

## HydroBloc® Polygel 530

Elastic polyacrylic gel for permanent waterproofing work

**HydroBloc® Polygel 530 is a low viscosity high reactive Injection system with adjustable reaction time. Made of a special acrylic composition based on a ARCAN owned recipe. After mixing HydroBloc® Polygel 530 to form a highly elastic hydrogel, a plastic containing water.**

The reaction time could be easily adjusted between a few seconds and 2 hours. This makes HydroBloc® Polygel 530 user friendly and easy to adapt on all building site conditions. The gel is chemically extremely resistant and tough against microorganism attacks and doesn't go under any ageing processes.

### Important

HydroBloc® Polygel 530, as supplied, is absolutely physiological harmless\*. The product doesn't contain anything that could affect or harm higher organisms. **The only injection gel\*\* available which must not be labelled according to the international dangerous material guideline.**

\*test certificate: Institute for Pharmacology and Toxicology, Hamburg

\*\*Stand: August 2019

**A typical application of HydroBloc® Polygel 530: Curtain injection behind the wall or inside the construction**



**Waterproofing of a railway bridge : The completely saturated vault of compressed concrete and pre-masonry sandstone is now - after full-surface injection with HydroBloc® Polygel 530 - perfectly watertight again.**

Pictures: ARCAN

The many features of HydroBloc®Polygel 530,

- **Low viscosity, waterlike**
- **Excellent penetration - even in finest pores**
- **Controlled swellability in water - volume increase**
- **Variable and easy to adjust reaction time**
- **Easy processing**
- **Non toxic and harmless for the environment**
- **High chemical and mechanical resistance**

make the product to the perfect all round injection material for all waterproofing jobs which are in permanent humid milieu.

E.g. joints, cracks, cleft and dice in civil engineering, tunnelling and mining even under tough conditions such as under pressure flowing water. For sealing walls / curtains and certainly for the classic gel applications such as pipe collars and sewage water channels.

photo: ARCAN



**IP-4 - the new European parliament in Strasbourg**

The object is located in the Rhine-Marne-Channel and the repair jobs started in the build time 1996 -1997.

The basement floors and the parking garages (6 floors deep) needed repair and waterproofing work because of big water intrusions as well as a big part of the waterside. These problems were solved with injections with curtain injections with HydroBloc®Polygel 530.

This is a wonderful success for ARCAN and the construction company, even more because numerous competitors with their product failed.

## Further applications



Rock pockets in concrete and porous brick work could be sealed easily with gel.

The bottom plate sealing of building pits, the encapsulation of contaminated soils and the stabilisation of unfixed soils are typical applications for hard and soft silicate gels but HydroBloc®Polygel 530 is superior even in this applications. The penetration especially into fine sands and structures with coarse clay are much better than silicate gels. HydroBloc®Polygel 530 doesn't shrink in humid milieus (no syneresis). The danger of crack creation under mechanical strain or agitation is much less than in silicate gels and the relatively brittle acrylate gels available on the market.

The sealing layer thickness is much smaller with HydroBloc®Polygel 530 than with silicate gels, therefore the time and material consumption is lower.

## Anchor waterproofing with HydroBloc®Polygel 530

HydroBloc®Polygel 530 is a typical hydrogel and contains water, this is stored into the structure of acrylate polymer and not chemically bonded. This is a great advantage because it enables the gel to keep the water inside even under pressure and mechanical strain. HydroBloc®Polygel 530 is not like a sponge!

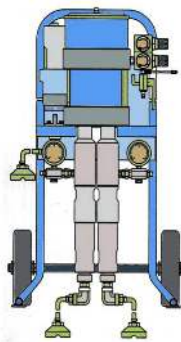
But in dry conditions or surroundings the water evaporates completely or partially (depends on the volume) The volume of the gel body shrinks proportional to the volume of the evaporated water.

## Technical limits of the application of injection gels

Dried gel bodies absorb water immediately after new water contact, they swell back to their original size.

**These typical features** (of all gels) restricts the application to areas which are in permanent contact with humidity - humid milieu.

## Processing



HydroBloc®Polygel 530 is a typical 2-component product. The A-component is an acrylate monomer. Shortly before processing, activators (accelerator, "HydroCat®") are added to the A-component. The type and amount of accelerator used controls the setting time of the injection solution. It can thus be easily adjusted between a few seconds up to 2 hours and more and is always easily adapted to the building conditions.

The second component is water, in which 2-5% HydroX® reaction starter (also known as "hardener") is dissolved. The two components are finally mixed 1:1 for injection. Mixing ratios with a larger proportion of stock component (A) are possible to achieve special effects. A dilution of the gel with water exceeding 1:1 by increasing the mass of component B is not recommended.

In the practice, fast reacting gels are preferred. Short reaction times are particularly advantageous for deposit injections ("gel curtain") and when pressing out water-bearing structures. They allow better control of the work, prevent uncontrolled seepage of the injection agent in the substrate and undesired mixing of the injection solution with stagnant water. Gels with short reaction times must be applied with 2 component pumps.

