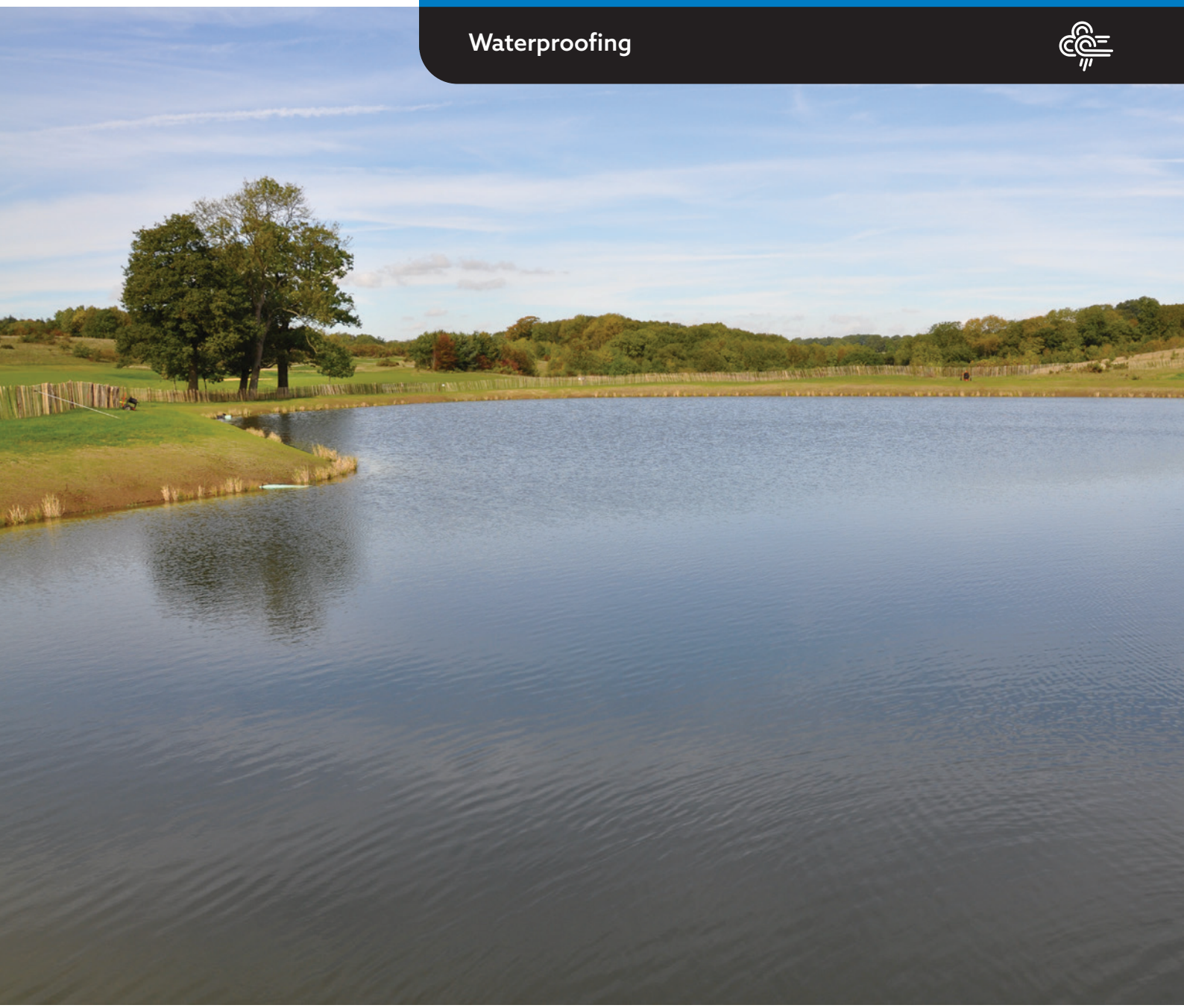
Water Storage

Solutions for hydraulic works

Waterproofing



SOPREMA

Building for Life



Hydraulics

Water management became a major issue in many domains: agriculture, energy, sewerage treatment, industry and, of course, for potable water.

