

HYDROSEAL P

General Building Authority Test Certificate



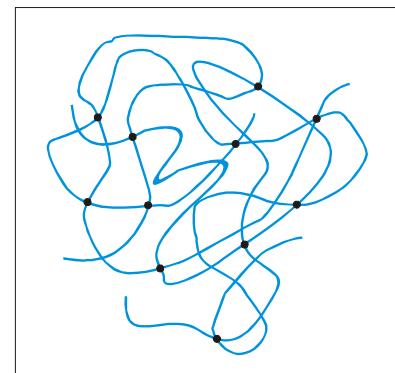
Properties:

HYDROSEAL P is a water-expanding rubber based on polyurethane, which is available in several different types. *HYDROSEAL P* is used for sealing purposes in civil engineering, structural engineering as well as tunneling.

HYDROSEAL P has the distinction of a three dimensional polymer structure, which is built up from unstructured polyurethane chains (macromolecules).

The elastomeric features arise due to the weak cross linkage of the polymer chains.

The swelling ability happens due to hydrophilic polymer resins, which can expand in contact with water up to approx. 450 % in volume.



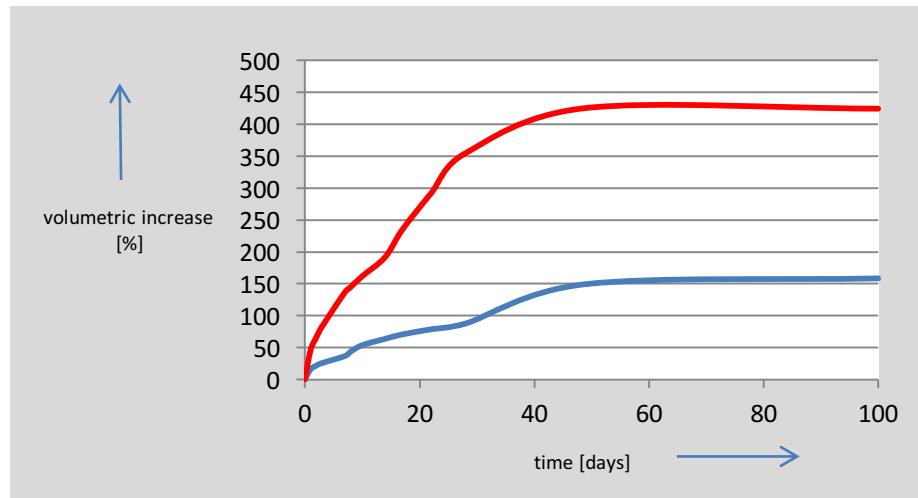
In order to avoid an early mechanical loading of surrounding fresh concrete by excessive swelling pressure the swelling process is slowly and controlled (see volumetric expansion process).

HYDROSEAL P is used for sealing of construction joints, pipe penetrations and precast concrete elements such as shaft rings, tubbings etc..

Technical data:

Rubber type	sponge rubber	
Material basis	polyurethane	
Colour	blue (other colours on request)	
Spec. density (20°C)	approx. 0.7 g/cm ³	
Profile types	rectangle and box profiles	
Dimensions	10 x 20, 10 x 25, 20 x 20, 20 x 25, 30 x 30 mm	
Shore A hardness	approx. 25	DIN ISO 7619-1
E-modulus	approx. 0.9 MPa	DIN EN ISO 527
Tensile strength	approx. 0.4 MPa	DIN EN ISO 527
Elongation at break	approx. 90 %	DIN EN ISO 527
Water absorption		DIN EN ISO 62
tap water	approx. 450 Vol. %	
4 % salt water	approx. 160 Vol. %	

Volumetric expansion process:



red graph = swelling in neutral drinking water (tap water)
 blue graph = swelling in 4 % sea water (Persian Gulf)

Chemical resistance

DIN EN ISO 175

Classification:

- + resistant (non or little effect)
- +/- limited resistant (moderate effect)
- not resistant (serious effect)

Chemical compound	Classification	Remarks
Benzyl alcohol	+/-	resistant for 72 h
Ethyl acetate	+	accelerated expansion
Sea water 12 %	+	
Sea water 25 %	+	
Sulfuric acid 96 %	-	
Petrol	+	
Diesel fuel	+	
Kerosine, Jet fuel (Jet A1)	+	
Mineral oil 15W40	+	
sewage, liquid manure, silage effluent	+	
o-Xylene	+	accelerated expansion
m-Xylene	+	accelerated expansion
Toluene	+	accelerated expansion
Ethylene glycol	+	
Acetone	+	strong accelerated expansion
Ethanol	+	
Methanol	+	
Ammoniac solution 32 %	+	
Sodium hydroxide solution 10 %	+	
2-Butoxyethanol	+	
n-Hexane	+	
Acetic acid 96 %	+	accelerated expansion

