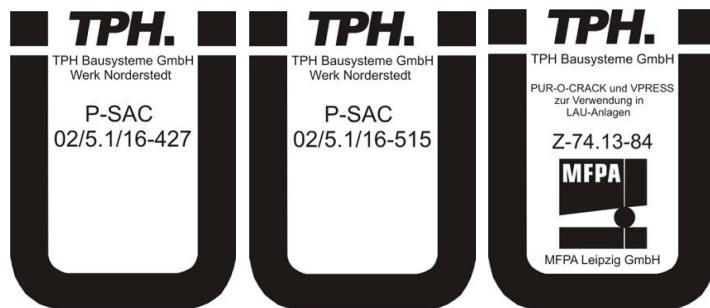


VPRESS

**General Building Authority Test Certificate with *PUR-O-CRACK*
General Building Authority Test Certificate with *RUBBERTITE /
POLINIT*
General Building Inspectorate Approval**



Properties:

VPRESS is a single-channel injection hose that is used as regular joint filling for the sealing of construction and butt joints in civil engineering, structural engineering as well as tunneling.

It can be used for multi-grouting in conjunction with the injection materials that have been tested for applicability.

VPRESS consists of a low-foamed PVC jacket with a fluted surface.

The injection material is applied into the joint to be sealed via small slots in the hose jacket. Positioning and shape of the slots prevent cement slurry intruding into the injection channel.

In addition to the VPRESS standard version (inner diameter 6 mm), which can be grouted with microfine cement, acrylate gel and polyurethane resin, there is also a tunnel version with an inner diameter of 10 mm, which can additionally be injected with grouting cement ZS-I / ZL-I (see test certificates).

For civil engineering structures with high walls (e.g. in tunnels or locks) it is necessary to use injection hose systems with longer system lengths (e.g. for horizontal wall-base joints plus the wall section joints per concreting section). The corresponding proof for system lengths >10m must be provided for the intended hose fillers mentioned in the abP ZTV. It is recommended not to exceed a system length of 30m.

The shorter the system lengths, the more reliably a complete hose injection can be achieved and the shorter will be the subsequent sealing of any unforeseen water-bearing joints. For the listed system lengths, the hose cross-sections with the tested hose grouting goods must be named in the AbP (see PG-FBB, Injection hose systems and swellable joint inserts).

Suitable injection products:

VPRESS inner diameter 6 mm	to 10 m	to 15 m	to 20 m	to 30 m	VPRESS inner diameter 10 mm	to 10 m	to 15 m	to 20 m	to 30 m
microfine-cement <i>F9200</i> <i>ZL-I</i>	X	X	X	X	Grouting cement <i>F9200 / F9300*</i>	✓✓	✓	✓	✓
microfine-cement <i>F8000</i> <i>ZS-I</i>	✓✓	✓	✓	✓	microfine-cement <i>F8000</i>	✓✓	✓✓	✓	✓
acrylate gel <i>RUBBERTITE</i> <i>/POLINIT</i> <i>S(P)</i>	✓✓	✓✓	✓	✓	acrylate gel <i>RUBBERTITE</i> <i>/POLINIT</i>	✓✓	✓✓	✓✓	✓✓
polyurethane resin <i>PUR-O-CRACK</i> <i>D (P)</i>	✓✓	✓✓	✓	✓	polyurethane resin <i>PUR-O-CRACK</i>	✓	✓✓	✓✓	✓✓
Epoxy resin <i>Hydropox EP1</i> <i>F(R)</i>	✓✓	X	X	X	Epoxy resin <i>Hydropox EP1</i>	✓✓	✓✓	✓✓	X

✓✓ - Processing tested according to DBV leaflet "Injection hose systems and swellable inserts for construction joints 2020"*

✓ - Processing possible, tested by TPH/MFPA Leipzig

* Grouting cement F9300 only tested up to 15 m length

Technical data:

Profile	round inner channel; ribbed outer sheath
Material basis	low-foamed PVC
Outer diameter	13 mm or 16 mm
Inner diameter	6 mm or 10 mm
Colour	blue

Further information on injection can be found in the DBV leaflet, "Injection hose systems and swellable inserts for construction joints" (Dec. 2020).

Processing:

Packing

VPRESS is normally cut into single lengths of 8 to max. 10 m and laid according to the geometry of the structural component to be sealed. The manufacturer should be contacted if the particular construction should require longer hose sections.

The hose sections are delivered with the accessory grouting end pieces (airbleed hose) attached to both ends. Connecting VPRESS and the air-bleed hose is carried out simply and without the need of tools by screwing the screw-in spouts into the hoses manually. Finally the hose ends are sealed with plugs.

Subsurface requirements

If the cement slurry acting as a separating layer in the construction joints is not removed, the waterproofing joint liner underneath this separating layer can be undermined. Exposing the (possibly coarse) aggregate too deeply in the immediate laying area can be counterproductive here, as too much joint roughness impedes the tight placement of the injection hose and cement paste from the second concreting section can undermine the hose. For this reason, the surface should be as smooth as possible for the direct placement of the hose so that the injection can reach the joint or the predetermined crack directly.