From the beginning, SOPREMA has been involved in water management projects. In 1912, the protection of the Möhne dam was considered a major project. Since then many water related projects, pipes and sewers have been realised with SOPREMA's bituminous products.

Since 1963 SOPREMA has developed specific PVC geomembranes for agriculture ponds. With that experience, it now provides a range of specialised geomembranes (PVC and TPO), geotextiles and geocomposites in order to provide its clients the highest level of knowledge in terms of conception of products, design of projects and advice in the choice of solutions.

The range of products for hydraulic projects are based on:

- **Durability:** durability is the main issue in the choice of a product. We offer a large range of products and thicknesses in order to adapt the solution to the user's needs.
- **Installation:** the success of a project is the result of a good installation. Our products are tested to be easy to weld and install.
- **Chemical compatibility:** with its large range of products, SOPREMA offers a wide range of solutions for water based projects, including having products dedicated to potable water.

SOPREMA supports its clients and partners throughout their projects. Both commercially and technically, the dedicated team ensure that the projects are carried out to meet the needs of customers. Do not hesitate to ask: **info@soprema.co.uk**



Hydraulic Storage Facilities

Whether for agricultural, industrial or leisure purposes, modern society has numerous liquid storage requirements: potable water, salt water, liquids containing chemical substances, leachates, etc. It is essential to waterproof these structures to ensure that it works properly, avoid soil contamination and guarantee long service. Furthermore, the integration of such storage facilities in the urban or rural landscape has become a major issue. Soprema provides answers to these issues for retention structures (ponds, tanks, dams, etc.) and rainwater harvesting or water transport structures (canals, etc.).





How to use a Geomembrane

By definition, a "geomembrane" is a manufactured product for civil engineering, minimum 1.50 m wide, thin, flexible, continuous, gas and/or watertight at the output of the assembly line, minimum effective thickness of 1.00 mm over the entire surface of the panel and continuously weldable on each face by thermal welding [...] (extract from the standard NF P84-500).

SOPREMA PVC and TPO geomembranes offer the possibility of realising waterproofing systems, visible or not, in different colours and that are easy to install whatever the shape of the structure.

The SOPREMA products are recognised as one of the easiest to weld which is the most important characteristic requested by installers.



How hydraulic structures should be waterproofed

For this type of structure, SOPREMA proposes PVC and TPO geomembranes which are particularly suited to the specific constraints of this type of structure:

- Lightweight, flexible, weldable with a simple installation process
- The 2.10 m wide rolls can be adapted to different shapes.
- A variety of colours are available for better integration of the structure into the landscape.

SOPREMA's complete range of synthetic geomembranes meet the technical requirements across Europe. To effectively waterproof a hydraulic structure, it is necessary to choose the right geomembrane. The main points to consider are:

Technical:

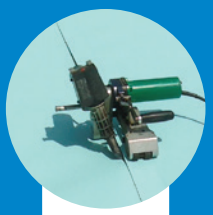
- UV resistance if the geomembrane is exposed.
- Chemical resistance.
- Mechanical resistance if the banks slope steeply or if the substrate is unstable.
- Potable drinking water compatibility.

Architectural:

- Shape of the structure (the more complicated the structure, the more narrow geo- membranes should be used).
- Integration into the landscape (colours, appearance, etc.).

Depending on the type of construction, the role of the waterproofing may vary and its composition may be adapted. As well as the synthetic liners themselves, Soprema offers its clients a vast range of complementary accessories:

- Geotextiles with different applications and geocomposite for protection (Geoland TTX).
- Fastening items (washers, edge strips, laminated sheets, etc.).
- Manual and automatic welding equipment.
- Pre-fabricated Flagon® accessories: inside and outside corners, rainwater outlets, aerators, anchors, etc.
- Adhesives, glues and cleaners.



Automatic welding equipment



Manual welding



Geotextile

Thanks to the numerous projects achieved since 1963, Soprema has acquired a level of experience that enables its teams to offer the best systems for clients' structures and budgetary constraints. As well as choosing the right waterproofing system, it is essential to choose a qualified installation contractor and to set up an appropriate quality control system.

