

HEGSEL FRP 341

Glass Mat Reinforced Vinyl Ester Lining System

Description:

HEGSEL FRP 341 is an approx. 3 mm thick; glass mat reinforced lining system based on a Novolac vinyl ester resin. The coating system consists of a trowel applied primer, a laminate layer and optionally a top coat. The top coat is used optionally, if an electrical conductive or a grey surface is required.

Characteristics:

- Temperature resistant up to +100°C on steel
- Excellent chemical resistance to acids, alkalis, solvents and especially oxidizing agents
- Crack-bridging properties. Can bridge cracks of ≤ 0.25 mm in concrete according EN 14879-3
- Electrically Conductive
- Drivable
- Excellent adhesion to concrete surfaces
- Very good mechanical properties

Applications:

HEGSEL FRP 341 is designed as an internal lining for sumps and collecting basins made of reinforced concrete, and it can also be used indoors and outdoors in liquid storage areas. Furthermore, **HEGSEL FRP 341** is suitable as a flooring material where the traffic consists of vehicles with inflated or solid tyres, or with Polyurethane (Vulkollan) or polyamide wheels, mainly in galvanizing plants, pickling plants and HBV (manufacture of water polluting substances) plants where the floors are in contact with oxidizing media. The optional feature of the coating system which ensures the dissipation of static charges enables the storage of flammable liquids.

Chemical resistance:

Information on the chemical resistance is available on request.

Substrate:

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

Pot life (20°C):

Product	Time (min)
Primer	ca. 40
Laminate layer	ca. 60
Topcoat	ca. 60

Curing (20°C):

Load Capacity	Time
Accessible	ca. 4 h
Chemical load	ca. 3 Days

Packaging:

The products are supplied in the following standard package sizes:

Product	Size	Article No.
HEGSEL FRP 341 SOLUTION	5 kg	17762130
HEGSEL FRP 341 SOLUTION	20 kg	17762100
HEGSEL FRP 341 SOLUTION	1000 kg	17762115
HEGSEL FRP 341 SOLUTION CONDUCTIVE	5 kg	17762220
HEGSEL FRP 341 SOLUTION CONDUCTIVE	20 kg	17762190
HEGSEL FRP 341 SOLUTION GRAY	5 kg	17762142
HEGSEL FRP 341 SOLUTION GRAY	20 kg	17762139
HEGSEL FRP 341L POWDER	25 kg	17762160
HEGSEL HR 910	0.1 kg	17760543
HEGSEL HR 910	0.4 kg	17760057
Cleaner E-200	4 kg	17701830
Cleaner E-200	8 kg	17701833

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
HEGSEL HR 910	$\leq +20^\circ\text{C}$	12 Months
Cleaner E-200	$5-25^\circ\text{C}$	60 Months
HEGSEL FRP 341 SOLUTION	$\leq +20^\circ\text{C}$	6 Months
HEGSEL FRP 341 SOLUTION CONDUCTIVE	$\leq +20^\circ\text{C}$	3 Months
HEGSEL FRP 341 SOLUTION GRAY	$\leq +20^\circ\text{C}$	3 Months
HEGSEL FRP 341 POWDER	-	24 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

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 and a "medium (G)" roughness degree as specified in EN ISO 8503-1 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 of the substrate.

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 brick lining 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. 3K

3. Application

The execution of the brick lining work is only permitted, if the requirements of "Surface Preparation" and "Environmental Conditions" are met.

HEGGEL FRP 341 PRIMER is applied onto the prepared substrate by using a roller, mortar trowel or grout spreader. As the troweled primer hardens, **HEGGEL FRP 341** solution is applied and the first layer of 450 g/m² glass mat is laid into the solution. It is then saturated with **HEGGEL FRP 341** solution and rolled on reasonably free from bubbles by using a roller (segmented roller). The glass mats need to

be placed with approximately 5 cm overlapping onto each other.

Before the previous layer hardens, the second layer of 450 g/m² glass mat is placed, saturated with **HEGGEL FRP 341** solution and rolled on reasonably free from bubbles. The overlapping distance between the subsequent layers need to be minimum 50 cm. Finally, a 30 g/m² surface veil is applied onto the second glass mat, fresh in fresh and reasonably free from bubbles. After hardening of the **HEGGEL FRP 341** two coats of grey Vinyl Ester-topcoat can be rolled on the top optionally.

Due to the nature of hand craft application, small air inclusions can not be avoided 100%. This is already considered and it's compensated by a higher lining thickness of **HEGGEL FRP 341**.

To achieve a conductive top coat, self-bonding copper tapes are bonded onto the hardened **HEGGEL FRP 341** and then the first coat of conductive topcoat is applied. Following the hardening of the 1st Topcoat (approx. 3 - 5 hours), 2nd coat of the conductive topcoat can be applied.

To improve the slip resistance of **HEGGEL FRP 341**, the fresh laminate coating can be sanded with silicon carbides (0.5mm; Consumption: 1.5 kg/m²).

4. Work tools

The following tools are essential for the application:

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

5. Mixing ratio

MIXING PRIMER

Pour **HEGGEL FRP 341 SOLUTION** in a mixing vessel and add **HEGGEL HR 910** hardener at the specified mixing ratio. The stirring of the merged components should be at least 3 minutes and must result in a homogeneous mixture. Then add **HEGGEL FRP 341 POWDER** in the recommended mixing ratio to this mixture and stirrer again. 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.

MIXING HEGGEL FRP 341 SOLUTION

Pour **HEGGEL FRP 341 SOLUTION** in a mixing vessel and add **HEGGEL HR 910** at the specified mixing ratio. The stirring of the merged components should be at least 3 minutes and must result in a homogeneous mixture. Then add **HEGGEL FRP 341 POWDER** in the recommended mixing ratio to this mixture and stirrer again. 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 (Liter)
HEGGEL FRP 341 SOLUTION	100	2.00
HEGGEL HR 910	2	0.04
HEGGEL FRP 341 POWDER	80	2.24

HEGGEL FRP 341	Parts by Weight (kg)	Parts by Volume (Liter)
HEGGEL FRP 341 SOLUTION	100	2.00
HEGGEL HR 910	2	0.04

Topcoat	Parts by Weight (kg)	Parts by Volume (Liter)
HEGGEL FRP 341 SOLUTION CONDUCTIVE	100	2.00
HEGGEL HR 910	1	0.02
HEGGEL FRP 341 SOLUTION GREY	100	2.00
HEGGEL HR 910	1	0.02

6. Consumption

Layer	Product	Coverage (g/m²)
Primer	Primer	ca. 700 - 1500
Laminate Layer	HEGGEL FRP 341	ca. 2700
	2 x Fibreglass mats 450 g/m² 1 x Surface veil 30 g/m²	ca. 1000
1 st Topcoat	HEGGEL FRP 341 Topcoat	ca. 300
2 nd Topcoat	HEGGEL FRP 341 Topcoat	ca. 300

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 observed.

Technical Data	Standard	Unit	Value
Resistance to Ground	DIN 14879-6	Ω	> 10 ⁸ *
Density (Mixture)	EN ISO 2811 (ASTM D1475)	g/cm ³	1.4
Compressive Strength	EN ISO 604	N/mm ²	60
Hardness Shore D	-	-	> 60
Max. Operating Temperature Dry	-	°C	+ 100

* When using the self bonding copper tapes with **HEGSEL FRP 341 SOLUTION CONDUCTIVE**

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

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