



SOLUTIONS
FOR HYDRAULIC WORKS

HYDRAULICS



HYDRAULICS

SUMMARY

- Presentation 3
- Hydraulic storage facilities 4
- How to use a "geomembrane" 4
- How hydraulics structures should be waterproofed 5
- Plasticised PVC geomembranes 6
- TPO geomembranes 8
- Solutions for dams 10
- Potable water 11
- Examples of recent references 12
- Products 14



An independent family group since 1908, **Soprema** has established itself as one of the world's leading waterproofing companies and also as a specialist in roofing, sound sublayers and insulation. Over the years, the **Soprema** Group has grown and diversified around the world, integrating complementary activities into its original business: waterproofing. Having become a world leader in waterproofing solutions, the Group is now a key player in the construction and civil engineering sector.

With a workforce of more than 9,200 people and a turnover of more than 3 billion euros in 2020, **Soprema** has a global commercial industrial presence with 81 factories, more than 100 operating subsidiaries and a presence in 90 countries, as well as 17 highly focused sustainable development R&D centres and 22 training centres in 8 countries

The result of a close collaboration between the Marketing and the R&D departments, the **Soprema** products range is innovative and in perfect harmony with market requirements and current standards. **Soprema's** success is built on a basic principle: to focus on the idea.

Soprema's products and services aim to meet the most demanding needs of building professionals, in terms of waterproofing of roof terraces, civil engineering works, insulation, roofing, natural lighting, green and photovoltaic roofs and reinforced geomembranes for swimming pools.

Soprema offers original, high-performance and high-tech solutions that address all building problems. Constantly optimised by the research and development services in a logic ecodesign, **Soprema** systems today display exceptional performance in terms of strength, reliability and longevity.

All **Soprema** plants are ISO 9001 certified. Some plants are ISO 14,001, ISO 16,001 and ISO 18,001.



HYDRAULICS

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

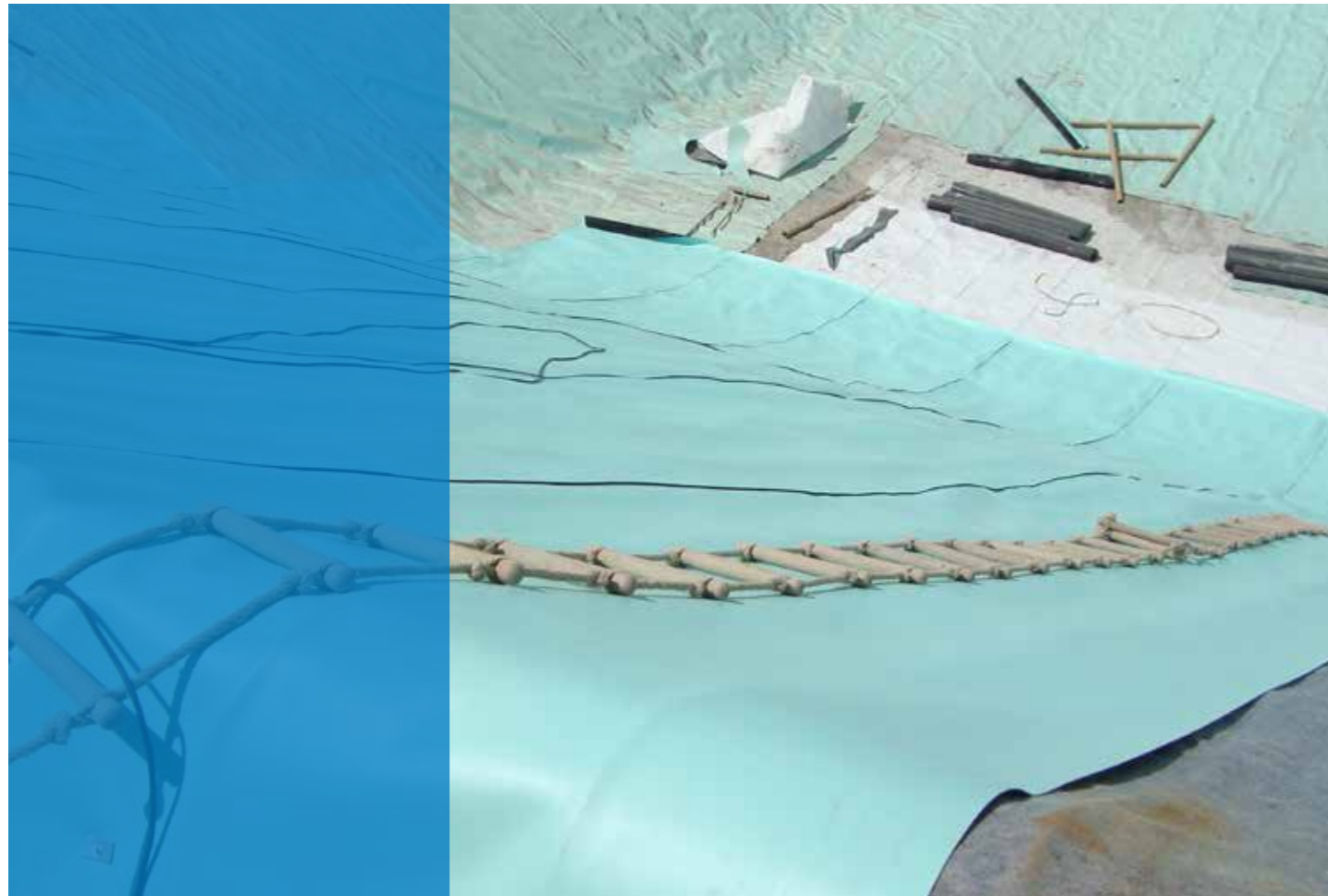
From the beginning, **Soprema** has been involved in water management projects. In 1912, the protection of the Möhne dam was considered a major project. Since then many water related projects, pipes and sewers have been realised with **Soprema's** bituminous products.