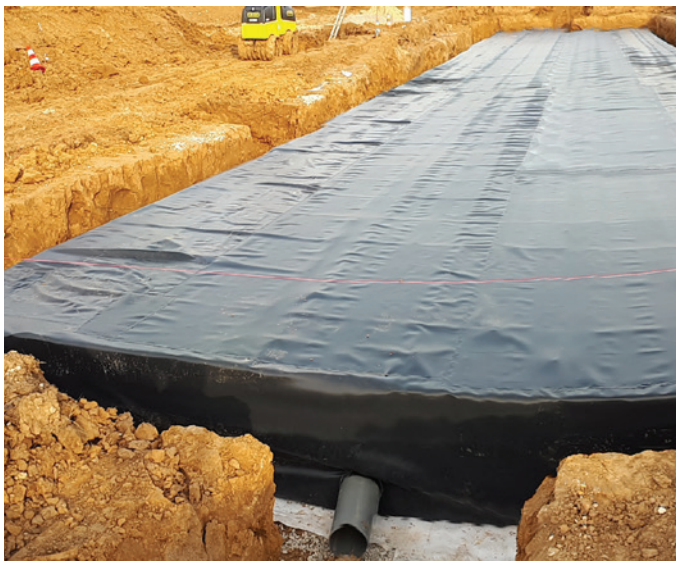


Plasticised PVC GEOMEMBRANES

These PVC geomembranes are manufactured by co-extrusion to make liners with thicknesses between 1.0 mm and 3.0 mm. The material produced can be homogeneous or reinforced single-ply geomembrane, with high tensile properties and high static and dynamic puncture resistance. This process can also produce two colours single-ply geomembranes (a thin layer to give colour at the surface and a resistant layer at the underface).

They are particularly flexible at low temperatures, with good mechanical strength. These geomembranes also have the following advantages, among others, which vary in degree according to the additives in the geomembrane:

- Unaffected by hot-cold cycles.
- Static and dynamic puncture resistance.
- Root-proof and resistant to attack by micro-organisms.
- UV resistant.
- Safe, flame-free working.
- Unlimited choice of colours available (subject to minimum quantities).
- Wide width of 2.10 m and standard length of 20 or 40 m depending on the product (other lengths possible on request to suit to large projects).





SOPREMA proposes PVC geomembranes with different compositions and for different areas of application. Multiple solutions using geomembranes are possible. This is why for any specific use or in the presence of various products, SOPREMA's dedicated team can guide you towards the most suitable geomembrane. Do not hesitate to ask: **info@soprema.co.uk**.

All these products are CE marked in accordance with:

EN 13361 Geosynthetic barriers. Characteristics required for its use in the construction of reservoirs and dams.

EN 13362 Geosynthetic Barriers. Characteristics required for its use in the construction of canals.

They are all available in different thicknesses as 1.2 mm, 1.5 mm, 1.8 mm and 2.00 mm (may be subject to minimum quantities / other thicknesses available on request).

	Intended use	Description	Standard Colours	Characteristics
FLAGON® CSL	Exposed geomembrane for basins, lakes, reservoirs, canals, etc.	Non reinforced.	Light or dark grey.	High elasticity and UV resistance.
FLAGON® SR	Exposed geomembrane for basins, lakes, reservoirs, canals, etc.	Polyester reinforced.	Light or dark grey.	Reinforced geomembrane – UV resistance.
FLAGON® A	Covered geomembrane for reservoirs with traces of oils or safety retention basins.	Non reinforced.	Black.	Resistance to hydrocarbons.



TPO Geomembranes

The TPO geomembranes are made with a mix of polypropylene resin and polyolefin resin. The advantage of the TPO geomembrane is that it does not contain plasticiser. Their mass per unit area is also 25 % less than PVC and they are easily recyclable, respecting people and the environment.

The membrane has been tested for resistance to UV exposure, moisture & high temperatures.

TPO geomembranes also have the following characteristics and advantages:

- Flexible at low temperatures.
- Unaffected by hot-cold cycles.
- High stability.
- Root-proof and resistant to attack by micro-organisms.
- Safe, flame-free working.
- Excellent geomembrane weldability.
- Compatible with bitumen.
- Unlimited choice of colours available (subject to minimum quantities).
- Wide width of 2.10 m, standard lengths of 20 or 40 m depending on the product (other lengths possible on request to suit to large projects).







