HEGGEL® FRP 321

Glass Mat Reinforced Phenol Lining System

You Build, We Protect!

Description:

HEGGEL FRP 321 is a black, approx. 3 mm thick; glass mat reinforced lining system based on a phenol resin. **HEGGEL FRP 321** is electrically conductive by using a hybrid mat.

Characteristics:

- Excellent chemical resistance, especially against acids and solvents
- High temperature resistance up to +90°C (dry)
- Electrically conductive

Applications:

HEGGEL FRP 321 can be applied on **HEGGEL Pox** coatings, sheets or rubber linings.

Chemical Resistance:

Information on the chemical resistance is available on request.

Substrate:

Components to be coated shall be designed and manufactured in accordance with EN 14879-1. Before start of coating work, the suitability of the surface preparation measures according EN 14879-1 must be checked and recorded.

Pot Life (20°C):

Product	Time
HEGGEL FRP 321	Approx. 30 min

Curing (20°C):

Load Capacity	Time
Over Workable	Approx. 24 hrs
Accessible	Approx. 24 hrs

Packaging:

The products are supplied in the following standard package sizes:

Product	Size
HEGGEL Pox 414 Solution	20 kg
HEGGEL Pox 414 Hardener	8 kg
HEGGEL FRP 321 Solution	20 kg
HEGGEL FRP 321 Hardener	10 kg
Cleaner E-200	4 kg
Cleaner E-200	8 kg

Storage:

The products must be stored in a cool and dry place, away from direct sunlight. At the specified storage temperatures a shelf life of the products is given of at least for the following periods:

Product	Temperature	Shelf Life
HEGGEL Pox 414 Hardener	≤ +25°C	24 Months
HEGGEL Pox 414 Solution	≤ +25°C	24 Months
HEGGEL FRP 321 Solution	≤ +20°C	6 Months
HEGGEL FRP 321 Hardener	≤ +25°C	24 Months
Cleaner E-200	5 - 25°C	60 Months

If the storage time is exceeded, the materials must be tested before use. Higher storage and transport temperatures will reduce the shelf life. The containers must be kept tightly closed. Liquid products must be stored frost-proof. In addition, the DIN 7716 must be observed.

1. Surface Preparation

Steel and concrete surfaces must be primed with **HEGGEL Pox 414** before application. If a sealing layer of rubber or coating is present, **HEGGEL FRP 321** laminate can be directly applied on the sealing layer. Unevenness should be compensated in the ground.

1.1. C-Steel

All contaminants, including non-visible detectable contaminants, must be removed in accordance with DIN Fachbericht #28 and EN ISO 8502.

Ferrite steel surfaces shall be abrasive blasted to “Near White Metal” in accordance with EN ISO 12944-4. A standard preparation degree of SA 2½ (SSPC SP-10; NACE #2) as specified in EN ISO 8501-1 must be achieved. A minimum surface profile of Rz ≥ 70 microns is required. For substrates made of stainless steel, the degree of roughness must also be “medium (G)” according to EN ISO 8503-1 and a minimum surface profile of Rz ≥ 70 microns. The primer must be applied immediately after the blasting.

1.2. Concrete

Appropriate action shall be taken to prepare the concrete surfaces; dry and free of dust and free of contaminants such as oil or grease. The concrete shall have minimum tensile strength of 1.5 N/mm². The residual moisture content must not exceed 4%.

2. Environmental Conditions

The specified environmental conditions must be observed during surface preparation and coating work and be tested and recorded according EN 14879.

Environmental Conditions	Value
Relative Humidity	≤ 80%
Surface Temperature	≥ +10°C up to +30°C
Application Temperature	+20°C ± 5°C recommended
Dew Point Distance	min 3°C

3. Application

The execution of the coating work is only permitted, if the requirements of “Surface Pre-treatment” and “Environmental Conditions” are met.

HEGGEL Pox 414 is applied twice (undiluted) by using brushes, wide brushes or rollers. If the overworking time is > 24 hours, the last coat must be sanded in fresh state with dry quartz sand (0.3 – 0.7 mm) – if no sanding is carried out – it must be grinded.

