ResinBau

GeoTrack

Ballast Bonding & Deep Consolidation

2k PUMP

ResinBau
MADE IN THE EU

ResinBau sp. z o.o.
ul. Frezerów 3, 20-209 Lublin
Tax ID: 9462710841
BDO: 000548679
e:info@resinbau.eu t:
+48 731 904 000

Technical Manual

A high-strength, two-component polyurethane system with low viscosity, designed for structural reinforcement of railway ballast and deep consolidation of non-cohesive soils.

The system is characterized by **adaptive reaction kinetics**:

- **In a dry environment:** it acts as a high-strength binder (similar to epoxy resins), penetrating deep into the structure without foaming and forming rigid bonds with very high hardness (Shore D 75).
- **In a moist/water environment:** an accelerated reaction with controlled expansion (approx. 2-fold increase in volume) occurs, which allows the intergranular voids to be filled and the water-saturated soil to be stabilized.

Properties

- **Low viscosity (~220 mPas):** Ensures excellent penetration into compact layers of crushed stone and fine-grained soils.
- **High hardness and strength:** After hardening, it forms a material with structural parameters (hardness >70 Shore D), resistant to high dynamic loads (train traffic).
- **Adaptability:** No need to use different products for dry and wet areas – the material adapts to the conditions in the ground.
- **Environmentally friendly:** Solvent-free, environmentally neutral after curing.
- **Good adhesion:** Excellent adhesion to mineral aggregates, concrete, and steel.
- **Mixing ratio:** 1:1 by volume
- High mechanical strength
- No shrinkage after curing

Areas of application

Railway infrastructure:

- Surface and deep bonding of ballast (prevention of ballast spillage).
- Stabilization of transition zones (bridge abutments, culverts).
- Reinforcement of railway embankments at risk of subsidence.

Geotechnics and Construction:

- Consolidation of loose soils (sand, gravel) under foundations.
- Filling voids and cavities while strengthening the soil.

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Product specifications

	Composition A+B
Color	Brown
Viscosity (23 °C)	220 ± 50 mPas
Density (23 °C)	~1.14 g/cm³
Volume mixing ratio A / B	100 / 100
Hardness (oSh A)	95 ± 5
Hardness (Shore D)	75 ± 5
Setting time in dry conditions (23 °C)	40 - 60 min
Setting time in wet conditions (23 °C)	3 - 4 min
Foam expansion ratio upon contact with water (v/v)	1 - 2.5
Permissible air and substrate temperature	5 - 40°C
Storage and warehousing temperature	5 - 25°C
Permissible relative humidity during spraying	30 - 80%

Processing instructions (Reaction kinetics)

The reaction time and behavior of ResinBau GeoTrack resin are closely dependent on the presence of moisture in the injected medium. These differences must be taken into account when planning the work:

Environmental conditions	Material behavior	Setting time (approximate)	Application
DRY (e.g., dry crushed stone, sand)	**No foaming.** The resin spreads by gravity, penetrates deeply, and bonds like construction adhesive.	**40 - 60 min**	Deep penetration, structural bonding, soil consolidation.
MOIST / WET (e.g., moist soil)	**Slight foaming (x2).** Reaction with water causes micro-gasification, increased volume, and faster gelation.	**approx. 3 - 4 min**	Filling voids, stabilizing loose / moist soil.

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Method of application

1. Crushed stone stabilization (spray/gravity method): The application is carried out using a 2-component pump (1:1) equipped with a spray or spout lance. The material is applied directly to the surface of the crushed stone. Thanks to its low viscosity, the resin penetrates deep into the pile, bonding the aggregate at the points of contact without completely blocking water drainage (permeability is maintained).

2. Soil consolidation (injection method): Injection using lances (**Hammpack** system) with a 2-component pump (1:1) equipped with a 3-component injection head - with a PI-CLEANER flushing system.

- **In dry soils:**
  The resin spreads radially, forming a mass of bonded soil with high compressive strength

- **In waterlogged soils:**
  The resin reacts with groundwater, increases in volume by displacing excess water, and stabilizes the soil, creating a rigid foam concrete structure.

Cleaning after finished work

- Clean the pump and equipment using Hammpack® PI-CLEANER
- When cleaning, ensure that the relevant safety precautions are observed.
- When the cleaning agent has been dispensed from the injection hose, flush it with a sufficient amount of Hammpack® PI-SAVER preservative.

Storage Shelf life

- Store in tightly closed, original containers at a temperature between 5°C and 25°C
- Containers should be protected from moisture and sunlight. The shelf life under the above-mentioned conditions is 6 months.

Safety

- Wear safety glasses, gloves, and protective clothing. Avoid contact with skin and eyes.
- In case of contact with eyes: rinse thoroughly with clean water and consult a doctor.
- In case of skin contact: rinse thoroughly with water.
- All other information is available in the product safety data sheet.

ResinBau GeoTrack is completely safe after the polymerization process is complete. Always wear appropriate protective clothing, goggles, and gloves when working with the material. It is important to avoid contact with skin and eyes and not to inhale vapors.

If the product comes into contact with your skin or eyes, immediately rinse the area with clean water and contact a doctor. Do not eat, smoke, or stay near open flames while working.

Before starting work, carefully read the safety instructions. Strictly follow industry regulations for working with reactive resins and chemical guidelines (MOO4/MO23).

Your safety is a priority – take care of yourself and your surroundings!

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