Technical Data Sheet
Issue: 27-02-2023

TRACKFIX PUR

Approval by the German Federal Railway Authority for operational testing of ballast bonding

Properties:

TRACKFIX PUR is a slowly curing, rigid to tough-elastic dual component urethane resin with high mechanical strength characteristic values especially for the consolidation of track ballast in railway construction.

TRACKFIX PUR is a polyurethane resin with a variable reaction time, which can be adjusted according to added catalyst quantity (see pot life table.)

The resin is universally applicable in railway construction.

Fields of application:

- Transitions from ballasted track to slab track
- Suitable for full and partial bonding I + II
- Ballast embankment protection
- Protection against gravel flow
- Protection against flying gravel
- Securing during work on the track
- Position stabilization and/or correction
- Reduction of tamping intervals
- Underpinning and fixing of sleepers
- Easier cleaning of track ballast beds
- Reduction of dust formation during operation

Due to its low viscosity *TRACKFIX PUR* penetrates excellently into the track ballast to be consolidated. As a rule, the product is processed in dry to maximum matt damp areas. In principle, application is also possible on wet ballast/subsoil, but the product foams slightly on contact with water.

Technical Data:

Substance data of components:

Component A

Consistency	liquid	
Colour	light yellow	
Odour	low	
Spec. density (23°C)	approx. 1,03 g/cm^3	DIN EN ISO 2811-1
Dyn. Viskosität (23°C)	approx. 190 mPas	DIN EN ISO 2555

Component B

Consistency	liquid	
Colour	brown	
Odour	charakteristisch	
Spec. density (23°C)	approx. 1,23 g/cm^3	DIN EN ISO 2811-1
Dyn. Viskosität (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 TRACKFIX PUR CAT at 23°C):

Pot-life (string gel time)	approx. 90 min	ASTM D7487
Foam factor		ASTM C1643
without water contact	1	
with water contact	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 pumped directly from the containers in a mixing ratio of 1 : 1 (volume parts) using two-component pumps.

Suitable pumps: *TPH INJECT PS 25-II*
TPH INJECT PS 5-II

At the end of the separate delivery hoses, the components are brought together in a T or Y piece and then mixed homogeneously (free of streaks) in the mixing tube by means of a static mixer.

Suitable static mixer: Static mixer 13-32

The reaction mixture is applied to the prepared track ballast via a subsequent injection lance in such a way that an even distribution of the product is achieved (flooding method). For a simple and even distribution we recommend the use of an appropriate distribution head (approx. 40 cm long T-shaped discharge pipe with outlet openings).

Due to the relatively long reaction time of *TRACKFIX PUR*, the product can alternatively be processed with a one-component pump. For this purpose, the components are mixed homogeneously (free of streaks) in a dry and clean vessel with a slow working agitator and then added to the pump.

Suitable pumps: *CONTRACTOR 1U*
ME 1 K ELEKTRISCH

After the mixing described above, it would also be possible to pour the reaction mixture onto the track ballast within the processing time without a pump.

The low-viscosity product penetrates quickly into the pore structure of the ballast and bonds or consolidates the ballast permanently.

The areas to be consolidated must be reworked at intervals depending on the penetration behavior until the required quantities of resin have been used up and have led to overall consolidation of the ballast.

Alternatively, *TRACKFIX PUR* can also be injected into the ballast by means of ram lances or placed under the sleeper plane.

Technical consumption approaches:

~ 3 - 4 kg/m² for gravel embankment protection
~ 1 - 2 kg/m² with track ballast bonding up to 15 cm ballast depth
~ 2 - 4 kg/m² with track bed ballast bonding up to 30 cm ballast depth
~ 5 - 8 kg/m² with track bed consolidation up to 50 cm ballast depth

The consumption data are empirical values. Irrespective of this information, a test field must be created before work begins and the site-specific consumption must be determined.

For a quantity consumption of up to 55.5 kg *TRACKFIX PUR* on 1 m³ track ballast according to DBS 918061 (08/2021), the classification of the fire behavior according to DIN EN 13501-1:2019-05 exists with: A2fl-s1 as a mandatory requirement for use in traffic tunnels.

