HEGGEL® VE 641

Epoxy Novolac Vinylester Mortar with Carbon Fillers

You Build, We Protect!

Description:

HEGGEL VE 641 is an epoxy Novolac Vinylester resin mortar formulated with carbon fillers for facilitating easy laying and jointing of acid-resistant ceramic tiles, bricks, or carbon bricks.

Characteristics:

- Excellent chemical resistance to a wide range of media: Acids, alkalis, solvents and oxidising media.
- High adhesion strength to ceramic tiles, bricks or carbon bricks
- Hydrofluoric acid resistance
- Temperature resistance up to 120°C (Dependent on the type of chemical being used)
- Suitable for both indoor and outdoor applications
- Electrically conductive

Applications:

HEGGEL VE 641 is designed as a tile and brick lining of apparatus and process vessels, as well as industrial facilities, chemical warehouses, and production zones demanding extensive and versatile chemical resistance.

Chemical Resistance:

Information on the chemical resistance is available on request.

Pot Life (20°C):

Product	Time
HEGGEL VE 641	Approx. 30 - 60 min

Note: Depending on the actual ambient temperature, the pot life may vary. Higher temperatures could shorten the pot life, while lower temperatures would prolong it. For further information, please consult HEGGEL!

Curing (20°C):

Load Capacity	Time
Accessible / Walkable	At least 16 hrs
Chemical and Mechanical Load	At least 7 days

Packaging:

The products are supplied in the following standard package sizes:

Product	Size	Package
HEGGEL VE 641 Solution	25 kg	Hobbock
HEGGEL VE 641 Powder	20 kg	Bag
HEGGEL FRP 343 Accelerator	2.5 kg	Can
HEGGEL FRP 343 Hardener	1 kg	Bottle

Storage:

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

Product	Temperature	Shelf Life
HEGGEL VE 641 Solution	20°C	6 Months
HEGGEL VE 641 Powder	20°C	24 Months
HEGGEL FRP 343 Accelerator	20°C	24 Months
HEGGEL FRP 343 Hardener	20°C	12 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, whereas lower temperatures would extend the minimum shelf life. The containers are to be kept closed tightly. All liquid products must be stored in frost-proof conditions.

1. Surface Preparation

As a rule, the mortar should be built up on one of the HEGGEL linings or coatings; in the case that such a sealing layer is not applied, then at least a suitable primer with adequate sprinkling must be used. Any unevenness in the substrate must already be levelled out.

1.1. Carbon 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 is required.

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 tile/brick lining. During the application, the substrate must be kept completely dry. No moisture (condensate, mist, etc.) may get onto the surfaces that are to be protected. The construction site has to be protected against direct sunlight and draught.

Environmental Conditions	Value
Relative humidity	≤ 80%
Surface / material / air temperature	≥ +10°C up to +30°C
Optimum processing temperature	+20°C
Dew Point Distance	min 3°C (At a relative humidity of above 70 % at least 5°C)

Elevated or decreased temperatures could affect the working time and consistency of the mixture. As a result, consumption and application performance may vary.

3. Application Tools

- Mortar mixer
- Joint iron
- Joint board
- Scale
- Drilling machine
- Trowel
- Joint injector
- Measuring cup
- Mixing vessel
- Anchor stirrer

4. Mixing Instruction

Warning: Strictly follow the prescribed mixing sequence for Vinylester systems to prevent potential explosion hazards.

HEGGEL VE 641	Parts by Weight
HEGGEL VE 641 Solution	100
HEGGEL FRP 343 Accelerator	2.5
HEGGEL FRP 343 Hardener	2.5
HEGGEL VE 641 Powder	360

Before use or partial withdrawal, vigorously stir the solution using an anchor stirrer at a speed of 300 - 500 rpm, ensuring thorough blending extending to the vessel's wall and bottom. Accurately measure or weigh the liquid components. Start by stirring the **HEGGEL VE 641 Solution** and transferring it into the mixing vessel. Introduce the **HEGGEL FRP 343 Accelerator**, gently stirring with an anchor stirrer (300 - 500 rpm) until achieving a consistent solution. Add the **HEGGEL FRP 343 Hardener** and continue mixing meticulously until uniformity is achieved. Maintain thorough mixing by moving the stirrer along the vessel's wall and bottom. Precisely measure or weigh the **HEGGEL VE 641 Powder** and gradually incorporate them into the solution, ensuring careful blending until a homogeneous lump-free mixture is achieved. Smaller quantities can be manually mixed. To ensure optimal performance, refrain from using the mortar after its designated working time has elapsed.

5. Application

HEGGEL VE 641 is suitable for both the full-joint as well as hollow-joint installation of tiles/bricks. Bedding joint is applied to the substrate in a thickness of 4 - 7 mm. When ceramic tiles/bricks are being installed, field sizes of approx. 3 x 3 m must be considered, particularly where the substrates are flexible. After conclusion of the initial curing phase, the dividing joints between the fields are sealed (normally 24 to 48 hours).

Apply the mortar to two side edges of the tiles/ bricks for full-joint installation, then place the tile/brick in position.

Remove the mortar bead with the trowel and smooth out the joint. For a hollow joint installation, the butt joint shall remain free and be filled later.

The jointing can be done subsequently with a joint injector, joint iron or joint board. To compress the joint, excess material should be pressed with the joint iron into the joint. The remaining material should be removed with the trowel.

When HEGGEL Mortar is being used for hollow-joint installation of tiles, the bedding joint must be cured and dry again. There should be a rectangular cross-section in the open joint (depth: >15 mm, width: 5 - 8 mm). The sides of tiles must be free of mortar and the joints must be clean.

Extra consideration should be given to ensure that the application is free of voids. In order to obtain visually flawless surfaces after jointing, the use of **HEGGEL protective varnish**, hard wax or clinker oil is recommended, depending on the tiles used. Check the use on a test area in advance.

6. Consumption

Required Mortar for full-length installation (Bed joint 5 mm, Joint width 7 mm)

Material	Sizes (mm)	Coverage (kg/m²)
Bricks	240 x 115 x 80	Approx. 26.70
Bricks	240 × 115 × 65	Approx. 23.60
Tiles	240 × 115 × 40	Approx. 19.50
Tiles	240 × 115 × 20	Approx. 15.40
Bed joint	4 - 7 mm	
Joint width	5 - 8 mm	

Note: Values are approximate requirements.

7. Cleaning

Any tools that are contaminated with uncured material can be cleaned using **HEGGEL Cleaner**. Only clean in areas with good ventilation and observe safety measures.

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

Title	DIN Standard	ASTM Standard	Value	Unit
Density	DIN EN ISO 1183-1	ASTM D792	2.1	g/cm³
Compressive Strength	DIN EN ISO 604	ASTM C579	100	MPa
Tensile Strength	DIN EN ISO 527		15	MPa
Modulus of Elasticity	DIN EN ISO 178	ASTM C580	5.5×10^3	MPa
Adhesion Strength to Ceramic Tiles	DIN EN ISO 4624		> 2	MPa
Adhesion to Carbon Tiles	DIN EN ISO 4624		> Inherent tensile strength	MPa
Thermal Coefficient of Linear Expansion	ISO 11359-2	ASTM C531	3.0×10^{-5}	1/K
Thermal Conductivity	ISO DIN 22007		1.8	W/mK
Electrical Leakage Resistance	DIN EN 14879-6 At >70% relative humidity	ASTM F150/98	$\leq 10^6$	Ω

Note: Mean value, determined on annealed samples

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