

# AGRUSAFE CONCRETE PROTECTION

LONGER SERVICE LIFE FOR  
REINFORCED CONCRETE  
BUILDINGS



# The Plastics Experts.

AGRUSAFE concrete protective liners will protect any building against moisture penetration and prevent fluid leakages. This considerably extends the life of the concrete structure. To give the concrete unparalleled safe mechanical anchoring, the patented AGRU-Sure Grip / AGRU-Ultra Grip stud is extruded in a single step.

The AGRU success story already spans seven decades. Founded in 1948 by Alois Gruber sen., the company is now counted among the most important comprehensive suppliers for piping systems, semi-finished products, protective liners for concrete and geomembranes made of engineering plastics. The fact that we provide everything as a single source supplier distinguishes us from many competitors. We process exclusively high-quality thermoplastic materials. And when it comes to problem-solving expertise for material selection and installation, we are your best partner.



## Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on-site are essential for this. The AGRU quality assurance system is compliant with ISO 9001:2015 and its environmental management system fulfils ISO 14001:2015. This in turn ensures that the products comply with international norms, as monitored and evaluated on an ongoing basis by independent testing agencies.

The start-to-finish attention to quality ensures that the products meet and beat the strictest technical specifications, providing safe operation within gas, water and wastewater infrastructures.

# Corrosion protection through chemical resistant plastics

Reinforced concrete is the material of the 20th and 21st centuries. But as robust as reinforced concrete may seem, water and chemicals often find a way to infiltrate the reinforcements, thus compromising the stability of structures. AGRU-SAFE concrete protective liners made of chemically resistant plastics prevent concrete corrosion effectively and therefore extend the life of structures. They are ideal for buildings with high groundwater pressure or strict environmental requirements.

## Effective protection against concrete corrosion

### through firmly sealed surfaces

Reinforced concrete remains new for many years

- thanks to the welded lining being completely sealed
- due to the unique, patented anchoring in the concrete
- thanks to the optional self-cleaning surface with bionic properties

## Solutions for every requirement

### thanks to the wide range of materials (PE, PP, PVDF and ECTFE)

Suitable for any concrete structure,

- as they are suitable for both cast-in-situ application and prefabricated concrete products
- as they can be used across a wide temperature range
- including renovated and new structures

## Unsurpassed cost efficiency

### thanks to easy installation and outstanding product quality

Particularly time- and cost-saving thanks to

- the ergonomic induction welding process
- the large liner formats
- the lined concrete surfaces being maintenance-free to a large extent

## Suitable for drinking water reservoirs

### HYDRO<sup>CLICK</sup> and HYDRO<sup>+</sup> meet hygiene and potable water requirements

AGRU PE 80 blue concrete protective liners for the supply of potable water

- are plasticiser-free and chlorine-resistant up to 3 mg/l
- ensure that linings last for decades
- enable optimum leakage monitoring in potable water tanks



## AGRUSAFE concrete protection system for permanently sealed surfaces



### AGRU-Ultra Grip - for handling groundwater pressure

AGRU-Ultra Grip's patented conical stud design ensures the ultimate grip in concrete. By means of the newly developed AGRU-Ultra Grip concrete protection liner, groundwater pressures of up to 1.75 bar (at 20 °C) can now be permanently withstood. In large buildings, installation is even faster and cheaper, because by using the sheets of 5 m in width, which are also available from AGRU, you can save up to 60% of the welds that would normally be necessary. For an extra-long service life, AGRU-Ultra Grip also offers increased abrasion resistance.



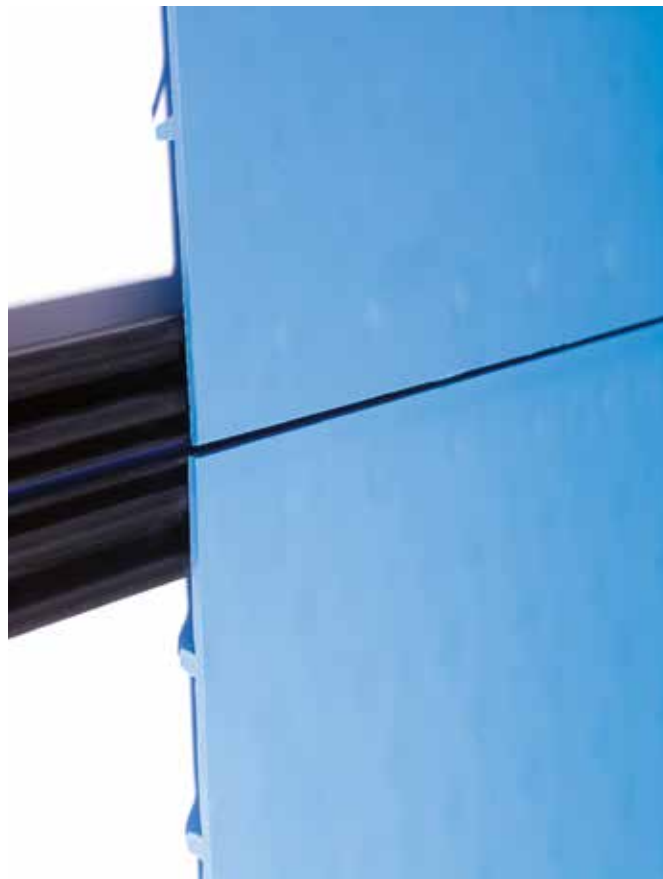
### AGRU-Sure Grip - for high chemical resistance

