

MINING

BEVEDOL S21 – BEVEDAN 1F

TWO-COMPONENT INJECTION RESIN

DESCRIPTION

BEVEDOL S21 F is a fast reacting two-component injection resin, free of CFCs.

BEVEDOL S21 is a mixture of various polyols and additives which reacts with BEVEDAN 1F to form a tough/hard polyurethane resin foam. BEVEDAN 1F is a modified polyisocyanate.



APPLICATION AND USE

Adhesive class: instantaneous

For solidification of largely loosened, dry or slightly moist strata zones.

To be used for cracks of more than 0.14 mm width.

- Rock stabilization
- Injections bolting
- Sealing against gas

ADVANTAGES

- Rapid reaction time
- Excellent adhesive strength
- High mechanical resistance

TECHNICAL DATA

The data below are laboratory data. They may vary in practice due to thermal exchange between resin and strata, surface properties of the stone, humidity, pressure, and other factors.

MATERIAL DATA

| Parameter | Unit | BEVEDOL S21 | BEVEDAN 1F | Standard |
|--------------------|-------------------|-------------|------------|-------------|
| Density at 25 °C | kg/m ³ | 960 ± 50 | 1200 ± 30 | DIN 12791-1 |
| Colour | - | honey | dark brown | - |
| Flash point | °C | > 140 | > 150 | DIN 53213 |
| Viscosity at 5 °C | mPa*s | 930 ±150 | 1530 ± 200 | ISO 3219 |
| Viscosity at 10 °C | mPa*s | 600 ±120 | 920 ± 150 | ISO 3219 |
| Viscosity at 15 °C | mPa*s | 420 ± 90 | 550 ± 120 | ISO 3219 |
| Viscosity at 20 °C | mPa*s | 290 ± 70 | 400 ± 90 | ISO 3219 |
| Viscosity at 25 °C | mPa*s | 210 ± 50 | 270 ± 50 | ISO 3219 |
| Viscosity at 30 °C | mPa*s | 160 ± 50 | 200 ± 50 | ISO 3219 |

TECHNICAL DATA SHEET



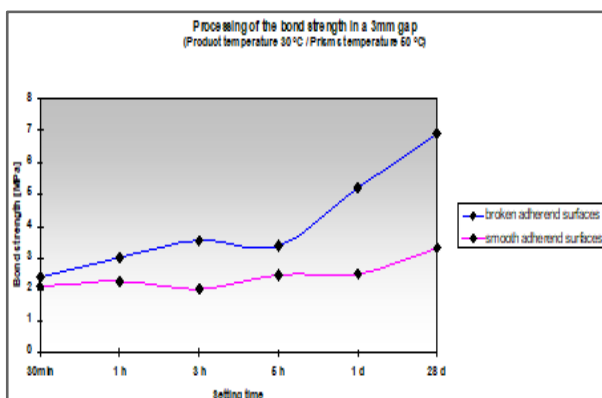
REACTION DATA

| Starting temperature | Start of foaming | End of foaming | Foaming factor | Standard |
|-----------------------------------|-------------------|-------------------|----------------|---------------|
| 5 °C | 1 min 20 s ± 20 s | 2 min 25 s ± 25 s | 1.3 - 2.4 | MCT PV 10-301 |
| 10 °C | 1 min 20 s ± 10 s | 1 min 50 s ± 25 s | 1.3 - 2.4 | MCT PV 10-301 |
| 15 °C | 55 s ± 15 s | 1 min 35 s ± 20 s | 1.3 - 2.4 | MCT PV 10-301 |
| 20 °C | 55 s ± 15 s | 1 min 20 s ± 20 s | 1.3 - 2.4 | MCT PV 10-301 |
| 25 °C | 50 s ± 15 s | 1 min 20 s ± 20 s | 1.3 - 2.4 | MCT PV 10-301 |
| 30 °C | 30 s ± 5 s | 55 s ± 15 s | 1.3 - 2.4 | MCT PV 10-301 |
| Max. reaction temperature (30 °C) | | 122 °C | GesBergV | |

MECHANICAL DATA

Determination under application conditions:

