

VARIOTITE

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



Properties:

VARIOTITE is a three-component, water-swelling-capable hydrogel based on acrylate or methacrylate with very good mechanical properties, especially with an extremely high elongation.

VARIOTITE is a gel with a variable pot-life between 15 seconds and 4 minutes, which can be adjusted according to B salt quantity added (see pot-life table).

VARIOTITE can be applied in case of curtain grouting, for stopping water ingress and for renovation of expansion joints in combination with *POLINIT* (further information see Technical Data Sheet *POLINIT*).

VARIOTITE has a German General Building Inspectorate Approval as an injection product for curtain grouting.

VARIOTITE alone and in combination with *POLINIT* is CE marked according to EN 1504-5 as a concrete injection product for swelling fitted filling of cracks.

Technical Data:

Substance data of components:

Component A I

| | | |
|-----------------------|--------------------------------|-----------------|
| Consistency | liquid | |
| Colour | transparent | |
| Odour | ester-like | |
| Spec. density (23°C) | approx. 1.22 g/cm ³ | DIN EN ISO 3675 |
| Dyn. viscosity (23°C) | approx. 65 mPas | DIN EN ISO 2555 |

Component A II

| | | |
|-----------------------|--------------------------------|-----------------|
| Consistency | liquid | |
| Colour | colourless | |
| Odour | amine-like | |
| Spec. density (23°C) | approx. 0.93 g/cm ³ | DIN EN ISO 3675 |
| Dyn. viscosity (23°C) | approx. 7.5 mPas | DIN EN ISO 2555 |

Component B

| | | |
|----------------------|--------------------------------|--|
| Consistency | solid | |
| Colour | white | |
| Odour | odourless | |
| Spec. density (23°C) | approx. 2.59 g/cm ³ | |
| Bulk density (23°C) | approx. 1.15 g/cm ³ | |

Mixture of A-and B-component:

| | | |
|-----------------------------|------------------|-----------------------|
| Processing temperature * | 5 - 40°C | substrate temperature |
| Viscosity of mixture (23°C) | approx. 4.2 mPas | DIN EN ISO 3219 |

Reaction data:

| | | |
|-----------------|----------------------|--------------|
| Pot-life ** | approx. 10 s - 7 min | DIN EN 14022 |
| Final curing ** | approx. 1 - 30 min | |

Properties after curing:

| | | |
|---------------------|---------------|----------------|
| Consistency | soft-elastic | |
| Colour | white | |
| Elongation at break | approx. 750 % | DIN EN ISO 527 |
| Water absorption | approx. 25 % | DIN EN ISO 62 |

* The declared range of temperature complies with our recommendations. Generally, the product reacts even at very low temperatures (from experience down to approx. -15°C) or distinct higher values than +40°C. Admittedly, problems might occur, which are not directly related to the properties of the product. At sharp frost the air line of the pump might freeze or even present ice inside the structural element to be sealed can cause difficulties. At temperatures above-average too short reaction times can arise, which prevent an entire and successful filling of the injection area. Beside that it might happen that the activated A-component at very high temperatures starts curing even without addition of the B-component, which results in a blockage of the injection pump.

** The indicated times are reached through different quantities of B component, as well as different temperatures.

Processing:

The All container is emptied completely into the Al container and mixed for approx. 3 minutes.

The B component is filled into a container equivalent to the Al component and filled with 17 litre of tap water, then it is mixed again for 3 minutes.

The A and B components prepared in this way are ready for use and are processed 1 : 1 (parts by volume) by means of an 2K injection pump.

Indicated injection pumps: **BOOSTER 10 A**
MINIBOOSTER 5U
TPH INJECT AirPower S25-3K, VA

The Al component activated with All can be used for approx. 4 hours (depending on temperature). Using the activated Al component is not recommended after this period.

The ready-for-use B component remains stable for approx. 5 hours (depending on temperature).

Dependent on the B salt quantity (as well as the temperature) different pot-lives can be adjusted. The indicated B salt quantities may not be fallen below and may not be exceeded.