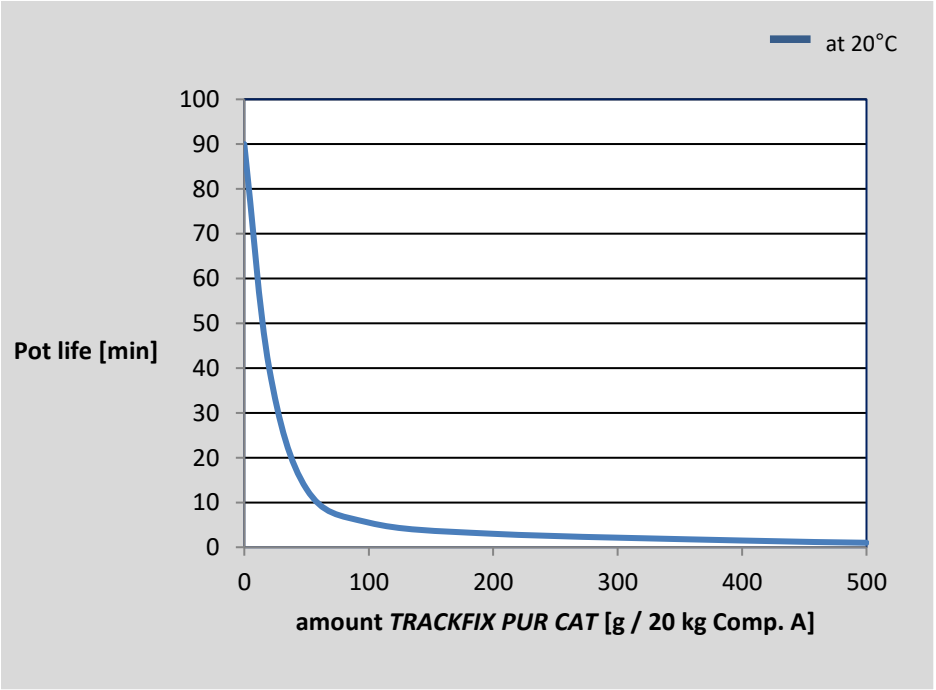
Applicable at ambient temperatures from : 5°C to 40°C
Recommended product temperature: 15°C to 30°C

By adding the catalyst *TRACKFIX PUR CAT* (CAT = catalyst) to the *TRACKFIX PUR* A component, different reaction times can be set according to the application (see pot life table).

*Pot life depending on the amount of TRACKFIX PUR CAT *:*

Addition of catalyst	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 measured at 20°C without contact with water; ASTM D7487 standard
catalyst addition based on 20 kg A component



Safety information:

The *TRACKFIX PUR B* component contains isocyanates and is classified as hazardous according to Regulation (EC) No 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:

TRACKFIX PUR Component A	20 kg- Plastic canister 1000 kg-IBC
TRACKFIX PUR Component B	24 kg- Plastic canister 1200 kg-IBC

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:

TRACKFIX PUR - Investigation of the elution behavior of a polyurethane-based injection resin; MFPA Leipzig 2014

TRACKFIX PUR - Investigation of the elution behavior of a polyurethane-based injection resin - supplement; MFPA Leipzig 2014

Investigations into the ageing behavior of *TRACKFIX PUR*; MFPA Leipzig 2017

Investigations on ballast bonded with *TRACKFIX PUR*; TU Munich 2019

Examination according to TrinkwV 2012 and coating guidelines; görtler analytical services gmbh Vaterstetten 2019

Determination of the compressive strength of ballast cubes bonded with *TRACKFIX PUR*, *TRACKFIX POX* and *TRACKFIX SIL*; TU Munich 201

TRACKFIX PUR - freeze-thaw change resistance; MFPA Leipzig 2020

Approval for operational testing of the two-component injection resin *TRACKFIX PUR* for ballast bonding; Eisenbahn-Bundesamt 2020

TRACKFIX POX, TRACKFIX SIL, TRACKFIX PUR - Reaction to fire test of floor coverings; MFPA Leipzig 2023

TRACKFIX POX, TRACKFIX SIL, TRACKFIX PUR – Determination of heat of combustion according to DIN ISO 1716:2010-11; MFPA Leipzig 2023

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.

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
Web www.tph-bausysteme.com