	Intended use	Description	Standard Colours	Characteristics
FLAGON® GEOP	Exposed geomembrane for basins, lakes, reservoirs, canals, etc.	TPO glass fibre reinforced.	Light green or Basalt grey (surface) and Black (underface).	Excellent stability and UV resistance.



Potable Water

It is important to consider drinking water as a valuable product. Many projects now require approvals for use in contact with potable (or drinking) water. Even in canals or lakes, the use of an approved product may be requested as the water can be used (after treatment) as drinking water.

The approvals are also suitable for fish farms or algae plants.

Soprema develops specific PVC and TPO geomembranes to be used in potable water storages in order to be approved by most of the countries and meet regulations. These developments are part of the works made for the protection of the water and maintain the hydraulic resources around the world, with benefits for industry and people.



Geomembranes in PVC or TPO:

TWO SAFE SOLUTIONS.

Waterproof geomembranes are able to:

- Secure the potable water storage in respect of the norms for drinking water.
- Protect the structures to avoid any risk of loss or cracks.

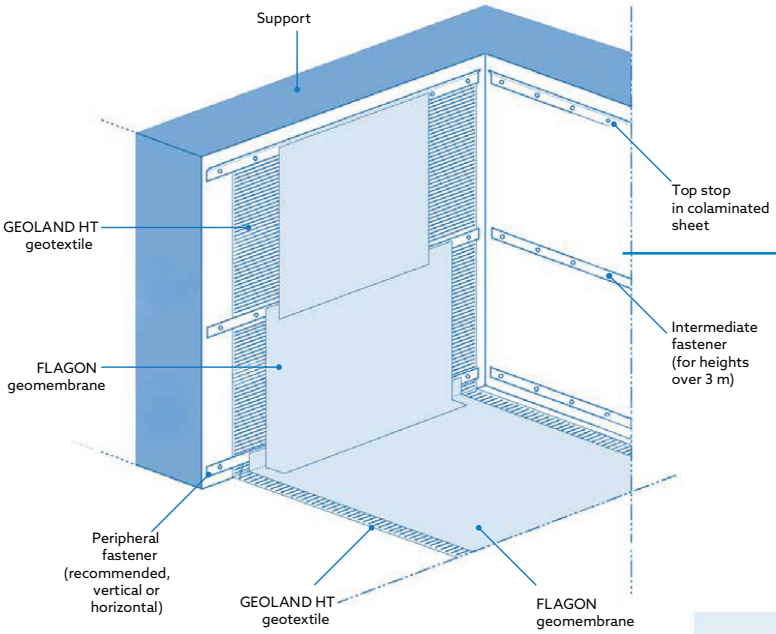
Sure, flexible and resistant:

- The geomembranes are made with specific materials responding to most requirements of owners, designers and installers.

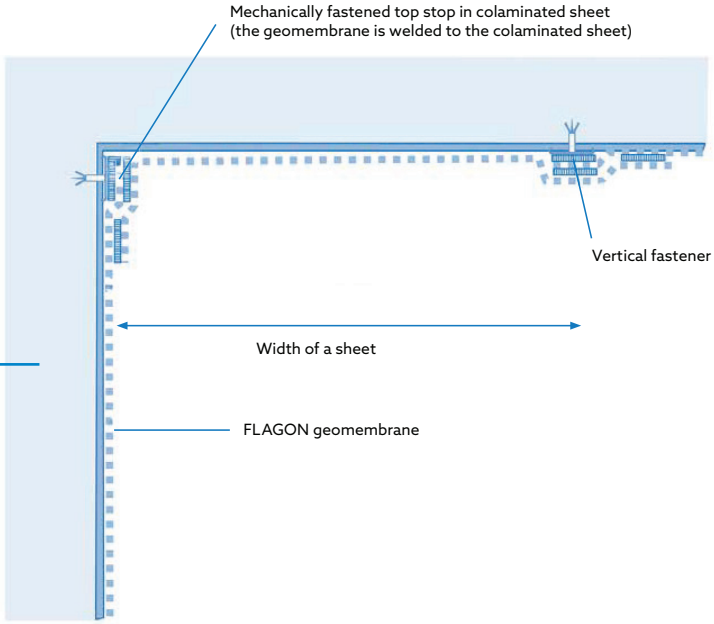
	Description	Standard Colours	Characteristics
FLAGON® AT	PVC non reinforced.	White or dark grey.	High elasticity and UV resistance.
FLAGON® GEOP AT	TPO glass fibre reinforced.	Light green or Basalt grey (upper face) and Black (underface).	Excellent stability and UV resistance.

