

# HEGSEL SP 665

Halogen Free Sodium Silicate Mortar

**Description:** **HEGSEL SP 665** is a grey, halogen free sodium silicate mortar, which by mixing with water, chemically reacts to harden. The hardener and binder are included in the powder.

**Characteristics:**

- Halogen-Free, containing no Fluoride
- Extreme high corrosion protection
- Temperature Resistance to +900°C
- Easy to use

**Applications:** **HEGSEL SP 665** is used mainly as a polarizing mortar for ceramic lining of chimneys in domestic households. Further, it is also used for the laying of tiles, bricks and shapes for floor and vessel linings.

**HEGSEL SP 665** exhibits good properties to water and rinsing actions for several weeks, yet permanent rinsing is not possible. For constant rinsing or abrasion resistance, use a HEGSEL synthetic resin based mortar for jointing.

Except to hydrofluoric acid, **HEGSEL SP 665** is resistant to all acids, solvents, oxidizing agents, oils and fats; but it is not resistance to alkalis.

**Chemical resistance:** Information on the chemical resistance is available on request.

**Substrate:** Components to be brick lined 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. Concrete surfaces needs to be covered with a sealing barrier layer, since all silicate based mortars have a certain porosity due to their nature, which allows the ingress of liquids.

**Pot life (20°C):**

| Product       | Time (min) |
|---------------|------------|
| HEGSEL SP 665 | ca. 90     |

**Curing (20°C):**

| Load Capacity | Time        |
|---------------|-------------|
| Load          | ca. 24 h    |
| Chemical load | ca. 10 Days |

**Packaging:**

The products are supplied in the following standard package sizes:

| Product              | Size  | Article No. |
|----------------------|-------|-------------|
| HEGSEL SP 665 POWDER | 25 kg | 17760330    |

**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 SP 665 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 must be achieved. The primer must be applied immediately after the blasting.

### 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/mm<sup>2</sup>. 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 14879-6.

| 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.

The scratch coat is applied on the substrate by using a wide brush or a lamb's wool roller.

**HEGGEL SP 665** is applied on the substrate or sealing layer by using a mortar trowel. Tiles and bricks must be free of voids, fully bedded and hollow jointed.

### 4. Work tools

The following tools are essential for the application:

- Stirrer (max. 300 r/min.)
- Measuring cup & Mixing vessels
- Flat / wide brush / lamb's wool roller
- Mortar trowel
- Grouting tool
- Miscellaneous (safety glasses, rubber gloves etc.)

### 5. Mixing ratio

Pour water in a mixing vessel and add **HEGGEL SP 665 POWDER** at the specified mixing ratio. The stirring of the merged components should be at least 3 minutes and must result in a homogeneous mixture. When mixing **HEGGEL SP 665**, a characteristic is that mixture is often found to be too dry at first; although after 5 min of mixing, a mix is produced which is good to apply.

| Scratch Coat for 1m <sup>2</sup> | Parts by Weight (kg) | Parts by Volume (kg) |
|----------------------------------|----------------------|----------------------|
| Water                            | 100                  | 2.00                 |
| HEGGEL SP 665 POWDER             | 400                  | 7.55                 |

| HEGGEL SP 665        | Parts by Weight (kg) | Parts by Volume (kg) |
|----------------------|----------------------|----------------------|
| Water                | 100                  | 2.00                 |
| HEGGEL SP 665 POWDER | 700                  | 13.21                |

### 6. Consumption

Bedding and jointing (Bed Joint 5 mm / Cross Joint 5-7 mm)

| Material | Sizes (mm)     | Coverage (kg/m <sup>2</sup> ) |
|----------|----------------|-------------------------------|
| Tiles    | 240 x 115 x 20 | ca. 15                        |
| Tiles    | 240 x 115 x 40 | ca. 18                        |
| Bricks   | 240 x 115 x 65 | ca. 23                        |
| Bricks   | 240 x 115 x 80 | ca. 26                        |

### 7. Post treatment

The brickwork and flooring with **HEGGEL SP 665** will be water-proof after 10 days, even if it is not acidified. If an earlier water-proofing is sought, then it should be acidified.

Acidifying is also necessary when **HEGGEL SP 665** is applied without jointing; where it is to be post jointed with a furanic or phenolic resin based mortar. In this case, after the potassium silicate mortar is set, it is necessary to acidify the voids / joints 2 or 3 times, with a few hours interval between. Acidifying can be done with a mixture (by weight) of: 20% alcoholic sulphuric acid (mixture of 20 parts water + 20 parts 96% sulphuric acid + 60 parts isopropyl alcohol).

20% watery sulphuric acid can also be used, but it has a slower drying time. When mixing, the water has to be added first.

### 8. Commissioning

Brick and tile linings with **HEGGEL SP 665**, can be exposed to chemical stresses of fluids, at the earliest after 5 days; except when the liquid temperature is +150° C, then there should be a time lapse of 8 -10 days after completion. In the case of chimneys, the actual norms and guidelines should be followed. Brick lined vessels or apparatus, should be put into operation initially with diluted mineral acids. If there is a long period of time between the completion of the linings and normal operation; or after the apparatus has been out of service for a longer time, it is mandatory to fill the vessel or apparatus with a weak concentration of acid and water. Open vessels should be covered.

### 9. Cleaning

Clean all equipment with water immediately after use. The cleaning is done while the material is still not hardened.

### 10. 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                 |
|----------------------------------|--------------------------|-------------------|-----------------------|
| Flexural Strength                | EN ISO 178               | N/mm <sup>2</sup> | 10                    |
| Density (Mixture)                | EN ISO 2811 (ASTM D1475) | g/cm <sup>3</sup> | 2.5                   |
| Compressive Strength             | EN ISO 604               | N/mm <sup>2</sup> | 25                    |
| E-Modulus                        | -                        | N/mm <sup>2</sup> | 1.1 x 10 <sup>4</sup> |
| Coefficient of Thermal Expansion | -                        | 1/K               | 12 x 10 <sup>-6</sup> |
| Thermal Conductivity             | -                        | W/(m • K)         | 1.2                   |
| Max. Operating Temperature Dry   | -                        | °C                | + 900                 |

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

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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 actual 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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