HEGGEL FRP 321 solution is applied on the surface by using a roller and then the first 450 g/m² glass mat is pressed fresh in fresh - with an overlapping width of approx. 5 cm - and rolled on reasonably free from bubbles by using a roller, saturated with **HEGGEL FRP 321** solution. The remaining air must be removed by using a laminate roller. The second 450 g/m² glass mat is pressed - with an over-lapping width of approx. 50 cm - on the uncured layer, soaked with **HEGGEL FRP 321** solution again and rolled on reasonably free from bubbles by using a roller, saturated with **HEGGEL FRP 321** solution. The remaining air must be removed again by using a laminate roller. Finally, a 30 g/m² surface veil is applied on the second glass mat fresh in fresh and reasonably free from bubbles. Due to the nature of hand craft application, small air inclusions cannot be avoided 100%. This is already considered and it’s compensated by a higher lining thickness of **HEGGEL FRP 321**.

To improve the slip resistance of **HEGGEL FRP 321**, the fresh laminate coating can be sanded with silicon carbide (0.5mm; Consumption: 1.5 kg/m²).

CONDUCTIVITY

If **HEGGEL FRP 321** should be conductive, a 290 g/m² hybrid fleece must be applied on the second glass mat instead of the 30 g/m² surface veil.

4. Application Tools

The following tools are essential for the application:

- Stirrer (max. 300 rpm)
- Measuring cup & Mixing vessels
- Flat / wide brush
- Laminate roller
- Scissors
- Miscellaneous (Safety glasses, rubber gloves etc.)

5. Mixing Ratio

5.1. Mixing Primer

HEGGEL Pox 414 must be stirred before adding the **HEGGEL Pox 414 Hardener** in the recommended mixing ratio. The stirring of the merged components should be at least 3 minutes and must result in a homogeneous mixture. Then pour the mixture into a clean pail and mix again briefly.

5.2. Mixing HEGGEL FRP 321 Solution

HEGGEL FRP 321 Solution must be stirred before adding the **HEGGEL FRP 321 Hardener** in the recommended mixing ratio. The stirring of the merged components should be at least 3 minutes and must result in a homogeneous mixture. Then pour the mixture into a clean pail and mix again briefly.

Primer	Parts by Weight (kg)	Parts by Volume (L)
HEGGEL Pox 414 Solution	100	2.00
HEGGEL Pox 414 Hardener	40	0.81

Heggel Frp 321 Laminate	Parts by Weight (kg)	Parts by Volume (L)
HEGGEL FRP 321 Solution	100	2.00
HEGGEL FRP 321 Hardener	20	0.37

6. Consumption

Layer	Product	Coverage (g/m²)
Primer	**HEGGEL Pox 414 Primer**	Approx. 300 - 350 (concrete) / Approx. 250 (steel)
Laminate Layer	**HEGGEL FRP 321 Laminate**	Approx. 2600 / Approx. 3300*
	2 x Fibreglass mats 450 g/m²	Approx. 1000
	1 x Surface veil 30 g/m²	Approx. 33

* When applying a hybrid fleece

7. Cleaning

Clean all equipment with **Cleaner E-200** immediately after use. The cleaning is done while the material is still not hardened.

8. Safety Measures

The material safety data sheets of the individual components, the safety instructions on the packing (label) as well as the legal requirements for handling hazardous materials must be observe

Technical Data	Standard	Value	Unit
Resistance to Ground (When using the 290 g/m² hybrid fleece)	DIN EN 14879	≤ 1 × 10^8	Ω
Density (Mixture)	EN ISO 2811 (ASTM D1475)	1.20	g/cm³
Adhesion Strength Concrete	EN ISO 4624	Own tensile strength	N/mm²
Hardness Shore D	-	> 60	-
Max. Operating Temperature Dry	-	+90	°C

Note: The indicated temperatures are dependent on the present load and may vary.

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