Processing:

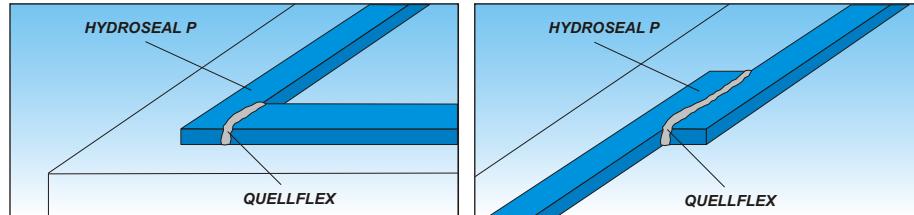
Sealing of contraction joints:

For the successful use of *HYDROSEAL P* in construction joints the profiles has to be placed into the center of the reinforcement or at least 10 cm away from the concrete flanks. It has to be adhered fully with *FIX-O-FLEX* or *QUELLFLEX* to the substrate.

If necessary the profile can also be nailed on to the concrete. It has to be sure that the profile cannot change its position while concreting.

Rough surfaces should be smoothed before adhering the profile. We recommend the use of *QUELLFLEX*. It develops in contact with water quickly the necessary pressure and supports like this profile.

In case of damp concrete the use of *FIX-O-FLEX* is a must. Joints and lap-over parts are fixed by means of *QUELLFLEX*.



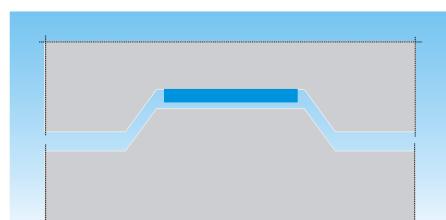
The application of *HYDROSEAL P* should be carried out in dry weather conditions if possible or shortly before concreting. The slow-reacting swelling behavior due to the formulation makes it possible to expose the product unprotected to wet weather conditions for maximum 2 to 3 days.

If longer periods between application and concreting under wet weather conditions are expected the profile must be coated with *HF-KLEBER* to avoid premature swelling.

Such a water-expanding rubber profile coated with *HF-KLEBER* may be exposed to wet weather conditions without swelling for approximately 7 days.

Sealing of precast concrete elements:

At use of *HYDROSEAL P* for sealing of precast concrete elements it is recommended to create a notch in the elements.



The applied profile is chosen so that the elements create already at assembling a pre-stress. A proper plugging by means of mounting cements like *F60* / *F300* or permanently elastic sealants e.g. *FIX-O-FLEX H* or *FIX-O-FLEX VG* can be achieved.

Safety information:

No special measures required

Packaging:

5 m rolls in carton

Profile type	Quantity per carton
10 x 20 mm	50 m
10 x 25 mm	50 m
20 x 20 mm	50 m
20 x 25 mm	50 m
30 x 30 mm	25 m

**Storage:**

Shelf life at least 12 month in original packaging when stored in dry conditions between 15-25°C, protected from heat, frost and direct sunlight.

After the expiration the use of the product is generally not recommended, unless an approval has been provided by TPH. This approval can only be obtained by the quality assurance department of TPH releasing the material after verification of main properties being within specification.

Disposal:*Recommendation:*

Small quantities of product residues can be disposed of as normal domestic waste. Dispose of bigger quantities must be effected in accordance with the corresponding local regulations.

Test certificates:

General Building Authority Test Certificate for *HYDROSEAL P* water-expanding rubber profile; MFPA Leipzig 2009

Screening of standard flammability (building material class B2) according to DIN 4102 part 1, edition May 1998; MFPA Leipzig 2009

Legal notice:

The correct and thus successful application of our products is not subject to our control. A guarantee can be issued for the quality of our products within the framework of our sales and supply conditions, however not for successful processing. All data and specifications in this specification sheet are based on the present state of the art and the right to changes and adaptations for the sake of development remains explicitly reserved. The consumption specifications designated by us can be only average empirical values, where deviations are possible on an individual basis and therefore cannot be excluded by us.

TPH Bausysteme GmbH
Nordportbogen 8
D-22848 Norderstedt

Tel.: +49 (0)40 / 52 90 66 78-0
Fax: +49 (0)40 / 52 90 66 78-78
e-mail: info@tph-bausysteme.com
Web: www.tph-bausysteme.com

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