CIVILROCK

Solutions for waterproofing civil engineering works

Civil Engineering

Underground Works Hydraulic Bridges

civil engineering

SOPREMA GROUP

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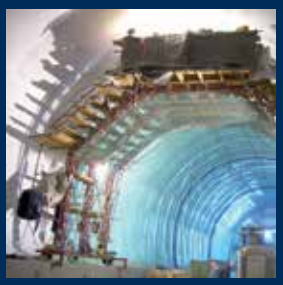


Civil engineering

unique expertise

SOPREMA introduction

An independent group since its creation over 100 years ago, **SOPREMA** is firmly established as one of the world's leading waterproofing companies, producing more than 150 million square metres of membranes a year.

SOPREMA has a global industrial presence with a workforce of over 4 300 individuals and a turnover exceeding 1.2 billion Euros. With 15 production facilities, including 11 in Europe, 18 subsidiaries and 40 distributors, 4 training centres and 5 research and development laboratories which are heavily focused on sustainable development, we operate in more than 80 Countries around the World.

Close collaboration between a dedicated team of specialists and the research and development laboratories, means that our product portfolio is innovative and perfectly in step with the demands of the market and current standards.

Thanks to its acquisition in 2007 of **FLAG SPA**, an Italian company producing synthetic membranes, **SOPREMA** has strengthened its expertise in the field of synthetic waterproofing.

FLAG develops high performance synthetic membrane made of both PVC and TPO for waterproofing tunnels, underground structures, retention ponds, canals, etc.

A leader in this market, **FLAG** has over 40 years experience and has accompanied its clients everywhere in the world, to lay over 100 million square metres of waterproofing membranes.

for all civil engineering projects

SOPREMA has a wide range of products to meet the needs of all types of civil engineering structures:

- Bituminous waterproofing
- Synthetic waterproofing (PVC and TPO)
- Liquid waterproofing

In order to meet the specific demand, **SOPREMA** has created the **CivilRock®** range, which offers products designed to support the requirements of civil engineers for all types of structures:

- Civil engineering structures, bridges and cars parks
- Tunnels, underground & basement structures
- Basins, hydropower dams, canals, lakes, ponds and tanks including those to be used to store potable water

CivilRock® covers all the activities connected to these structures, which were previously covered by the group's different brands: **SOPREMA**, **FLAG**, **Alsan®**… This has given us the chance to offer a more complete range which better matches the requirements of clients, project managers and contractors.

With its different types of products, **CivilRock®** offers waterproofing or sealing solutions adapted to virtually all built structures.

All the **SOPREMA** group's factories are certified ISO 9001 with some also certified ISO 14001, ISO 16001, ISO 18001.

CIVILROCK® – THE AREAS COVERED

The **SOPREMA** group is best known for its bituminous membranes.
FLAG is recognised in the synthetic waterproofing field.
Alsan® designs and develops liquid waterproofing solutions.
For waterproofing projects, it is often necessary to study different solutions to find the one best suited to both the performances required and various other factors such as the budget and the program.

The reason for the **CivilRock®** range: to be able to offer the most suitable solution using the most appropriate products.

CivilRock® offers the choice in the same range of specific products for the three main fields of application below:

- Structures, bridges, slabs, car parks
- Hydraulic structures, basins, tanks, dams and canals
- Underground structures, tunnels, covered trenches

For each area, **CivilRock®** provides a complete range of solutions and a variety of waterproofing products to fulfil the requirements of the project.

CivilRock® range of products for civil engineering

CIVILROCK® - PRODUCTS

The **CivilRock®** range includes three families of products.

BITUMINOUS MEMBRANES

These consist of a bituminous binder containing a reinforcing mesh and are sold in rolls 1 metre wide. They can be adhered to the substrate or partially bonded.
They are particularly suited to the waterproofing of concrete slabs as well as for civil engineering structures, bridges, car parks, buried slabs and cut and cover.
They are applied using a gas torch or a hot air machine such as the **Macaden®**.