AGRU-Sure Grip's design and chemical resistance mean it can be used for decades. Depending on how it is going to be used, it can be supplied in the extremely chemically resistant PVDF-FLEX and ECTFE. 420 studs/m<sup>2</sup> ensure generous anchor stud spacing and therefore guarantee safe installation in coarse concrete with grains size up to 22 mm. AGRU-Sure Grip is also available with a self-cleaning surface for the lining of chemical- and industrial sewage pipes."

## HYDRO<sup>CLICK</sup> /HYDRO<sup>+</sup> for pure potable water

HYDRO<sup>CLICK</sup> impresses with a patented installation system that is ideal for renovating water tanks. A great deal of time and cost can be saved by installing a lining directly on top of an old lining (however soft linings such as rubber linings must be removed).

HYDRO<sup>+</sup> is ideal for lining new and existing potable water tanks and is 100% free of plasticisers. Its patented conical stud design increases the pull-out strength and resists pressure and temperature fluctuations.



## Bionic - the sheet with the lotus effect

AGRU has perfectly imitated the „lotus effect“ seen in nature with its self-cleaning concrete protection system Bionic. The self-cleaning effect is present when flow rates are low. In sewers, this ensures that things flow smoothly without leaving behind deposits and therefore prevents deposits from building up and causing blockages. The formation of biogenic hydrogen sulphide is also less, which reduces odours in sewers significantly. Elaborate and costly maintenance work is a thing of the past with Bionic.

## AGRU-Ultra Grip with a signal layer

- Light signal layer so damage can be detected visually
- Improved installation due to the white, reflective layer for optimal flatness on the formwork





## AGRUSAFE AGRU-Ultra Grip

### The safe industry standard



#### Completely safe welds

AGRUSAFE AGRU-Ultra Grip sheets are joined using extrusion welding or hot-gas wire welding to create completely leakproof joints. Even cracks that occur in the concrete later on are bridged safely and permanently.



#### High media resistance

AGRUSAFE AGRU-Ultra Grip made of polypropylene has become indispensable in surface technology. Electrolytic pickling and high temperatures can damage unsealed concrete pools and basins. AGRU-Ultra Grip is resistant to media and prolongs the life of concrete pools and basins.

## AGRU-Ultra Grip - use in tunnels

In the case of large underground structures such as sewage tunnels and collectors, service life span is of utmost importance. AGRU-Ultra Grip is a widely proven solution here. Optimised installation techniques in conjunction with the large-format sheets of up to 5 m in width offered by AGRU enable corrosion-resistant and leakproof linings to be installed rapidly and for a reasonable cost. Channels of this type are built with an internal diameter of up to 6 m and have a single- or double-layer design.



## AGRU-Ultra Grip - Combisegments

The Combisegments offered by Herrenknecht Formwork are ready-to-use segments equipped with a circumferential seal featuring AGRU-Ultra Grip. The tunnel is lined with single-layer segment rings by the tunnel boring machine in a single pass and – thanks to this new technology – permanently sealed. This completely removes the need for two work steps, namely the retroactive installation of a concrete protection liner and the welding work in the tunnel. Time and cost savings are the result. The image on the right shows segment formwork with an inserted Combisegments lining.



## Product range

The best material for every application.

### AGRU-SURE GRIP PRODUCT RANGE

Material	thicknesses
PVDF-FLEX natural	4.0 mm
ECTFE natural	2.5 mm

Special colours are available on request.



### AGRU-ULTRA GRIP PRODUCT RANGE

Material	thicknesses
PE black/white	2.0 mm – 5.0 mm
PE yellow	2.0 mm – 5.0 mm
PE black	2.0 mm – 12.0 mm
PE agate grey	2.0 mm – 5.0 mm
PE-el black	3.0 mm – 5.0 mm
PPR grey	3.0 mm – 8.0 mm
PP black	3.0 mm – 5.0 mm



## HYDRO<sup>CLICK</sup> /HYDRO<sup>+</sup> Permanently pure potable water



### Low-cost refurbishing with HYDRO<sup>CLICK</sup>

Older water reservoirs no longer comply with today's stringent quality requirements. HYDRO<sup>CLICK</sup> offers an easy-to-install lining system for the interior refurbishment of reservoirs. For the installation, the click profiles are fastened mechanically without a lot of time having to be spent cleaning the tank beforehand. This is followed by clicking the HYDRO<sup>CLICK</sup> sheets into place. Extrusion welding ensures that the sheet joints are 100% leakproof.