Installation examples

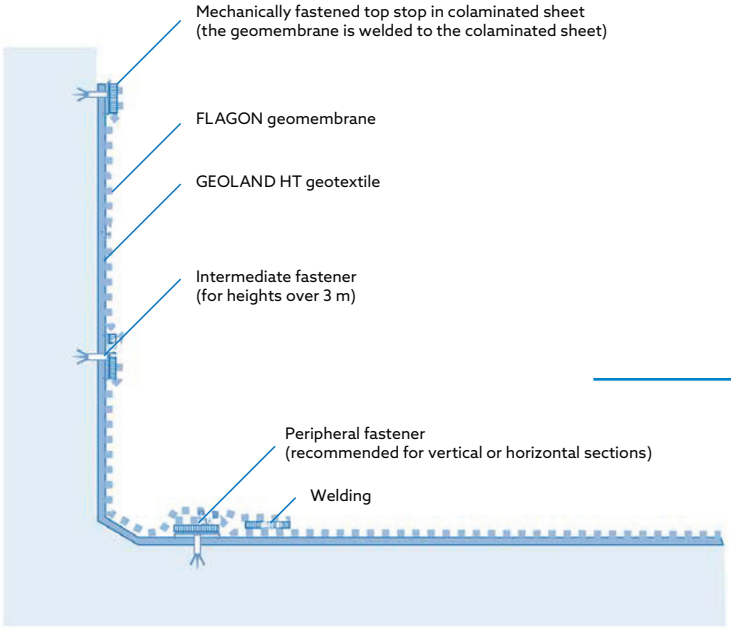
Fastening to a Concrete Wall and Floor



Horizontal Fastening to a Concrete wall (section)



Vertical Fastening to Underside of a Concrete Slab



Examples of recent References

FRANCE

Purification basin. Achères.	19,000 m^2
Basin. Ferraiz, La Clusaz.	16,000 m^2
Basin. Vallandry.	4,600 m^2
Coking plant. Fos sur Mer.	18,000 m^2
Golf club. Les Gets.	6,500 m^2
Retention. Méribel.	30,000 m^2
Nursery basin. Dampierre-en-Burly.	6,400 m^2
Altitude retention. Chamrousse.	28,000 m^2
Multi-slide park. Baillargues	72,000 m^2
Altitude retention. Lauze, Courchevel.	30,000 m^2
Golf club. Belle Ile En Mer.	3,000 m^2



▲ GOLF CLUB. LES GETS.

▼ ALTITUDE RETENTION. LAUZE, COURCHEVEL.





▲ IRRIGATION CANAL. THESSALONIKI.



▲ WATER STORAGE BASIN FOR ARTIFICIAL SNOW. TURIN 2006 OLYMPIC WINTER GAMES.

ITALY

Basin. Mucone.	75,000 m^2
Seawater fish farm ponds.Orbetello.	250,000 m^2
Hydro-electric channel. Aosta.	45,000 m^2
Golf. Is Molas.	10,000 m^2
Retention. Cavanella.	35,000 m^2
Tub. Scanzano Montalbano Jonico, Matera.	9,000 m^2
Basin. Butera, Gela.	18,000 m^2
Reservoir. Ciampino.	2,400 m^2
Water storage basin for artificial snow. Turin 2006 Olympic Winter Games.	18,000 m^2

UK

Drinking Water. Grand Turk.	5,000 m^2
Nuclear cooling. Hartlepool.	2,000 m^2
Golf club. London.	15,000 m^2
Drinking water tank relining	20,000 m^2
Water tower relining	5,000 m^2

GREECE

Irrigation canal. Thessaloniki.	50,000 m^2

SPAIN

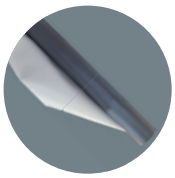
Basin. Almansa.	30,000 m^2
Basin. Andalucía.	4,000 m^2
Irrigation channel. Alagón.	33,000 m^2

MOROCCO

Private house.	3,800 m^2

Products

PVC Geomembranes



→ FLAGON® CSL

Geomembrane made of PVC-P UV resistant, specifically for waterproofing of basins, tanks, canals and similar structures.