When used for road surfacing, bituminous membranes may be directly covered by layers of asphalt or coated materials.

SYNTHETIC MEMBRANES

The **CivilRock®** range includes reinforced and non-reinforced PVC and TPO membranes. These membranes are 2.10 metres wide. They are loose laid on the substrate and are particularly suited to waterproofing underground and hydraulic structures.

LIQUID WATERPROOFING SYSTEMS

Thanks to the development of liquid waterproofing techniques, **CivilRock®** offers products that complement the bituminous and synthetic membranes and are particularly useful for achieving complex details (upstands, special features...) more effectively.

For car parks and walkways, **CivilRock®** distributes PMMA resins suitable for treating large directly trafficable areas.

Bituminous waterproofing

Synthetic waterproofing

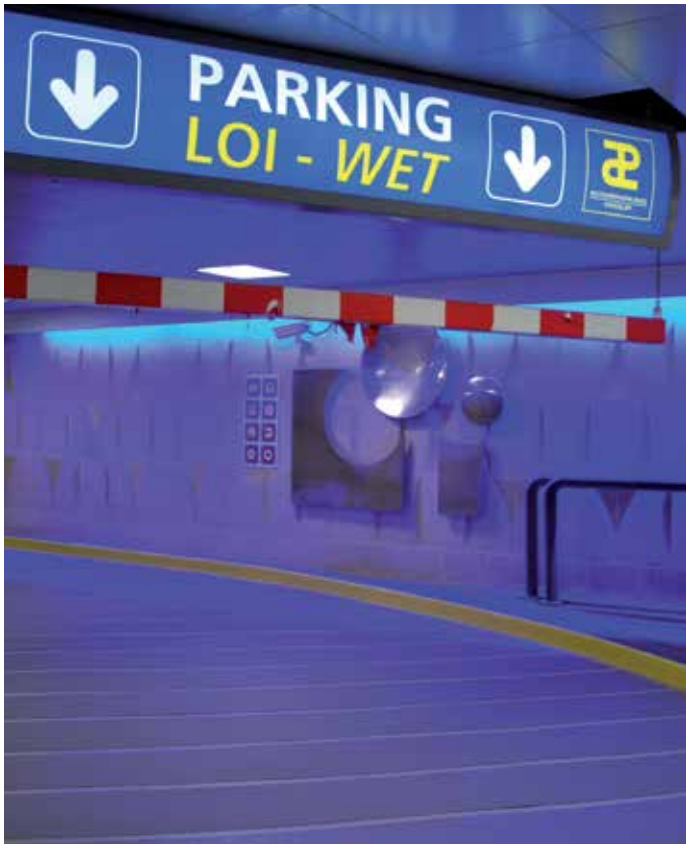
Liquid waterproofing

services

services

civilrock®
a team

The **CivilRock®** team is here to listen to engineers and designers and help them to plan the waterproofing systems for their projects.



a range of products

CIVILROCK® – THE SERVICES

CivilRock® is not just a range of products, it is also a team offering its clients and partners numerous services.

The **CivilRock®** team's first objective is to provide appropriate, high performance products. Thanks to its experience in the field all over Europe and close collaboration with the group's R&D departements, products are developed to meet the requirements and criteria definded to satisfy precise needs.

Secondly, the members of the **CivilRock®** team are there to listen to engineers and designers in order to help them plan the waterproofing systems for their projects. Details, installation, choice of the most appropriate products are jointly studied so that **CivilRock®** can share its expertise on these projects.
If the project requires it, **CivilRock®** may propose installation partners and/or equipment. Through its network of clients, **CivilRock®** selects those which best meet the project requirements, contacts them and proposes that they participate in the tender. For civil engineering projects, **CivilRock®** also offers mechanised installation solutions, such as **Macaden®** (see **CivilRock®** brochure - Bridges and Civil Engineering Works).

CivilRock® works with the different **SOPREMA** installation training centres to offer specific training in civil engineering waterproofing: regulations, project preparation, installation techniques, hot air welding.

