

PUR-O-STOP FS-L

**General Building Inspectorate Approval for curtain grouting
CE-marking in accordance with EN 1504-5**



Properties:

PUR-O-STOP FS-L is a slow-hardening, rigid, two-component injection resin based on polyurethane for water proofing and stabilisation of water bearing structures.

PUR-O-STOP FS-L is an injection resin with variable reaction time which can be adjusted by adding the catalyst (see pot-life table).

PUR-O-STOP FS-L penetrates well into structures to be sealed. Upcoming water gets mostly forced out due to the viscous and hydrophobic mixture. At borders of resin/water the mixture develops stable and solid foam.

PUR-O-STOP FS-L has a German General Building Inspectorate Approval as an injection product for curtain grouting.

PUR-O-STOP FS-L is used for stabilisation and solidification of water bearing rocks, ground, sand as well as for stopping in rushing water in tunnels, shafts, dams and other building structures made from concrete or brickwork and as a concrete injection product for force transmitting filling of cracks¹.

Technical Data:

Substance data of components:

Component A

Consistency	liquid	
Colour	transparent yellowish	
Odour	hardly noticeable	
Spec. density (23°C)	approx. 1.03 g/cm ³	DIN EN ISO 2811-1
Dyn. viscosity (23°C)	approx. 190 mPas	DIN EN ISO 2555

Component B

Consistency	liquid	
Colour	brown	
Odour	characteristic	
Spec. density (23°C)	approx. 1.23 g/cm ³	DIN EN ISO 2811-1
Dyn. viscosity (23°C)	approx. 100 mPas	DIN EN ISO 2555

Mixture of A- and B-component:

Processing temperature	5 - 30°C	substrate temperature
Mixing ratio A : B	1 : 1 (parts by volume)	
Viscosity of mixture (23°C)	approx. 140 mPas	DIN EN ISO 2555

Reaction data (without PUR-O-STOP FS-C at 23°C):

String gel time (pot-life)	approx. 90 min	ASTM D7487
Volumetric expansion factor		ASTM C1643
without water	1	
in contact with water	approx. 1.5 - 3	
Final curing	approx. 24 h	

Properties after curing:

Bending tensile strength	approx. 29 N/mm ²	DIN EN 12390-5
Compressive strength	approx. 74 N/mm ²	DIN EN 12390-3
E-modulus	approx. 2800 MPa	DIN EN ISO 527

Processing:

Both components are taken directly from the original packaging by means of a 2K injection pump and mixed homogeneously in a static mixer. Injection is done over packer or injection lances.

Indicated injection pumps: *TPH INJECT PS 25-II*
 TPH INJECT PS 5-II

Indicated mixer: static mixer 13-32

Due to the relatively long reaction time *PUR-O-STOP FS-L* may be alternatively processed by means of a 1K injection pump. Therefore mix components in a dry and clean container with the aid of a mixing device until reaching a homogeneous appearance (no streaks). Afterwards the mix is to be pumped.

Indicated injection pump: *CONTRACTOR 1U*

At contact with water the resin starts foaming and prevents the following resin to foam up. Therefore *PUR-O-STOP FS-L* can be processed in one step of work.

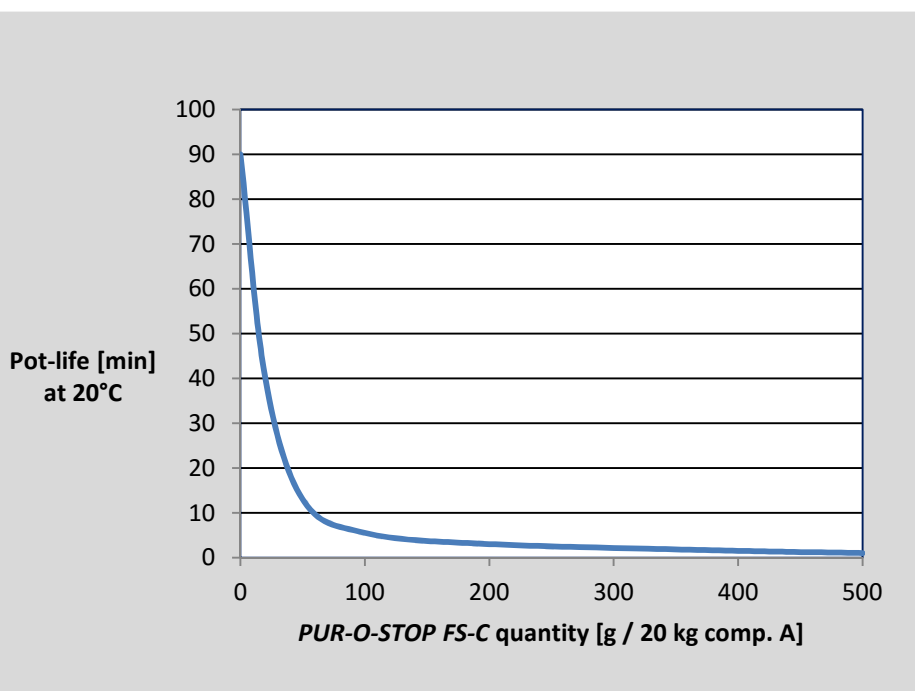
Variable reaction time can be adjusted by adding the catalyst *PUR-O-STOP FS-C* (C = catalyst) according to the application (see pot-life table).

