

HEGGEL FRP 341

Glass Mat Reinforced Epoxy Vinyl Ester Lining System

You Build, We Protect!

Description:

HEGGEL FRP 341 is a glass mat reinforced lining system based on a Bisphenol-A epoxy vinyl ester resin, that provides outstanding resistance to a broad range of acids and alkalis, oxidizing agents, as well as a variety of solvents widely used across many industries. The lining system consists of a primer applied by trowel, a laminate layer and a top coat.

Characteristics:

- Conveniently workable due to lower viscosity
- Temperature resistance on steel up to +100°C
- Excellent chemical resistance against acids, alkalis, solvents and particularly oxidizing substances
- Crack-bridging properties
- Excellent adhesion to substrates of all kind
- High tensile and flexural strength
- High toughness due to high elongation at break
- Highly flexibility for handling and storage thanks to the longer shelf life

Applications:

HEGGEL FRP 341 is designed as a lining for internals of steel / concrete storage tanks, vessels, scrubbers, sumps, collecting basins, flue gas desulfurization units and waste water treatment plants. It is also suitable for marine applications and the interior/exterior of liquid storage facilities, and can be applied to a wide range of substrates.

Gel Time (25°C):

Product	Time
HEGGEL FRP 341 (Curing agents: 1.2% MEKP + 0.3% Cobalt 6%)	Approx. 15 – 25 min

Note: Depending on the amount of curing agents added and the actual ambient temperature, the gel time can vary. For further information, please consult HEGGEL!

Curing:

Approx. 3 - 4 days at 25°C or 24 hours at 25°C + 2 hours post curing at 105°C

Packaging:

The products are supplied in the following standard package sizes:

Product	Size
HEGGEL FRP 341 Primer	20 kg
HEGGEL FRP 341 Solution	200 kg
HEGGEL FRP 341 Topcoat	25 kg

Storage:

The products must be stored in a cool, dark and dry place, away from direct sunlight, heat, sparks and flames. At the indicated storage temperatures, the shelf life of the products is at least the below mentioned periods:

Product	Temperature	Shelf Life
HEGGEL FRP 341 Primer	≤ +25°C	6 Months
HEGGEL FRP 341 Solution	≤ +25°C	9 Months
HEGGEL FRP 341 Topcoat	≤ +25°C	6 Months

If the shelf life is passed, the materials must be tested prior to use. Higher temperatures by storage and transport would reduce the shelf life. The containers are to be kept closed tightly. All liquid products must be stored in frost-proof conditions. Additionally, the DIN 7716 must be observed.

Technical Data:

HEGGEL FRP 341 Resin / Typical Clear Casting Properties	Standard	Value	Unit
Appearance	-	Light yellow	-
Viscosity Brookfield	at 25°C	250 - 450	cps
Styrene Content	-	45	%
Tensile Strength	ASTM D638	90 - 95	MPa
Elongation at break	ASTM D638	5 - 6	%
Flexural Strength	ASTM D790	135 - 157	MPa
Barcol Hardness	ASTM D2583	35 ± 3	-
HEGGEL FRP 341 Laminate	Standard	Value	Unit
Compressive Strength	EN ISO 604	60	N/mm ²
Max. Operating Temperature Dry	-	+100	°C

Note: All of the values given are approximate and can only be used as a guide for specifications.

1. Surface Preparation

1.1. C-Steel

All contaminants such as those which are not visible but detectable, have to be removed in accordance with DIN Fachbericht # 28 and EN ISO 8502. Ferrite steel surfaces must be 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 is required. A minimum surface profile of Rz ≥ 70 microns must be achieved. On stainless steel substrates, a "medium (G)" degree of roughness according to EN ISO 8503-1 and a minimum surface profile of Rz ≥ 70 microns are required. The primer must be applied immediately after the substrate is blasted.

1.2. Concrete

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

2. Environmental Conditions

The specified environmental conditions must be complied with during surface preparation and brick lining and they shall 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 lining work may only be carried out, if the requirements under "Surface Preparation" and "Environmental Conditions" are met.

HEGSEL FRP 341 Primer is applied onto the prepared substrate with a roller, mortar trowel or grout spreader. After primer is applied onto the substrate, the laminate layers should be built up between 4 hours and 7 days. If it becomes tacky-free, the surface should be roughed before applying laminating resin. As the troweled primer hardens, **HEGSEL FRP 341** solution is applied and the first layer of 450 g/m² glass mat is placed in the solution. It is then soaked with **HEGSEL FRP 341** solution and rolled with a (segmented) roller until reasonably free of bubbles. The glass mats must be laid on top of each other with an overlap of with approx. 5 cm.

Before the previous layer hardens, the second layer of 450 g/m² glass mat is laid, soaked with **HEGSEL FRP 341** solution and rolled until reasonably free of bubbles. The overlapping distance between the subsequent layers must be at least 20 cm. Finally, a 30 g/m² surface veil is applied to the second glass mat, fresh in fresh and reasonably free from bubbles. Then coat the surface with a protective topcoat using **HEGSEL FRP 341 Topcoat**.

To improve the slip resistance of **HEGSEL FRP 341**, the fresh laminate coating can be sanded with silicon carbides.

4. Application Tools

The following tools are essential for the application:

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

5. Mixing Ratio

HEGSEL FRP 341	Parts by Weight (kg)
HEGSEL FRP 341 Solution	100
Cobalt 6%	0.3
MEKP	1.2

Note: Depending on the amount of curing agents added and the actual ambient temperature, the gel time can vary. For further information, please consult HEGSEL!

6. Consumption

Layer	Product	Coverage (g/m²)
Primer	HEGSEL FRP 341 Primer	Approx. 250-300
Laminate Layers	HEGSEL FRP 341 Solution	Approx. 2600
	2 x Fibreglass mats 450 g/m²	Approx. 1000
	1 x Surface veil 30 g/m²	Approx. 33
Top Coat	HEGSEL FRP 341 Solution	Approx. 100
	HEGSEL FRP 341 Topcoat	Approx. 3

Note: All of the values given are approximate and can only be used as a guide for specifications. Laminate systems are designed according to project service conditions. For further information, please consult HEGSEL!

7. 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

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All information contained herein is based on the current state of our knowledge and practical experience at the time of release. Therefore, please make sure that this is the latest edition of the Technical Data Sheet. All data are only intended as a guideline for informational purposes and do not constitute a legally-binding warranty of the suitability for a certain purpose of use, due to its dependence on site conditions and possible processing, use and applications. All information contained in this technical datasheet is subject to change without notice.

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