Finally, **CivilRock®** supports its clients and partners throughout all the stages of a project. Both commercially and technically, the members of the dedicated **CivilRock®** team do all they can to meet clients' needs and ensure projects go as smoothly as possible.

CIVILROCK® – BRIDGES AND CAR PARKS

BITUMINOUS SOLUTIONS FOR BRIDGES

The membranes in the **CivilRock®** range are made from a bitumen binder modified by an SBS elastomer polymer (for flexibility and ease of laying) with a non-woven polyester reinforcement (for the mechanical properties) and top and underside protection layers.

The sheet is welded by thermo-fusion to obtain total adhesion to the substrate, after cleaning and coating the latter with cold-applied primer. **CivilRock®** manufactures specific bituminous membranes for all the road surfaces used in Europe.

BITUMINOUS SOLUTIONS FOR CAR PARKS

The traffic on car parks does not require the membrane to be fully adhered to the substrate. Furthermore, the thermal exchanges inside slabs are often very high as they are not very thick. It is therefore recommended that a partially bonded waterproofing layer be laid which, whilst ensuring perfect water-tightness, avoids the problems that can arise due to gas surfacing in the concrete.

LIQUID WATERPROOFING SOLUTIONS

Attractive, long-lasting and functional: these are the advantages offered by liquid waterproofing solutions thanks to their quality, reliability and an extremely wide choice of colours.

Irreproachable waterproofing systems and long-lasting wear resistance are indispensable for areas where they are used as a surface course: car parks, pedestrian walkways or areas subject to light traffic, accessible slabs…

For the main surface, **CivilRock®** proposes quick-setting PMMA resin-based solutions which guarantee durable protection even on the most complex substrates.