VPRESS is fixed to the level concrete subsurface that has been cleared of any loose matter and cement slurry. Any ice films must be melted prior to laying, any ponding water that has collected must be blown off the subsurface (oil-free compressed air).

The subsurface must be firm, there must be no sharp-edged differences in height (landing). The concrete on both sides of the joint have a high waterimpermeability.

If VPRESS is fixed to metal or PVC waterstops, it should be ensured that the hose is firmly attached and the fixing distance is maximum 15 cm.

Installation and Fixation

VPRESS is fixed using of plastic clips or metal nail clamps. The KSC / plastic clip is driven into bore holes of 8 mm diameter.

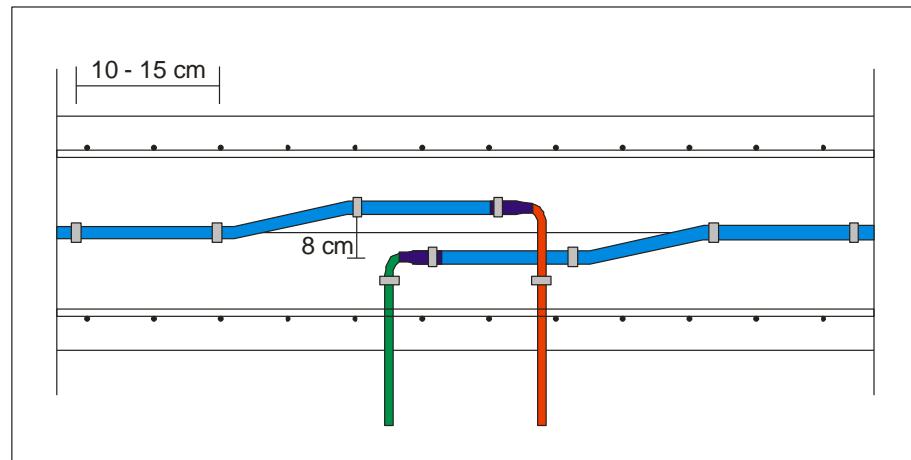
The most simple fixing method is to use metal clamps that can be nailed or closed.

The fixing points should be spaced every 10 cm as far as possible. Spacing between the fixing points must not exceed 15 cm to ensure that the injection hose is retained sufficiently for concreting.

Contact between the individual hose sections must be avoided in order to prevent the hoses from grouting each other.

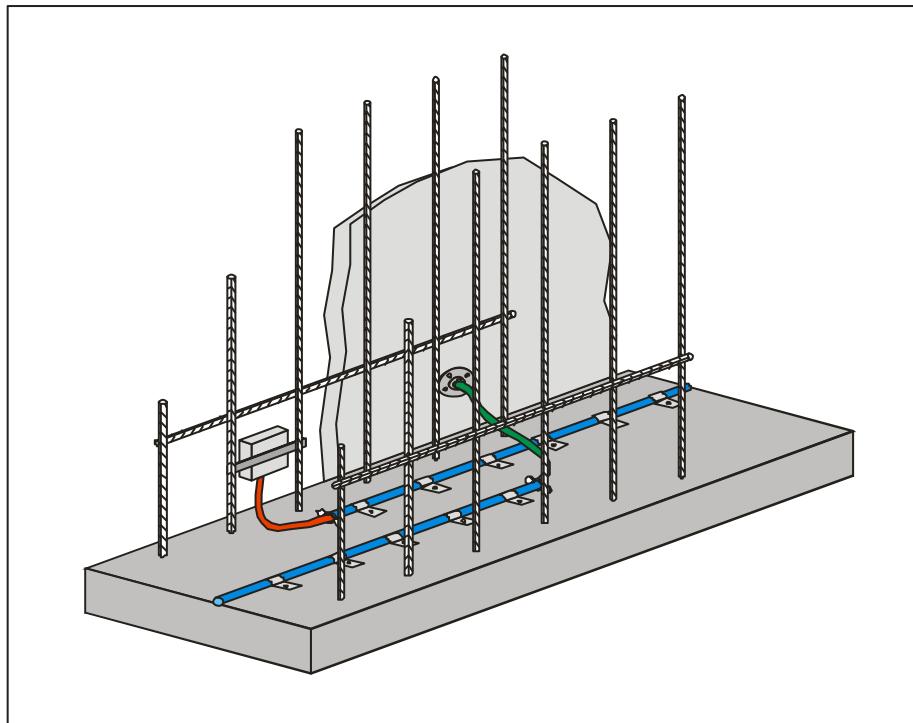
The following minimum bending radii need to be observed during installation:

Injection hose type	Minimum bending radius for installation [mm]
VPRESS, Inner diameter 6 mm	50
VPRESS, Inner diameter 10mm	80



As a rule the air-bleed ends are led out of the construction at a right angle. They may be connected in protective boxes that are fixed to the reinforcement.