## Easy processing with 1 or 2 component injection pumps



The temperature is a big influence factor for the reaction time. Temperature changes of +/- 10°C divide into half or double the reaction time. Through the dosage of the accelerators it is possible to settle the temperature influences.

With HydroCat® activated Polygel® could be polymerised by UV light. Activated gel must be protected from light sources with UV part such as sun, halogen spot light and fluorescent lamp in high intensity.

### **Quick reaction in contact with concrete or cement**

The contact with alkaline substances speed up the setting time. Carefulness is necessary when the used water is alkaline (cement, chalk, etc.) Because of the difficult control of the reaction time we don't recommend the use of HydroBloc®Polygel 530 in combination with cement containing suspensions and fresh concrete.

Advantage: The activation will be effectual even in contact with alkaline surfaces such as concrete or cement mortar. As a result, the injected gel reacts much faster in the concrete - **an advantage especially when using the 1-component method!**

### **Tunneling: A classic application for injection gels are sealing meanwhile driving and lining**

picture: RATP



**The line "METEOR" of the Metro in Paris. HydroBloc®Polygel 530 is certified from RATP the operating company for waterproofing work. It is also used for permanent repair work in the older parts of the transport network.**

### **With HydroBloc® PolyBlend 540 or SiliBlend®535 as Component B: More possibilities and better properties!**

Different additives could be used as second component, instead of water.

HydroBloc®PolyBlend 540 is a special polymer compound. The polymer reacts with the gel and increases the mechanical strength, elasticity and adhesion and it increases the solid content. We recommend the application of this mixture in projects with high requirements such as sealing of high pressurised water intrusions or the repair of dilatation joints.

SiliBlend®535 is a reactive mineral compound. Gels with this additive create a stone like material. Typical applications are filling of big holes and stabilisation of loose rubble and the sealing of pressurised water intrusions.

## Properties

Composition	Acryl-and Methacrylmonomere
Colour	Blue green translucent
Odour	Weak fruity
Density	Approx. 1.15-1.17 g/ml
pH	5,3 - 6,0
Refraction index	1,40 - 1,50
Viscosity	Approx. 3,2 mPa.s (Injection resin 1:1 with water)
Boiling point	100°C
Setting point	> -20°
Flame point	Non flammable
Water penetration	> 10 <sup>-10</sup> m/sec.*
Acute Toxicities	Not toxic or harmful to health
LD <sub>50</sub> (Rat)	> 5000 mg/kg

\*measured Mixture resin with water 1:1 into sand

### Canal repair with HydroBloc® Polygel 530:

gel time test at injection  
robot before  
entry (1)

Operator of the  
injection car (2)

Flushing of a sealed  
coupling. The gel creates to-  
gether with the sand a com-  
pact waterproof  
mortar (3)

pictures: ARCAN



HydroBloc®Polygel 530 is not dangerous, but we recommend the usual safety in handling with chemical substances.

## Work safety

The activator HydroCat®546 is tertiary amine and reacts heavy alkaline, the watery solution of the Reaction starter HydroX®549 reacts sour and is a strong oxidizing agent. Both materials are weak acidly in contact with skin and mucosa. While handling and processing the material wear working clothes and goggles.

The national guidelines for the working safety of injection materials must be kept. In case of direct eye contact rinse immediately for 15 minutes and consult a doctor.

## Storage Disposal



In originally closed cans, protected against heat and sunlight, the shelf life of HydroBloc®Polygel 530 is minimum 12 month.

The product must not be stored into cans made of metal (exception stainless steel) or mixed with external materials.

Keep away from children and store out of reach of unauthorised persons.

Reacted HydroBloc®Polygel 530 could be disposed as building rubble. We recommend to wash empty cans immediately with water and use this water as second component. Empty PE drums and containers could be sold to every reconditioning company: PE cans are no special waste and could be disposed as building rubble or burned.

Liquid left over should be mixed with HydroX reaction starter or cement and could be disposed as building rubble afterwards.

## Quality: tested and monitored

The quality and the suitability of HydroBloc®Polygel 530 are certified through a lot of certificates. The product fulfills the requirements of Deutsche Bahn AG for Injection gels for sealing of traffic buildings as well as the KTW guidelines for applications in drinking water. It doesn't attack reinforcement steel (corrosion) and doesn't contain any risky substances.

**20 years practical experience with this material and a consistently own production from raw material to formulated final product - combined with permanent quality control guarantees a high quality standard.**

These technical information describe the present-day state of knowledge these product. They should only inform about the possibilities of application and could not release the applicator of his commitment to check the possibility to use the product for the required application. Information for processing can be found in processing instructions of our product. Information about safe handling can be found in our current safety data sheet.

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## ARCAN Waterproof

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passion to invent 