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



4 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 and easily welded, they are simple to install.
- 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.
- Possible drinking water compatibility.

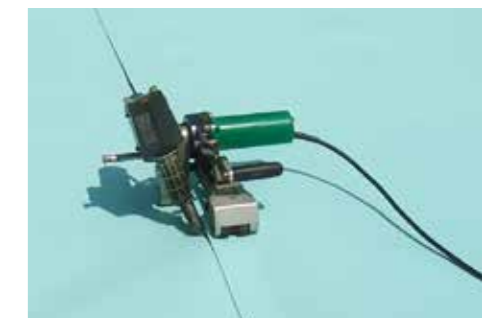
Architectural:

- Shape of the structure (the more complicated the structure, the more narrow geomembranes 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 (TILTEX).
 - 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.



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.



Automatic welding equipment



Manual welding



PVC geomembrane

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 and self-extinguishing.
- 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.	Light or dark grey.	High elasticity and UV resistance.
FLAGON® SR	Exposed geomembrane for basins, lakes, reservoirs, canals, etc.	Light or dark grey.	Reinforced geomembrane – UV resistance.
FLAGON® A	Covered geomembrane for reservoirs with traces of oils or safety retention basins.	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. This makes TPO an environmentally-friendly material, respecting people and the environment.

Furthermore, it is very resistant to UV degradation and weathering.

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

FLAGON®GEOP

Exposed geomembrane for basins, lakes, reservoirs, canals, etc.

DESCRIPTION

TPO glass fibre reinforced.

STANDARD Colours

Light green or Basalt grey (surface) and Black (underface).

CHARACTERISTICS

Excellent stability and UV resistance.





SOLUTIONS FOR DAMS

The use of synthetic geomembranes in dams is offering many opportunities to ensure a better resistance and longer service life on new projects and to restore older structures.

According to the type of project, **Soprema** proposes solutions which are integrated in the structure or laid on its surface.

Specific studies have to be executed for each project to determine what the suitable products are: type of structure, height of water, sun exposure, etc. Do not hesitate to contact us (info@soprema.co.uk) to learn how we can help you and provide you with the highest quality of waterproofing products for your project.



Sibelon by Carpi.



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.

These three geomembranes can be used for basins, lakes, reservoirs, canals, fish farms and algae plants.

EXAMPLES OF RECENT REFERENCES

FRANCE

- Purification basin. Achères. 19,000 m²
- Basin. Ferraiz, La Clusaz. 16,000 m²
- Basin. Vallandry. 4,600 m²
- Coking plant. Fos sur Mer. 18,000 m²
- Golf club. Les Gets. 6,500 m²
- Retention. Méribel. 30,000 m²
- Nursery basin. Dampierre-en-Burly. 6,400 m²
- Altitude retention. Chamrousse. 28,000 m²
- Multi-slide park. Baillargues. 72,000 m²
- Altitude retention. Lauze, Courchevel. 30,000 m²
- Golf club. Belle Ile En Mer. 3,000 m²



Basin. Vallandry.



Golf club. Les Gets.



Agriculture pond. Dampierre-en-Burly.



Multi-slide park. Baillargues.



Altitude retention. Lauze, Courchevel.



Golf club. Belle Ile En Mer.

ITALY

- Basin. Mucone. 75,000 m²
- Seawater fish farm ponds. Orbetello. 250,000 m²
- Hydro-electric channel. Aosta. 45,000 m²
- Golf. Is Molas. 10,000 m²
- Retention. Cavanella. 35,000 m²
- Tub. Scanzano Montalbano Jonico, Matera. 9,000 m²
- Basin. Butera, Gela. 18,000 m²
- Reservoir. Ciampino. 2,400 m²
- Water storage basin for artificial snow. Turin 2006 Olympic Winter Games. 18,000 m²

UK

- Drinking Water. Grand Turk. 5,000 m²
- Nuclear cooling. Hartlepool. 2,000 m²
- Golf club. London. 15,000 m²

GREECE

- Irrigation canal. Thessaloniki. 50,000 m²

SPAIN

- Basin. Almansa. 30,000 m²
- Basin. Andalucía. 4,000 m²
- Irrigation channel. Alagón. 33,000 m²

MOROCCO

- Private house. 3,800 m²



Water storage basin for artificial snow. Turin 2006 Olympic Winter Games.



