.2, 1.5, 1.8 and 2 mm thick, 1.6 m wide and 20 m long.
- **FLAGON SFC** - a PVC membrane with a glass fibre reinforcement, a signal layer on the surface and coupled to a 200 g/m^2 non-woven polyester felt support. It is designed for fully-adhered horizontal applications. It is supplied as a roll 1.2, 1.5, 1.8 and 2 mm thick, 1.65 m wide and 20 m long.
- **FLAGON S** - a non-reinforced PVC membrane used for detailing work. It is supplied as a roll 1.5 mm thick, 1.05 m wide and 20 m long.
- **FLAGON CSL** - a non-reinforced PVC membrane used as a protection layer. It is supplied as a roll 1.2, 1.5, 1.8 and 2 mm thick, 2.1 m wide and 20 m long.
- **FLAGON AT** - a non-reinforced PVC membrane used as a waterproofing for blue roofs with potable water and as a protection layer. It is supplied as a roll 1.2, 1.5, 1.8 and 2 mm thick, 2.1 m wide and 20 m long.

Adhesives

- **FLEXOCOL A89** – a mono-component polyurethane, moisture-curing adhesive for adhering FLAGON SFC and SRF. It is supplied in 12 kg pails.
- **FLEXOCOL V** – a mono-component elastomeric and solvent-based adhesive for adhering FLAGON PVC membranes. It is supplied in 20 L pails.

Other accessories

- **FLAGON LIQUID PVC** – a PVC compound dissolved in tetrahydrofuran (THF), used for finishing welds of FLAGON PVC membranes.
- **FLAGON PVC CLEANER** – a solvent-based cleaning agent used to deoxidise and clean the PVC membranes sealing and tools.

4.5 Compatible accessories used with all the systems are:

- FLAGON internal/external PVC corners.
- FLAGON PVC pipe collars and rain outlets.
- FLAGON PVC standing seam profiles.
- FLAGON PVC vapour aerator.
- FLAGON roofing safety lines-hooks connection.
- FLAGBAR (prepunched bar) and FLAGOFIL.
- FLAGMETAL accessories.
- FLAGON PVC coated metal plate
- FLAGON PVC walkways.
- SOPRASOLAR FIX EVO TILT PVC.
- SOPREMA DRAINI.

Handling and Storage

5.1 Handling and storage of all materials, whether on-site or off-site, is under the control of the Soprema Australia Pty Ltd certified applicator. All materials must be stored inside, up off concrete floors, out of direct sunlight and freezing conditions. Dry storage must be provided for all products and the rolls of membrane must be lying down on pallets and protected.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Soprema PVC Membrane Installation Guide.
- Soprema Flagon PVC Roofing Membrane System Installation Details.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 Soprema Flagon PVC Roofing Membrane System is for use on roofs, gutters, decks and parapets where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas. The system can be used on new or existing buildings. Soprema Australia Pty Ltd should be consulted as to the suitability of any existing substrates, prior to using Soprema Flagon PVC Roofing Membrane System.

Structure

8.1 Soprema Flagon PVC Roofing Membrane System fully bonded systems are suitable for use in areas subject to maximum wind pressure of 6 kPa Ultimate Limit State (ULS).

Substrates

Plywood

9.1 Structural plywood must be a minimum of 17 mm thick, complying with AS/NZS 2269. The structural plywood must be supported with joists at a maximum spacing as detailed in AS 1684.3, Table 7.3, and fixings shall be as per 'Technical Note on the Use of EWPAA Branded Structural Plywood As Exterior Decking'. [*Note: LOSP treated plywood must not be used.*]

Concrete

9.2 Concrete substrates must be designed in accordance with the NCC.

Existing Construction

9.3 A thorough inspection of the substrate must be made to ensure it is in fit condition and does not contain any materials that will adversely affect the performance of the membrane. Refer to Soprema Australia Pty Ltd for specific requirements.

9.4 Repairs must be undertaken, where applicable, to ensure the substrate is sound, the joints are sealed, and the flashings are sound. Plywood substrates must be checked for screw fixings, and if necessary, re-fixed as for new plywood.

Durability

Serviceable Life

10.1 Soprema Flagon PVC Roofing Membrane System will have a durability of at least 15 years and an expected serviceable life of over 25 years, provided it is designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

Chemical Resistance

10.2 Industrial air pollutants and windborne salt deposits should not significantly affect the durability of the membranes. However, the long term properties of the material may be affected by contact with petroleum-based products such as oils, greases and solvents.

10.3 Flagon PVC membranes are not compatible in direct contact with EPS and XPS insulation panels. Refer to Soprema Australia Pty Ltd for specific requirements.

Maintenance

11.1 Soprema Flagon PVC Roofing Membrane System must be regularly (at least annually) checked for damage, rubbish or debris. Damage, such as small punctures and tears, must be repaired as recommended by Soprema Australia Pty Ltd.

11.2 Special care must be taken when inspecting the membrane roof system to ensure the continuing prevention of moisture ingress, and repairs must be undertaken where required.

11.3 Drainage outlets must be maintained to operate effectively.

Outbreak of Fire

12.1 Soprema Flagon PVC Roofing Membrane System must be protected or separated from fireplaces, heating appliances, chimneys and flues in accordance with the requirements of NCC Volume One, Part G2, Performance G2P1 and NCC Volume Two, Part H7, Performance H7D5.