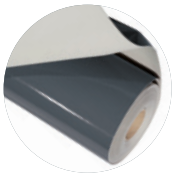
Packaging	Reference	Thickness	Roll	Exposed Colour	Rolls per pallet
FLAGON® AT	00050666	1.2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	28
FLAGON® GEOP AT	00050670	1.5 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	23
FLAGON® CSL 20	00050676	2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	18

Installation

Flagon® CSL rolls are placed independently on a geotextile of the Geoland range and the sheets are welded together by applying hot air with manual or automatic welding machine.

Main advantages

- Flexibility.
- Excellent weldability.
- ASQUAL certified in thickness 1.2 mm and 1.5 mm.
- Compliant with relevant harmonised standard



→ FLAGON® SR

Synthetic PVC waterproofing geomembrane for main part and readings. The geomembrane is reinforced with a polyester grid.

Packaging	Reference	Thickness	Roll	Exposed Colour	Rolls per pallet
FLAGON® SR 12	00050353	1.2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	14
FLAGON® SR 15	00051543	1.5 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	14
FLAGON® SR 18	00050430	1.8 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	14
FLAGON® SR 20	00051545	**2 mm**	20 m x 2.10 m (42 m²)	Light grey / Dark grey	**14**

Installation

Semi-independent by mechanical fixings: Flagon® SR geomembranes are unwound and superimposed without tension with longitudinal overlap of 10 cm minimum. The fixing mechanics are placed under the cover of strips which will then be welded.

Main advantages

- Flexibility at low temperature.
- Insensitivity to hot-cold cycles.
- High mechanical resistance and static and dynamic punching.
- UV resistance.
- No Hot Works required



→ FLAGON® A

FLAGON® A is a thermoplastic geomembrane made of PVC-P that contains special plasticizers, specifically designed for the non UV exposed waterproofing of areas in contact with fluids with traces

Packaging	Reference	Thickness	Roll	Exposed Colour	Rolls per pallet
FLAGON® A 15	00050482	1.5 mm	20 m x 2.10 m (42 m²)	Black	23
FLAGON® A 18	00050484	1.8 mm	20 m x 2.10 m (42 m²)	Black	18
FLAGON® A 20	00051925	2 mm	20 m x 2.10 m (42 m²)	Black	18

Installation

The rolls of Flagon® A are laid independently on a geotextile and the strips are welded together by heat sealing. The geomembrane must be UV protected.

Main advantages

- Flexibility.
- Excellent weldability.
- Hydrocarbon and oils resistance.
- Compliant with relevant harmonised standard

TPO Geomembranes



→ FLAGON® GEOP

TPO geomembrane reinforced with a glass fiber for the waterproofing of basins and tanks exposed to UV.

Packaging	Reference	Thickness	Roll	Exposed Colour	Rolls per pallet
FLAGON® GEOP 12	00050790	1.2 mm	25 m x 2.10 m (52.50 m²)	Light grey / Dark grey	23
FLAGON® GEOP 15	00050812	1.5 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	23
FLAGON® GEOP 20	00050820	2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	18

Installation

The rolls of Flagon® GEOP are laid independently on a geotextile and the lengths are welded together by heatsealing.

Main advantages

- Root resistant.
- Excellent weldability.
- Low dimensional variation under the heat effect.
- ASQUAL certified in 1.2 mm (without reinforcement).
- Compliant with relevant harmonised standard

GEO Geomembranes for potable water



→ FLAGON® AT

FLAGON® AT is a thermoplastic geomembrane made of PVC-P specifically designed for waterproofing tanks and basins used for drinking water.