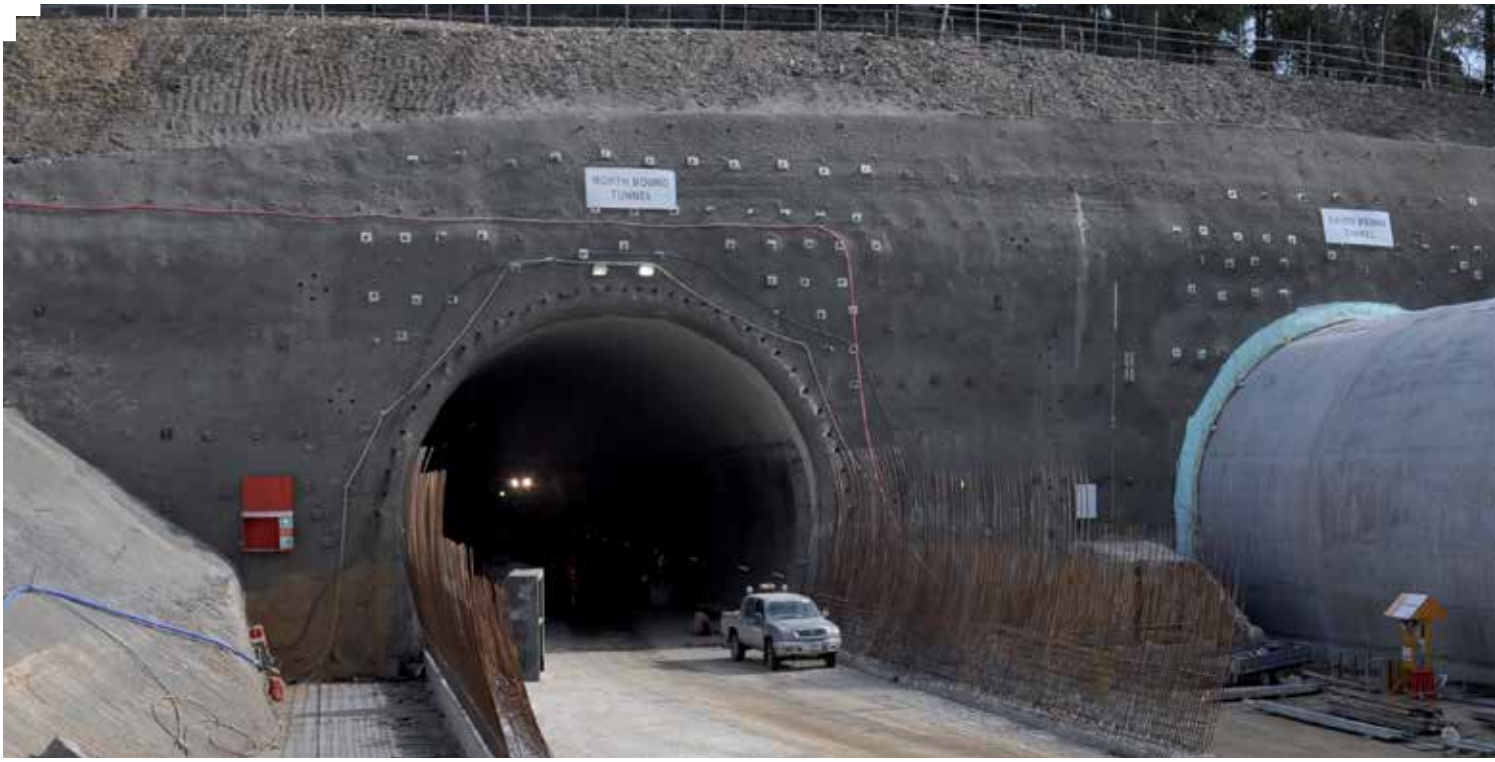
SYNTHETIC WATERPROOFING SOLUTIONS

These solutions using synthetic membranes underneath road structures are not widely known, but they are able to meet particularly demanding construction imperatives.

Synthetic sheeting used under roadways has the advantage of being totally independent of the substrate.

This solution is only suited to areas with little or light traffic, but it can be implemented very rapidly after casting the structure.

CivilRock® has developed PVC membranes resistant to hydrocarbons and perfectly suited to such applications.



CIVILROCK® – UNDERGROUND STRUCTURES AND TUNNELS

CivilRock® proposes two main ranges of products for underground works:

- Synthetic membranes
- Bituminous membranes

Synthetic membranes are used as the waterproofing layer in the construction of bored tunnels and linings.

Thanks to the multitude of possibilities that these membranes offer, they are capable of providing technical solutions for even the most demanding projects.

Bituminous membranes are laid fully adhered to structures which are to be backfilled. These solutions are therefore particularly suited to open cut structures built in the open air using prefabricated elements or with covered slabs (cut and cover, tunnels built with external accessibility…).
These membranes offer excellent performance in terms of puncture and anti-root resistance.

The waterproofing system must be designed appropriately and suitable materials used. **CivilRock®** proposes different solutions varying from the most sophisticated to the simplest, from the most economical to the safest.

In all cases, to guarantee the correct installation of a waterproofing system, a qualified contractor must be chosen.

The implementation of suitable procedures and adequate quality control with experienced installers is the key to success.

CivilRock® provides numerous contractors with support, whether in terms of training and technical development or on the economic and commercial side, for projects all over the world.

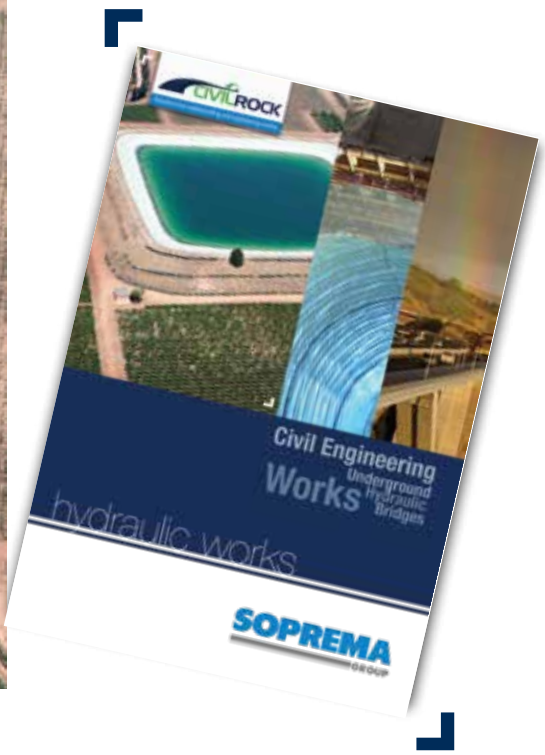
CIVILROCK® – HYDRAULIC STRUCTURES AND BASINS