Spread of Fire

13.1 The Soprema Flagon PVC Roofing Membrane System consists of combustible materials. Designers must take this into account when undertaking the fire design for the building.

Damp and Weatherproofing

14.1 Roofs and decks must be designed and constructed to meet code compliance with NCC Volume One, Part 3 Roof and wall cladding, Performance F3P1 and NCC Volume Two, Part H2 Damp and weatherproofing, Performance H2P2. They must also take account of snowfalls in snow prone areas.

14.2 When installed in accordance with this Appraisal and the manufacturer's Technical Literature, Soprema Flagon PVC Roofing Membrane System will prevent the penetration of water and will therefore meet code compliance with NCC Volume One, Part F3 Roof and wall cladding, Performance F3P1 and NCC Volume Two, Part H2 Damp and weatherproofing, Performance H2P2. The membranes are impervious to water and will give weathertight roofs and decks capable of accepting minor structural movements.

14.3 The minimum in service fall for roofs, decks and gutters is 1 in 100 in accordance with AS 4654.2, Paragraph 2.5.2. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane. Where possible, BRANZ recommends a design fall of 1:50 for roofs and decks.

14.4 Roof and deck falls must be built into the substrate and not created with mortar screeds applied over the membrane.

14.5 Allowance for deflection and settlement of the substrate must be made in the design of the roofs and decks.

14.6 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter.

14.7 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the blockage of roof drainage.

14.8 The design of details not covered by the Technical Literature is subject to specific weathertightness design, and is outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

15.1 Installation of the membranes must be completed by Soprema Australia Pty Ltd certified applicators.

15.2 Installation of substrates must be completed by tradespersons with an understanding of roof construction, in accordance with instructions given within the Soprema Australia Pty Ltd Technical Literature and this Appraisal.

Preparation of Substrates

16.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve an even and uniform surface.

16.2 Concrete substrates can be checked for dryness using a hygrometer, as set out in BRANZ Bulletin No. 585. The relative humidity of the concrete must be 75% or less before membrane application.

16.3 The moisture content of the plywood and timber substructure must be a maximum of 20%, and the plywood sheets must be dry at time of membrane application. This will generally require plywood sheets to be covered until just before the membrane is laid, to prevent rain wetting.

Membrane Installation

17.1 The membranes must be installed in accordance with the Technical Literature.

17.2 All external edges must be chamfered to a 5 mm radius to remove sharp edges.

17.3 The membrane is installed allowing a 80-120 mm overlap according to the system. [*Note: These are minimum overlap widths. Refer to the Technical Literature for the specific overlap widths for the product and system being specified.]*

Inspections

18.1 Critical areas of inspection for waterproofing systems are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the manufacturer's instructions.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

19.1 The following is a summary of the testing and test reports on Soprema Flagon PVC Roofing Membrane Systems:

- Testing has been carried out on the membranes for tensile strength, elongation, shrinkage, flexibility at low temperature, puncture resistance, water tightness, joint strength under shear, heat aging resistance, chemical resistance and artificial weathering followed by tensile strength, elongation and low temperature flexibility retention by various testing centres. Results and test methods have been reviewed by BRANZ and found to be satisfactory.
- British Board of Agrément Certificate No. 97/3430.

The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

20.1 A durability opinion has been provided by BRANZ technical experts.

20.2 Installation of the membranes has been assessed by BRANZ for practicability of installation and found to be satisfactory.

20.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of the membranes has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. The manufacturer of Soprema Flagon PVC Roofing Membrane System has been assessed and registered as meeting the requirements of ISO 9001.

21.2 The quality of the supply of products to the Australian market is the responsibility of Soprema Australia Pty Ltd.

21.3 Quality on-site is the responsibility of the Soprema Australia Pty Ltd certified applicators.

21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems, in accordance with the instructions of Soprema Australia Pty Ltd and this Appraisal.

21.5 Building owners are responsible for the maintenance of the membrane system, in accordance with the instructions of Soprema Australia Pty Ltd and this Appraisal.

Sources of Information

- AS 1684.3:2021 Residential timber-framed construction - Cyclonic areas.
- AS 4654.2:2002 Waterproofing membranes for external above-ground use, Part 2: Design and installation
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 2269:2012 Plywood – Structural.
- BRANZ Bulletin No. 585 Measuring moisture in timber and concrete, June 2015.
- BRANZ Good Practice Guide: Membrane roofing (second edition), 1 October 2015.
- National Construction Code 2022, Australian Building Codes Board.
- Technical Note on the Use of EWPAA Branded Structural Plywood As Exterior Decking - PAA Engineered Wood Products Association of Australasia.

Amendments

Amendment No. 1, dated 13 July 2023

This Appraisal has been amended to update the Technical Specification and fall requirements and to update the references to NCC 2022.

BRANZ

In the opinion of BRANZ, Soprema Flagon PVC Roofing Membrane System is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Soprema Australia Pty Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Soprema Australia Pty Ltd:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Soprema Australia Pty Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Soprema Australia Pty Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
17 February 2022