Packaging	Reference	Thickness	Roll	Exposed Colour	Rolls per pallet
FLAGON® AT 12	00050492	1.2 mm	20 m x 2.10 m (42 m²)	White / Dark grey	28
FLAGON® AT 15	00050494	1.5 mm	20 m x 2.10 m (42 m²)	White / Dark grey	23
FLAGON® AT 20	00050989	2 mm	20 m x 2.10 m (42 m²)	White / Dark grey	18

Installation

Semi-independent by mechanical fixings: Flagon® SR geomembranes are unwound and superimposed without tension with longitudinal overlap of 10 cm minimum. The fixing mechanics are placed under the cover of strips which will then be welded.

Main advantages

- Flexibility.
- Excellent weldability.
- ACS certified product (Attestation of Sanitary Compliance).
- Compliant with relevant harmonised standard



→ FLAGON® GEOP AT

TPO geomembrane reinforced with a glass fiber, designed for the waterproofing of basins and drinking water tanks exposed to UV.

Packaging	Reference	Thickness	Roll	Exposed Colour	Rolls per pallet
FLAGON® SR 12	00050794	1.2 mm	25 m x 2.10 m (52.50 m²)	Light green	23
FLAGON® SR 15	00050818	1.5 mm	20 m x 2.10 m (42 m²)	Light green	23
FLAGON® SR 18	00051392	1.8 mm	20 m x 2.10 m (42 m²)	Light green	18
FLAGON® SR 20	00052830	**2 mm**	20 m x 2.10 m (42 m²)	Light green	**18**

Installation

Flagon® GEOP AT rolls are laid independently on a geotextile and the lengths are welded between them by heat sealing.

Main advantages

- Root resistant.
- Excellent weldability.
- Low dimensional variation under the influence of heat.
- Compatible with drinking water.
- DWI approved



→ GEOLAND HT

Non-woven needle punched geotextiles made of 100% polypropylene high tenacity fibers used for road construction projects, tunnels, foundations and hydraulics.

Packaging

Colour: white.

Width: 2.20 m, 3.30 m or 6.60 m.

Weight: 120 g/m² (125 lin m), 150 g/m² (125 lin m), 200 g/m² (100 lin m), 300 g/m² (65 lin m), 400 g/m² (55 lin m), 500 g/m² (50 lin m), 700 g/m² (50 lin m), 800 g/m² (50 lin m).

Other weights on request.

References: On request.

Installation

Geoland HT is loose laid in direct contact with the ground. Junction can be done by light hot air welding. UV exposure has to be limited.

Main advantages

- High tenacity.
- High resistance to alkalinity and inert towards the various chemical elements present in the soil.
- Possibility of roll widths of up to 6.6 m and length on request.
- CE marking for separation, filtration, drainage and protection.



→ GEOLAND SHT

Non-woven needle punched geotextiles made of 100% polypropylene high tenacity fibers treated by the addition of carbon black used for road construction projects, tunnels, foundations and hydraulics.

Packaging

Colour: black

Width: 2.20 m, 3.30 m or 6.60 m.

Weight:500 g/m² (50 lin m), 700 g/m² (50 lin m), 800 g/m² (50 lin m), 1000 g/m² (40 lin m), 1200 g/m² (30 lin m).

Other weights on request.

References: On request.

Installation

Geoland SHT is loose laid in direct contact with the ground. Joints can be done by light hot air welding.

Main advantages

- High tenacity.
- High resistance to alkalinity and inert towards the various chemical elements present in the soil.
- Possibility of roll widths up to 6.6 m and length on request.
- CE marking for separation, filtration, drainage and protection.

Geoland TTX



→ Geoland TTX

Geoland TTX is a geocomposite made with two polypropylene non woven geotextiles (350 g/m² for the carrier layer and 200 g/m² for the cover layer) embedding a cement-sand mix. The whole is maintained by an intense needling process made in the plant.

Packaging

Mass per unit area (Kg/m²): 7, 9, 10, 12

Length/width: 20 lin m / 5 m – 20 lin m / 2.5 m – 5 lin m / 1 m

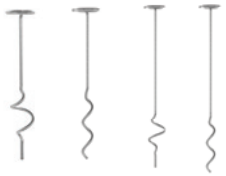
References: 00118648 to 00118671.