Pot-life depending on different quantities of B salt and temperature:

| | | | | |
|--------------|-------------|--------------|--------------|---------------|
| 25 °C | 01:25 | 00:28 | 00:14 | 00:10 |
| 20 °C | 01:30 | 00:43 | 00:19 | 00:15 |
| 15 °C | 02:30 | 01:00 | 00:28 | 00:20 |
| 10 °C | 04:25 | 01:37 | 00:43 | 00:25 |
| 5 °C | 07:15 | 02:38 | 01:12 | 00:40 |
| | 40 g | 200 g | 600 g | 1000 g |

(Quantities with reference to 20 kg Al and 0.5 kg All component)

In case of curtain grouting, a reaction time at least 2 minutes should be adjusted, in order to achieve an optimal penetration of the ground. Faster reaction times have been indicated in extensive testing to be negative, because no uniform gel curtain can be achieved.

In case of renovation of expansion joints as well as crack injection in concrete structures we recommend to process *VARIOTITE* only in combination with

POLINIT (see test certificates). Even in the case of these applications a reaction time at least 2 minutes (or longer) should be selected.

Safety information:

VARIOTITE component AII and B 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:

| | |
|---------------|------------------------|
| Component AI | 20 kg plastic canister |
| Component AII | 0.5 kg plastic bottle |
| Component B | 1 kg plastic can |

| | |
|----------------|------------------------|
| <i>POLINIT</i> | 20 kg plastic 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:

Microbiological test for sterility, LADR Geesthacht 1999

Determination of resistance of acrylate gels *RUBBERTITE* and *VARIOTITE* to different fluids; MFPA Leipzig 1999

Compatibility test for waterstops in contact with *VARIOTITE* acrylate gel; MFPA Leipzig 1999

Corrosion resistance test of reinforcing steel to *VARIOTITE* acrylate gel; MFPA Leipzig 2000

Luminescent bacteria test in accordance with DIN EN ISO 11348; LADR Geesthacht 2002

Renovation of defective expansion joint with *VARIOTITE* / *POLINIT*; MFPA Leipzig 2002

Resistance test of *VARIOTITE* / *POLINIT* to freeze-thaw cycling; MFPA Leipzig 2004

Suitable test of the injection gels *VARIOTITE* and *VARIOTITE* / *POLINIT* in compliance with the Directive 804.61.02 of the Deutsche Bahn; MFPA Leipzig 2010

Determination of electrical conductivity of the acrylate gels *VARIOTITE* and *VARIOTITE* / *POLINIT*; MFPA Leipzig 2010

Examination of the leaching behaviour with reversed flow direction of the acrylate gel *VARIOTITE* (column trial referring to DIBt Guideline "Assessments of the effects of construction products on soil and ground water"); MFPA Leipzig 2011

Testing of watertightness of *VARIOTITE* / *POLINIT* polyacrylate gel according to DIN EN 14068 at a water pressure of 7 bar; MFPA Leipzig 2011

Resistance test of injection products to concrete-corrosive fluids; MFPA Leipzig 2011

Long-time behaviour of *VARIOTITE* at tidal zone storage for 13 years; MFPA Leipzig 2016

VARIOTITE - Examination of the leaching behaviour of an injection resin based on acrylate; MFPA Leipzig 2018

VARIOTITE + *POLINIT* - Examination of the leaching behaviour of an injection resin based on acrylate; MFPA Leipzig 2018

Determination of identification properties and performances of crack filling material *VARIOTITE* according to DIN EN 1504-5:2005; MFPA Leipzig 2018

Determination of identification properties and performances of crack filling material *VARIOTITE*+*POLINIT* according to DIN EN 1504-5:2005; MFPA Leipzig 2018

Resistance test of acrylate gels to concrete-corrosive fluids; MFPA Leipzig 2018

General Building Inspectorate Approval "*VARIOTITE* for curtain grouting"; DIBt Berlin 2020

VARIOTITE - Determination of identifying properties of an acrylate-based injection resin; MFPA Leipzig 2020



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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