- Volume rate 10 l/min CT-PM remote dredging pump
- BVS40 SM
- Strength investigation dry (Class I)



BOND STRENGTH

| Setting time | Unit | 30 min | 1 h | 3 h | 5 d | 1 d | 28 d |
|--|------|--------|------|------|------|------|------|
| Bond strength - broken adherend surfaces | MPa | 2.38 | 2.99 | 3.55 | 3.36 | 5.2 | 6.9 |
| Bond strength - smooth adherend surfaces | MPa | 2.07 | 2.25 | 2.01 | 2.46 | 2.48 | 3.3 |

DEFLECTION FRACTURE

| Deflection fracture, 3 mm gap | Unit | 30 min | 1 h | 3 h | 5 h | 1 d | 28 d |
|-------------------------------|------|--------|------|------|------|------|------|
| Broken adherend surfaces | mm | 5.52 | 5.25 | 4.54 | 4.39 | 2.63 | 1.45 |
| Smooth adherend surfaces | mm | 4.28 | 4.19 | 3.06 | 3.23 | 1.78 | 0.73 |

DEFORMATION

| Deformation work, 3 mm gap | Unit | 30 min | 1 h | 3 h | 5 h | 1 d | 28 d |
|----------------------------|------|--------|------|------|------|------|------|
| Broken adherend surfaces | Nmm | 2424 | 2906 | 3268 | 2999 | 3296 | 1998 |
| Smooth adherend surfaces | Nmm | 1897 | 2244 | 1464 | 1937 | 1208 | 395 |

STRENGTH

| Parameter | Unit | 24 h |
|---|-------------------|------|
| Compressive strength (at 10 % compression set) | N/mm ² | 3.4 |
| Compressive strength (at 50 % compression set) | N/mm ² | 8.8 |
| Bending tensile strength (at 50 % compression set)* | N/mm ² | 4.5 |

*The maximum mean bending tensile strength was not testable due to the long deformation path and the resulting deflection.

Classification according suitability for application in water bearing rocks

| | | |
|---|-------------------|------|
| Strength investigation wet to bearing (Class II) | Unit | 3 h |
| Bond strength | N/mm ² | 2.19 |
| Strength investigation fastmoving water (Class III) | Unit | 3 h |
| Bond strength | N/mm ² | 2.57 |

| Parameter | Value | Standard |
|--------------|-------|-------------------|
| Oxygen index | 28.4% | DIN EN ISO 4589-2 |

TECHNICAL DATA SHEET**APPLICATION METHOD**

The two components are pumped by a dual component pump at the volumetric ratio 1 : 1; they are mixed thoroughly in a static mixer unit prior to injection into strata via a packer installed in a previously drilled borehole.

For detailed instructions on use, in particular before a change of the injection resins, consult the brochure 'Operating instructions on proper use of Minova injection resins'.

SAFETY INSTRUCTIONS AND LIMITATIONS

Observe the usual precautionary measures for handling chemicals, see MSDS of BEVEDOL S21 and BEVEDAN 1F.

The processing temperature for can material (pump e.g. DP40) must be at least 15 °C and for IBC material (pump CT-PM) at least 20 °C.

When the material is warmed up, local overheating, e. g. at the container wall, must be avoided by any means.

PACKAGING AND TRANSPORTATION

All forms of packing are approved to the danger goods regulation road, railway, domestic shipping.

The components can be delivered in 20/26/200/1000 l units.

Other packaging units are available on request. Details are shown in the offer.

BEVEDOL S21 – BEVEDAN 1F is also available in two-component foil cartridge.

STORAGE AND SHELF LIFE

At least six months from date of delivery when stored in a dry place between 10 °C and 30 °C. If this time is exceeded, we recommend having the material checked by Minova for compliance with specification.

DISPOSAL

Follow local regulations.

APPROVALS AND CERTIFICATES

1. Report of the determination of properties (MCT, 2013)
2. Certificate bending tensile strength and compressive strength (DMT, 2013)

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ADDITIONAL DOCUMENTATION

- Operating instructions on proper use of Minova injection resins
- MSDS of BEVEDOL S21 and BEVEDAN 1F

TECHNICAL DATA SHEET**LIST OF REPRESENTATIVES**

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