PVC-P MEMBRANES

These are particularly flexible at low temperatures, with good mechanical strength.

These membranes also have the following advantages, among others, which are heightened to differing degrees according to the additives in the membrane:

- Unaffected by hot-cold cycles
- Static and dynamic puncture resistance
- High ultimate elongation
- Self-extinguishing
- Rot-proof
- Resistant to perforation by roots and attack by micro-organisms
- UV resistant
- Safe, flame-free working
- Unlimited choice of colours available to order (subject to minimum order quantities)
- Wide roll width (2.10 m), standard length (20 or 40 m depending on the product and other lengths available on request)



TPO MEMBRANES

These membranes contain no plasticiser, their mass per unit area is 25 % less than plasticised PVC and requires less energy for transport limiting CO^2 emissions. This makes it an environmentally-friendly material, respectful of people and the environment, non-toxic and easily recyclable.

Furthermore, it is very resistant to UV degradation and weathering. TPO membranes also have the following characteristics and advantages, among others, which vary in degree according to the additives in the membrane:

- Flexible at low temperatures
- Unaffected by hot-cold cycles
- Ultimate elongation
- High mechanical resistance
- Static and dynamic puncture resistance
- Rot-proof
- Resistant to perforation by roots and attack by micro-organisms
- Safe, flame-free working
- Excellent membrane weldability
- Compatible with bitumen
- Unlimited choice of colours available to order (subject to minimum order quantities)
- Wide roll width (2.10 m), standard length (20 or 40 m depending on the product and other lengths available on request)





REFERENCES - CIVIL ENGINEERING STRUCTURES

France:
- La Cotière viaduct (A 432) - 30,000 m²
- St Paul, La Grande Ravine and La Ravine Fontaine viaducts (Route des Tamarins) - 48,400 m²
- Le Bec and La Risle viaducts (A 28) - 30,000 m²
- Charles de Gaulle ring road (Avignon) - 14,000 m²
- La Gravette viaduct (La Roche / Grane) - 24,000 m²
- Meaux south-west bypass - 38,000 m²
- Choisy le Roi interchange (A86) - 13,000 m²
- Covering of A1 motorway (Paris - Bourget) - 20,000 m²
- Viaducts over the Rhône, Ventabren, lots 21 and 22 (South-east TGV line) - 100,000 m²
- Perpignan Figueras high speed rail line - 37,000 m²
- Charles de Gaulle Airport (Roissy Satellite 3) - 23,000 m²
- Pantin car park (RATP) - 4,000 m²
- CORA supermarket car park (Nancy) - 38,000 m²

Spain:
- Subtramo XIII and XV (A.V.E. Madrid - Barcelona) 58,000 m²

Portugal:
- Villa Real bridge (Regua) - 40,000 m²
- Villa pouca de Aguiar Viaduct (A24) - 25,000 m²

Russia:
- Kalliningrad bridge - 5,000 m²

Switzerland:
- Felsenauviadukt (A1, Bern) - 30,000 m²
- Hardbrücke, Stadtautobahn (city motorway bridge) (Zürich) - 40,000 m²

Poland:
- Gnydia bridge (Gdansk) - 60,000 m²
- A2 Poznan motorway (Poznan) - 12,600 m²

Czech Republic:
- Melnik bridge (Prague) - 11,500 m²
- 1/39 Debr bridge - 6,000 m²