Irrigation canal. Thessaloniki.

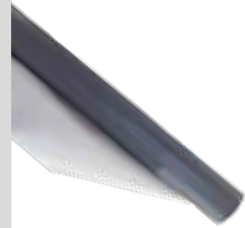


Irrigation channel. Alagón.

PRODUCTS

PVC GEOMEMBRANES

FLAGON® CSL



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

Packaging:

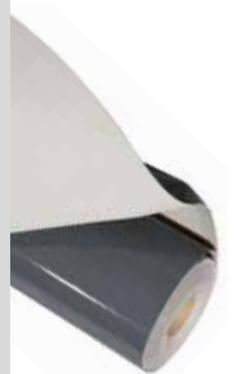
	Reference	Thickness	Roll	Exposed color	Rolls per pallet
FLAGON® CSL 12	00050666	1.2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	28
FLAGON® CSL 15	00050670	1.5 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	23
FLAGON® CSL 20	00050676	2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	18

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.
- Approved by a CPR - Construction Product Regulation

FLAGON® SR



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

Packaging:

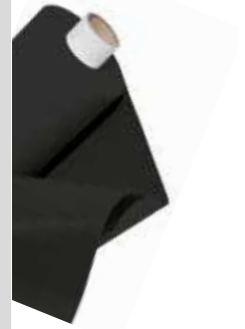
	Reference	Thickness	Roll	Exposed color	Rolls per pallet
FLAGON® SR 12	00050353	1.2 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	14
FLAGON® SR 15	00051543	1.5 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	14
FLAGON® SR 18	00050430	1.8 mm	20 m x 2.10 m (42 m²)	Light grey / Dark grey	14
FLAGON® SR 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 unbound 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 of hydrocarbons or oils. **FLAGON® A** can also be used on hydraulics (retention), on undergrounds (tanking) and on roofs under trafficable rigid ballast.

Packaging:

	Reference	Thickness	Roll	Exposed color	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.
- Approved by a CPR - Construction Products Regulation

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 color	Rolls per pallet
FLAGON® GEOP 12	00050790	1.2 mm	25 m x 2.10 m (52.50 m²)	Light green / Dark grey	23
FLAGON® GEOP 15	00050812	1.5 mm	20 m x 2.10 m (42 m²)	Light green / Dark grey	23
FLAGON® GEOP 20	00050820	2 mm	20 m x 2.10 m (42 m²)	Light green / 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

- Compatible with plants.
- Excellent weldability.
- Low dimensional variation under the heat effect.
- ASQUAL certified in 1.2 mm (without reinforcement).
- Approved by a CPR - Construction Product Regulation

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 color	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

*On request.

Installation
 The rolls of **Flagon® AT** are laid independently on a geotextile of the Geoland range and the lengths are welded together by heat sealing.

Main advantages

- Flexibility.
- Excellent weldability.
- ACS certified product (Attestation of Sanitary Compliance).
- Approved by a CPR - Construction Product Regulation

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 color	Rolls per pallet
FLAGON® GEOP AT 12	00050794	1.2 mm	25 m x 2.10 m (52.5 m²)	Light green	23
FLAGON® GEOP AT 15	00050818	1.5 mm	20 m x 2.10 m (42 m²)	Light green	23
FLAGON® GEOP AT 18	00051392	1.8 mm	20 m x 2.10 m (42 m²)	Light green	18
FLAGON® GEOP AT 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

- Compatible with plants.
- Excellent weldability.
- Low dimensional variation under the influence of heat.
- Compatible with drinking water.
- Approved by a CPR - Construction Product Regulation
- DWI approved

GEOTEXTILES

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.
- **Reference:** 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.

TILTEX

TILTEX®



TILTEX® 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

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

TILTEX P

On request.

	Reference	Units per box
	TILTEX® P1 00118995	200
	TILTEX® P2 00118996	200
	TILTEX® P3 00118997	150
	TILTEX® P4 00118998	150



TILTEX TOOL

On request.

Reference: 00118999.

ALSAN FLEX 2921SB + GUN

On request.

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



ACCESSORIES - WELDING TOOLS



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.

Reference: 00159164.



TPO CLEANER

On request.

Reference: 00159166.

Soprema at your service:

Do you have a question about a specific project, the products or application possibilities? Then contact our technical team.

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

Soprema UK

Soprema House
Freebournes Road
Witham, Essex, CM8 3UN

Tel : 0330 058 0668
info@Soprema.co.uk
www.Soprema.co.uk