Installation

Once unrolled, the product is hydrated with water to set the mortar and form a thin layer of fiber cement.

Main advantages

- Simple to install.
- Easy to adapt.
- High resistance to erosion and static or dynamic punctures.



→ Geoland TTX P

On request

Packaging	Reference	Units per box
Geoland TTX P1	00118995	200
Geoland TTX P2	00118996	200
Geoland TTX P3	00118997	150
Geoland TTX P4	00118998	150



→ Geoland TTX Tool

On request

References 00118999



→ ALSAN FLEX 2921SB + GUN

On request

References: 00152421 (cartridge) / 00156179 (Application Gun CG-CT6) 00152471 (bags) / 00156181 (Application Gun CG-FP6).

Accessories - Welding



→ Roller for PVC

On request.

References: 40 mm: 00051442 / 80 mm: 00051443.



→ Roller for TPO

On request.

Reference: 30 mm: 00051441.

→ Kit for pressure test

On request.

Reference: 00051326.

Accessories - Cleaners



→ PVC Cleaner

On request.

References: 00159164

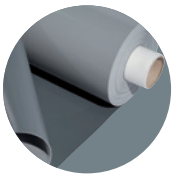


→ TPO Cleaner

On request.

Reference: 00159168

Accessories - Walkway



→ Walkway PVC

On request.

Reference: 00107223



→ Walkway TPO

On request.

Reference: 00050784

Accessories - Fixing accessories



Fixing bar

On request.

Reference	Length (m)	Pieces per pack
00105750	2	10
00102455	2	10



→ Metal sheet with PVC

On request.

Reference	Length (m)	Pieces per pack
00105750	2	10
00102455	2	10



→ Metal sheet with TPO

On request.

Reference	Length (m)	Pieces per pack
00105750	2	10
00102455	2	10



→ Fixing plates in PVC

On request.

Reference: 00051344



→ Fixing plates in TPO

On request.

Reference: 00051346

Accessories - Vent



→ Vent in PVC

On request.

Reference	Height (mm)	Ø	Colours	Pieces per pack
00050846	160	390	Light grey	10
00051674	240	320	Light grey	10
00051673	400	390	Light grey	10



→ Vent in TPO

On request.

Reference	Height (mm)	Ø	Colours	Pieces per pack
00050950	160	390	Light grey	10
00051027	240	320	Light grey	10



→ Vent Cap

On request.

Reference	Type	Height (mm)	Ø	Pieces per pack
00051621	Standard	80	100	10

Accessories - Angles



ANGLE IN PVC 90° 95

On request.

Reference	Type	Colours	Pieces per pack
00050297	Internal	Light grey	20
00050285	External	Light grey	20



ANGLE IN TPO 90° 95

On request.

Reference	Type	Colours	Pieces per pack
00050319	Internal	Light grey	20
00050255	External	Light grey	20

Accessories - Anchors



FLAGON ANCHORS

The anchors that must be made through geomembranes can be done by using a FLAGON ANCHOR. The number of anchors must be determined according to the nature of the support and the loads.

On request.

References: 00155396



ALSAN ANCHOR EP3 and application gun CG-DC7

ALSAN ANCHOR EP3 is a best-performing two-component 3:1 ratio pure epoxy based bonded anchoring system, which offers extremely high load-bearing capacity.

Main advantages

- Anchoring high load bearing.
- Compatible with Soprema products.

On request.

Reference: 00156151 / 00156177 (GUN).

Notes

SOPREMA at your service:

Do you have a question about a specific project, the products or application possibilities?
Then contact our technical team at:
techsupport@soprema.co.uk

All information can be found on:
www.soprema.co.uk

SOPREMA UK

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Tel: +44 (0) 330 058 0668

SOPREMA

SOPREMA group attaches great importance to quality and therefore operates in accordance with the internationally recognised, independently audited and certified quality system EN ISO 9001 - ISO 14001. SOPREMA group reserves the right, depending on the evolution of knowledge and techniques, without notice to change the composition and terms of use of its products.

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