



You Build, We Protect!

HEGSEL® SP 669

Silicate Based Castable Concrete

Description:

HEGSEL SP 669 is a two-component, inorganic silicate based castable concrete consisting of a potassium silicate solution and a catalyzed mineral filler powder. It replaces the need for Portland cement-bonded concrete in new construction and maintenance operations. The grain size of this product makes it suitable for any application, with grain sizes of 1, 3, and 6 mm available. **HEGSEL SP 669** should not be used at thicknesses less than 20 mm. It has relatively high surface porosity, which enhances performance under thermal cycling conditions. However, care should be taken in environments with variable temperatures and moisture, as freeze-thaw cycles can lead to premature disintegration of the castable body.

Characteristics:

- Excellent acid resistance (not including hydrofluoric acid)
- Excellent resistance to organic materials like solvents and oils
- Refractory temperature resistance up to 900°C (Dependent on the type of chemical being used)
- Highly resistant to strong oxidizing acids like sulphuric acid

Application Areas:

HEGSEL SP 669 is designed as a construction concrete for most applications where strong acidic materials are present, particularly for general tiling and masonry work, construction of floors, as well as for trenches, pits, sumps, storage areas, plinths and walls in areas exposed to corrosive environments. It can be applied in a manner similar to civil concrete using formwork, and finished with a trowel, float, or by mechanical methods.

Chemical Resistance:

Not resistant to hydrofluoric acid, strong bases, or crystallizing salt. Information on the chemical resistance is available on request.

Pot Life:

Temperature	15°C	20°C	30°C
HEGSEL SP 669	60 min	50 min	20 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 HEGSEL!

Curing(20°C):

Load Capacity	Time
Initial Set	~ 12 hrs.
Accessible / Walkable	~ 24 hrs.
Chemical and Mechanical Load	~ 5 - 7 days

Note: It must never be exposed to water, steam, or chemical environments until the primer has fully cured.

Packaging:

The products are supplied in the following standard package sizes:

Product	Size	Package
HEGSEL SP 669 Powder	25 kg	Polyweave bags
HEGSEL SP 669 Solution	34 kg	UN drums

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
HEGSEL SP 669 Solution	25°C	12 Months
HEGSEL SP 669 Powder	25°C	24 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 products must be stored in frost-proof conditions. Do not store solution and powder components together. Accidental leakage could lead to a flash setting of the material.

1. Surface Preparation

The surface to be sealed must be dry, clean, and free from grease, oil, dust, rust, and any other contaminants that could impair adhesion.

Before application, the substrate must be mechanically prepared using appropriate abrasive blasting or scarifying equipment to remove all laitance and surface contaminants. Any unevenness in the substrate must already be levelled out.

Due to the acid catalyst components in **HEGGEL SP 669**, a primer must be applied prior to application to prevent reaction between the substrate (e.g., alkaline concrete) and catalyst (See Application).

2. Environmental Conditions

The specified environmental conditions must be complied with during surface preparation and lining.

Environmental conditions	Value
Relative humidity	≤ 80%
Ambient temperature	Above the air dew point
Dew Point Distance	min. 3°C

3. Application Tools

- Proper mortar mixer
- Trowel
- Pencil vibrators
- Mixing vessel
- Screed board
- Measuring cup
- Inclined mixer or cement mixer

4. Mixing

HEGGEL SP 669	Parts by Weight
HEGGEL SP 669 Solution	1
HEGGEL SP 669 Powder	4-5

Add the powder to the mixing vessel first, then gradually add the solution, mix thoroughly for a minimum of 3 minutes until the powder is fully wetted and transforms into a castable material. Using an inclined mixer or a traditional cement mixer recommended.

Note: Do not mix more material than what is needed based on its pot life, as it cannot be reconstituted. Avoid adding unapproved materials to the mix, especially Portland Cement or excess water.

5. Application

Primer: The substrate should generally be pre-treated with a silicate solution prior to application. This involves coating the surface and allowing it to become tacky, typically after about one hour, depending on temperature to ensure effective adhesion between the substrate and the concrete.

For areas with significant substrate degradation, alternative primers should be applied before the silicate solution. (Please consult us!). In the case of new concrete constructions, the use of damp-tolerant primer, is recommended. It can be applied within 48 hours after the concrete has set, helping to streamline the construction timeline.

After completion of the silicate priming, **HEGGEL SP 669** can then be applied.

For service temperatures exceeding 100°C, only the silicate solution should be used as a primer.

Casting: Formers should be constructed from rigidly braced wood or metal and treated with a light coating of a suitable release agent to prevent adhesion of **HEGGEL SP 669**. The release agent must not leave any residue on the freshly cast surface.

All formers must be fully sealed and watertight using a heavy-consistency, pliable caulking compound, especially when placed over rough horizontal surfaces.

Avoid application over standing water.

In severely corrosive environments, use corrosion-resistant reinforcement instead of standard formers. Do not apply any load until the material has fully set.

Note that lower ambient temperatures will extend curing times and delay the safe removal of formers.

Application: After mixing, the castable can be poured into place, where it should be distributed using tamping methods or pencil vibrators. Use a trowel or screed board to level the **HEGGEL SP 669** flush with the top of the former. If necessary, apply a trowel finish within 15 minutes of

mixing. Similar to conventional concrete, large areas should be covered with damp hessian or cloths during the curing process to prevent excessive evaporation of liquid components. This helps avoid the formation of microcracks on the surface of **HEGGEL SP 669**.

Acid-resistant epoxy expansion joints are recommended for concrete slabs at 4m intervals.

Nominal thickness of > 20 mm are recommended. For thicknesses over 100 mm, coated steel rebar is recommended to enhance structural strength.

Acidification: After the material has set (7 days), if exposed to neutral conditions like rainwater, all joints should be thoroughly acid-washed to fully react the silicate components. Use either a 25% HCl or 35% H₂SO₄ solution in a suitable solvent.

6. Consumption

Typical consumption on a relatively smooth concrete surface for a mixed **HEGGEL SP 669** system:

Thickness	Consumption (kg/m ²)
25 mm	~ 55
50 mm	~ 110
100 mm	~ 220

Note: Values are approximate requirements.

7. Cleaning

Tools stained with uncured materials can be cleaned using excess water and damp cloths.

8. Safety Measures

Adequate ventilation must be provided while work is in progress and is mandatory for enclosed or indoor applications. Releases into sewers or drains are not permitted under any circumstances. Also, 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	Standard	Value	Unit
Density	-	2000	kg/m ³
Compressive Strength	BS1902	25	MPa
Tensile Strength	-	5.40	MPa
Flexural Strength	-	11.96	MPa
Water Absorption	-	10	%
Temperature Resistance	-	Up to 900	°C

HEGGEL SP 669; Revision No: 0.00 / Last Revision Date: 20.02.2025

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.

HEGGEL GmbH

Huttropstr. 60
45138 Essen
Germany

Tel: +49 201 17003 270

Fax: +49 201 17003 277

E-Mail: info@heggel.de

Web: www.heggel.de