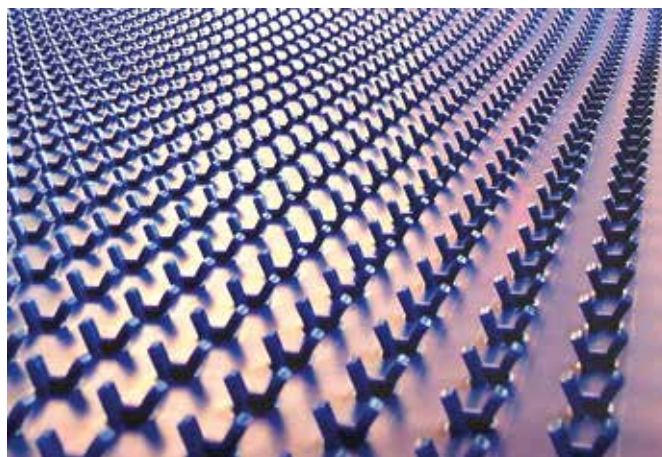


### HYDRO<sup>CLICK</sup> - more than a renovation

The renovation of this historic water castle was carried out using HYDRO<sup>CLICK</sup>. The advantage of HYDRO<sup>CLICK</sup> is that it can be installed directly on top of an existing lining. This saves time and money. Thanks to the high quality standard of the sheets, the solution is more durable, more drinking water-friendly and more hygienic than any protective coating.

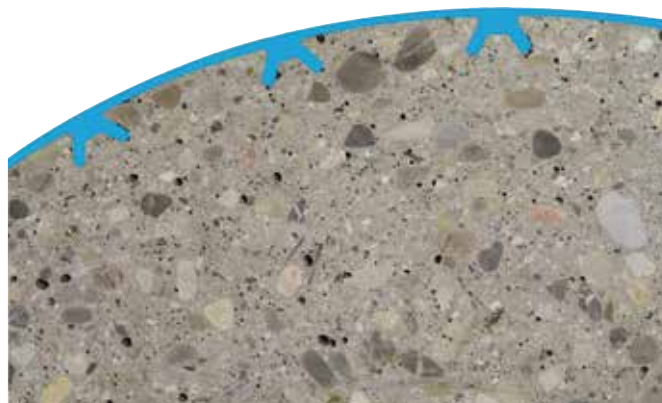
## HYDRO<sup>+</sup> - 100 % plasticiser-free

HYDRO<sup>+</sup> is resistant to chlorine up to a maximum of 3 ppm. This makes this concrete protection liner ideal for drinking water reservoirs being lined for the first time. Both site-mixed concrete and prefabricated concrete structures can therefore be equipped with it.



## HYDRO<sup>+</sup> - perfect for new building work

HYDRO<sup>+</sup>'s special stud design, which is extruded as a single piece with the sheet, buries itself into concrete and creates a rock-solid bond. In the potable water sector in particular, the material also plays an important role. Unlike solutions made of PVC and chemical coatings, HYDRO<sup>+</sup>, which is made of PE, is 100% safe.



## Product range

The best material for every application.

### HYDRO<sup>CLICK</sup> PRODUCT RANGE

Material	thicknesses
PE 80 blue	4.0 mm

### HYDRO<sup>+</sup> PRODUCT RANGE

Material	thicknesses
PE 80 blue	5.0 mm



## Induktofix / Bionic / AGRU-Mini Grip New approaches in concrete protection



### The Induktofix system

The AGRU Induktofix system was developed so that thermoplastic linings could be fastened to concrete structures mechanically without the lining system being penetrated. The Induktofix welding discs can be attached to the concrete structure both in a variable manner and in specific patterns. As a result, existing steel reinforcements can be worked around. Additional welding with covers over the fastening points is no longer necessary thanks to Induktofix.



### Fast refurbishment with induction welding

The Induktofix fastening system is mostly used in the refurbishment of concrete structures. To install the lining system, the Induktofix welding discs are mechanically secured to the concrete first. The concrete sheet's anchor studs near the fastening points are then removed. Once the concrete protective liner and induction welding unit have been put in exactly the right positions, the Induktofix welding discs are permanently welded onto the concrete protective liner.



### Bionic - self-cleaning sewers

Sand and fatty deposits are a major problem in sewers. The Bionic concrete protection liner made by AGRU has a surface structure that causes turbulence in the wastewater being transported. The solids are therefore constantly in motion in the media flow and are transported onward.

### AGRU-AGRU-Mini Grip - corrosion protection in pipes

This new product by AGRU makes linings with very low wall thicknesses of 1.65, 1.80 or 2.00 mm possible. This low-cost variant in the AGRU concrete protective liner range provides excellent anchoring in concrete thanks to its large number of studs, but offers reduced groundwater pressure resistance due to the low sheet thicknesses. It is suitable for use in prefabricated concrete pipes and is exclusively for corrosion protection.



### Product range

The best material for every application.

#### BIONIC PRODUCT RANGE

Material	thicknesses
PE yellow	2.0 mm – 3.0 mm

Special colours are available on request.

#### AGRU-MINI GRIP PRODUCT RANGE

Material	thicknesses
PE yellow	1.65 mm – 2.0 mm

Special colours are available on request.



The Plastics Experts.

Your distributor

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