

## **STARRGleis SIL**

**Approval by the German Federal Railway Authority for operational testing of ballast bonding for use in track areas on earthwork structures and bridges**



### **Properties:**

STARRGleis SIL is a two-component, silicate-based injection resin developed especially for the fixation of rail ballast in railway construction.

This resin may be deployed universally in railway construction, on ballast of any type and with containing any level of moisture.

### Areas of application:

- Transitions between standard open rail and fixed rail stretches
- As protection against ballast shifting
- As protection against flying ballast
- For safety during work on tracks
- Position stabilisation and/or correction
- Reduction of tamping intervals
- For easier cleaning of track ballast beds
- Reduction of dust production in operations
- Securing of escape routes in tunnels

### **Technical Data:**

#### Substance data of components:

##### Component A

Consistency	liquid	
Colour	colourless	
Odour	characteristic	
Spec. density (23°C)	approx. 1.41 g/cm <sup>3</sup>	DIN EN ISO 2811-1
Dyn. viscosity (23°C)	approx. 150 mPas	DIN EN ISO 2555

##### Component B

Consistency	liquid	
Colour	brown	
Odour	characteristic	
Spec. density (23°C)	approx. 1.11 g/cm <sup>3</sup>	DIN EN ISO 2811-1
Dyn. viscosity (23°C)	approx. 250 mPas	DIN EN ISO 2555

#### Mixture of A- and B-component:

Processing temperature	15 - 30°C	substrate temperature
Mixing ratio A : B	1 : 1 (parts by volume)	

## Reaction data (at 23°C):

String gel time (Pot-life)	approx. 60 s	ASTM D7487
Final curing	approx. 20 min	

## Properties of silicate resin:

Compressive strength		DIN EN 12190
2 h	approx. 18 N/mm <sup>2</sup>	
1 d	approx. 22 N/mm <sup>2</sup>	
7 d	approx. 25 N/mm <sup>2</sup>	
E-modulus	approx. 75 MPa	DIN EN ISO 527
Tensile strength	approx. 6.0 MPa	DIN EN ISO 527
Elongation at break	approx. 10 %	DIN EN ISO 527

## Processing:

The two components are initially stored in a 1 : 1 proportion and continuously moved using a suitable injection pump.

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

At the end of the the conveyor hoses the components are combined using a T or Y piece and then mixed together homogeneously in the mixing pipe using a static mixing unit.

Using an attached injection lance, the reaction mixture is applied to the prepared track ballast area in such a way as to achieve the uniform spread of the product (using a flood grouting process). For an easy and uniform distribution, we recommend the use of flat fan nozzles (e.g. 80/10).

The still liquid products quickly flows into the porous structure of the ballast, but then reaches a consistency at which it can no longer flow freely and begins to harden without any increase in volume.

The areas to be consolidated should be reviewed in sections depending on penetration behaviour until the required quantity of resin has been applied and resulted in the even consolidation of the ballast.

Alternatively, *STARRGLEIS SIL* may be injected into the ballast or under the sleepers with ram injection lance.

Criteria for ceasing will always be the following:

- Emergence of the injection resin from the ballast bed
- Formation of puddles
- Temperatures lower than the minimum for use of the material

## Other notes:

The minimum temperature for use of the product is 15° C. If the product is cooled excessively it may result in problems with the suction capacity of the pump due to increased viscosity. Warm the product before use being careful to avoid local hot spots.

The mixing lines of the equipment must contain at least a 25 cm spiral or screen mixer, depending on the diameter of the mixing pipe. Operation of the piston pump requires the use of a compressor of a suitable rating.





Approval for operational testing of the two-component injection resin  
*STARRGleis SIL* for ballast bonding for use in track areas on earthwork  
structures and bridges; Eisenbahn-Bundesamt 2013

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**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](mailto:info@tph-bausysteme.com)  
Web [www.tph-bausysteme.com](http://www.tph-bausysteme.com)

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