Bulgaria:
- Plovdiv bridge - 6,000 m²

Slovakia:
- Bridges over the C202 and D2020 - 13,800 m²

Greece:
- Araxthos bridge - 23,800 m²
- Greveniotikos bridge -13,250 m²
- Metsovo bridge - 12,600 m²

REFERENCES - HYDRAULIC STRUCTURES

France:
- Méribel dam - 30,000 m²
- Ferraiz basins - La Clusaz - 16,000 m²
- Les Gets golf course - 6,500 m²
- Achères sewage tanks - 19,000 m²
- Fos Sur Mer coke works - 18,000 m²

Italy:
- Aosta hydroelectric canal - 45,000 m²
- Cavanella dam - 35,000 m²
- Mucone basin - 75,000 m²
- Ismolas golf course - 10,000 m²
- Orbetello seawater fish farm ponds - 250,000 m²

Spain:
- Almansa basin - 30,000 m²

United Kingdom:
- Grand Turks drinking water - 5,000 m²
- London Golf Club - 15,000 m²
- Hartlepool nuclear cooling - 2,000 m²

Bulgaria:
- Petrohan dam

Greece:
- Thessaloniki irrigation canal - 50,000 m²

major references

REFERENCES - UNDERGROUND STRUCTURES, TUNNELS

France:
- A89 - Le Violay, Bussières and Chalosset tunnels 320,000 m²
- South-east TGV line Lot 3M (Marseille tunnel) 230,000 m²
- Toulouse metro (Lot 2l) - 50,000 m²
- Météor station (Paris) - 11,200 m²
- CEA VALDUC (centre for nuclear studies) - 17,000 m²
- La Hague storage centre (2nd phase) - 3,000 m²

Italy:
- Over 10,000,000 m² have been installed in underground structures projects in Italy

Spain:
- Bubierca-Dehesillas-Castejón tunnel - 160,000 m²
- La Cabrera y Bunol tunnel - 155,000 m²
- M. Pesquera tunnel - 187,500 m²
- La UTE San Pedro tunnel - 315,000 m²
- Arlaban tunnel - 180,000 m²
- Piteira, Barro y Outeiro tunnel - 187,000 m²

Portugal:
- Isla de Madeira motorway - 140,000 m²
- Lisbon metro - 25,000 m²

United Kingdom:
- CTRL 410 North Downs tunnel - 130,000 m²
- Ramsgate tunnel - 30,000 m²
- Hindhead tunnel cut and cover - 5,000 m²
- Tyne tunnel SCL - 8,000 m²

Ireland:
- Port of Dublin tunnel - 120,000 m²

Croatia:
- Brinje/Gric tunnel - 150,000 m²
- Krapina tunnel - 200,000 m²

Czech Republic:
- Metro Line IV (C2 Prague) - 570,000 m²

Turkey:
- Ankara metro - 240,000 m²
- Istanbul metro (several sites) - over 240,000 m²

Austria:
- Wienerwaldtunnel - 560,000 m²
- Vomp tunnel - 390,000 m²
- H2 Brixlegg tunnel - 260,000 m²
- Strengen tunnel S16 - 320,000 m²
- Plaubutschtunnel - 270,000 m²

Bulgaria:
- VITINJA tunnel - 24,500 m²
- TOPLY DOL tunnel - 44,000 m²

Slovenia:
- Trojane - 160,000 m²
- Podmilj - 50,000 m²

Montenegro:
- Sozina - 54,000 m²
- Vrmac tunnel - 60,000 m²

Greece:
- Tunnel Driskos - 270,000 m²
- Tunnel Kakia Skala (Highway) - 25,000 m²
- T8 Ioannina - 150,000 m²
- Egnatia Odos Tunnels - 500,000 m²
- Patra-Thessaloniki Detour St Konstantinos - 250,000 m²
- Tunnel du métro Holargos - 55,000 m²
- Tunnel Egnatia Odos - 500,000 m²
- Tunnel Grevena - 400,000 m²

Switzerland:
- Montaigre tunnel - 30,000 m²
- Cut and cover method - 60,000 m²

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