Pot-life dependent on PUR-O-STOP FS-C quantity *:

Catalyst quantity	without	20 g	50 g	100 g	200 g	400 g	500 g
Pot-life [min:s]	90:00	40:00	12:50	5:24	2:43	1:21	0:58

Pot-life determined at 20°C without water contact; standard ASTM D7487
 Catalyst quantities with reference to 20 kg component A

* Reaction zone according to General Building Inspectorate Approval is valid up to a maximum quantity of 80 g (0.4 pbw) *PUR-O-STOP FS-C* with reference to 20 kg component A (see General Building Inspectorate Approval Z-101.29-19, DIBt Berlin 2014).



With strong outflow of water or in case of cold water we recommend to use *PUR-O-STOP FS-F* (F = fast reaction time) or *PUR-O-STOP FS* combined with *PUR-O-STOP FS-TX* thixotropic agent.

PUR-O-STOP FS, *FS-F* und *FS-L* can be combined with each other. The component B of these products is identical.

Safety information:

PUR-O-STOP FS-L component B contains isocyanates and is classified as hazardous according to Regulation (EC) 1272/2008 (CLP).

It is therefore necessary, before beginning processing, to become familiar with the precautions and safety advice as indicated in the material safety data sheet.

Packaging:

PUR-O-STOP FS-L
Component A 20 kg metal canister

PUR-O-STOP FS
Component B 24 kg metal canister

Bigger packaging on request.

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:

Small quantities of cured product residues can be disposed of as normal domestic waste. Dispose of not cured product components must be effected in accordance with the corresponding local regulations. For further information please refer to the material safety data sheets.

Test certificates:

PUR-O-STOP FS-L Examination of the leaching behaviour with reversed flow direction of an injection resin based on polyurethane (column trial referring to DIBt Guideline "Assessments of the effects of construction products on soil and ground water"); MFPA Leipzig 2013

PUR-O-STOP FS-L and *PUR-O-STOP FS-F* Determination of resistance when stored in liquid; MFPA Leipzig 2014

PUR-O-STOP FS-L Determination of identified properties of injection resins based on polyurethane; MFPA Leipzig 2014

Screening of standard flammability (building material class B2) according to DIN 4102-1:1998-05; MFPA Leipzig 2014

General Building Inspectorate Approval "*PUR-O-STOP FS-L* for curtain grouting"; DIBt Berlin 2014

PUR-O-STOP FS-L Examination of the leaching behaviour with reversed flow direction of an injection resin based on polyurethane (column trial referring to DIBt Guideline "Assessments of the effects of construction products on soil and ground water") - supplement (analysis of amines); MFPA Leipzig 2014

Behaviour of injection resins in contact with anhydrite rock and shell limestone; MFPA Leipzig 2015

Investigations on ageing processes of *PUR-O-STOP FS-L* - Interim report after 180 days; MFPA Leipzig 2015



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GER0513/09

EN 1504-5:2004

Concrete injection product
EN 1504-5: U(F1) W(5)(1/2/3) (5/30)(0)

Adhesion by tensile bond strength	> 2 N/mm ²
Adhesion by slant shear strength	NPD
Volumetric shrinkage	< 3 %
Glass transition temperature	> 40°C
Injectability into dry medium	Injectability class: 0.5
Durability (compatibility with concrete)	cohesive failure in the substrate
Corrosion behavior	deemed to have no corrosive effect
Release of dangerous substances	NPD

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.

Comments:

¹ for uses with low performance requirements in buildings and civil engineering works

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