Or they are fixed to the formwork panel by means of spigots. Permeability, accessibility, markings, if applicable, and the protected position of the hose ends (air-bleed ends) must be safeguarded for subsequent grouting.



Injection

Before injecting the hose, check the surfaces of the component in the area of the construction joint for possible defects and the injection connections for accessibility. The check should be carried out on both sides of the construction joint, if possible. If access is only possible on one side, it may be advisable to use a suitable external dam to prevent uncontrolled flow of the injection material. Gravel pockets and other defects in the joint area must be professionally repaired and sealed in advance with suitable material.

Injection work should be carried out as late as possible (after 28 days at the earliest). In addition, the injection should be carried out, if possible, under water stress and with a large joint opening (e.g. at low component temperatures), taking into account application conditions within the boundaries of the intended hose fillers.

The correct time for the injection work depends on the boundary conditions of the structure or component. As essential criteria are to be considered:

- Decay of the heat of hydration,
- shrinkage behavior,
- component thickness
- Water level fluctuations,
- shutdown of the dewatering system
- Leakage (moisture penetration in the joint area),
- working space filling
- Component movements under temperature loads,
- component movements under load stresses (from building and water pressure),
- Limits of material processing
- Accessibility for the injection works,
- component temperature

If fresh concrete composite systems or strip-shaped external joint sealing are used at the same time, the injection pressure to be maintained must be adjusted by a competent waterproofing planner in such a way that the functionality of these systems is not impaired (e.g. by a bond disturbance).

Injection work is carried out in sections on contiguous components, starting from one side. Vertical hoses are injected from bottom to top.

To vent the injection hose, the hose is first filled with injection material on one side until the material emerges bubble-free at the other end. This end of the hose is then closed. After closing the end of the hose, the injection pressure is slowly increased so that the injection material can emerge evenly from the slits into the joint gap.

When using *RUBBERTITE/POLINIT* acrylate gel, *F8000* microfine cement or *F9200/F9300* grouting cement, it is possible to inject several times if the hose is sufficiently flushed with water immediately after injection. The unpressurized flushing of the injection channel (the previously closed grouting end must be opened) must be carried out before the pot life of the injection materials has expired. The information required for this can be found in the technical data sheets of the individual injection materials.

For the injection of acrylate gel, the use of the dual component injection pump *MINIBOOSTER 5U* with an external flushing pump is recommended.

**Further information on injection can be found in the DBV leaflet:
"Injection hose systems and swellable inserts for construction joints"
(Dec. 2020).**

The suitability of the injection hose has been proven for grouting with the following injection materials:

Microfine cement	<i>F 8000 ZS-I</i>
Grouting cement	<i>F9200, F9300 ZL-I</i>
Acrylate gel	<i>RUBBERTITE/POLINIT S(P)</i>
Polyurethane resin	<i>PUR-O-CRACK D(P)</i>

Safety information: No special measures required

Packaging: 100 m on cardboard spool

Storage: Shelf life at least 24 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.

Documentation:

The contractor must document the execution of the work as part of the site control. A daily log must be prepared during the execution of the injection work (for an example of documentation, see the DBV Code of Practice "Injection hose systems and expansive inserts for construction joints"). After completion of the work, the overall documentation should include the following:

- a) Technical specifications of the manufacturer of the injection hose system material and the injection material itself (abP, injection material data sheets and, if applicable, declaration of conformity, CE declaration of performance).
- b) Location of injection hoses and injection connections (laying plan)
- c) Injection records with information on material and component temperature, type, consumption and batch number of injection material
- d) Result of the hardening test

Test certificates:

Test of multi injectable injection hose VPRESS together with the injection products *F8000* and *RUBBERTITE / POLINIT*; MFPA Leipzig 2009

Injection capability of a 30 m length segment of single-cannel, multi injectable injection hose VPRESS 10 mm in combination with *F9200* injection cement; MFPA Leipzig 2010

Injection capability of a 30 m length segment of single-cannel, multi injectable injection hose VPRESS 10 mm in combination with microfine-cement, acrylate gel and polyurethane resin; MFPA Leipzig 2010

Injection capability of VPRESS injection hose together with *F9200* injection cement; MFPA Leipzig 2012

Injection capability of a 30 m length segment of single-cannel, multi injectable injection hose VPRESS in combination with *F8000*, *RUBBERTITE/POLINIT* and *PUR-O-CRACK*; MFPA Leipzig 2013

General Building Inspectorate Approval for "PUR-O-CRACK and VPRESS injection system to the use within facilities for storage, filling and transferring of waterhazardous substances; DIBt Berlin 2015

General Building Authority Test Certificate for the injection hose system VPRESS with injection resin *PUR-O-CRACK*; MFPA Leipzig 2016

General Building Authority Test Certificate for the injection hose system VPRESS with injection gel *RUBBERTITE / POLINIT*; MFPA Leipzig 2016



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.

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