

### MONNELI ESPOCEM HES

*High Early Strength Non Shrink Cementitious Grout*

#### Uses

ESPOCEM HES is suitable for use precast concrete applications and for other structural sections of concrete where high early strength is required. Used for:

- Machinery anchoring
- Anchoring bolts of steel structures footings
- Rigid filling of prefabricated elements
- Underpinning
- Heavy duty support beneath machine base plates
- Bridge bearings
- Tie bar hole filling
- Crane rails
- Precast elements
- Bridge bearing application
- Repairing and construction of degraded or damaged structural elements such as concrete beams, columns, walls, honeycombed concrete, floors and pillars.
- Reparation of concrete pavements (roads, airports, industries), and rigid joints filling, up to 25 cm of thickness, in prefabricated residential and industrial building.

#### Product Description

Features a high compressive strength designed to suit in projects that specifically requires an early strength development. ESPOCEM HES consists of special blend of cement, silica sand, selected aggregate and chemical additives that when mixed with water produces a self-leveling, non-shrinking and very fluid mortar, with high initial and final mechanical strength. The mix is flowable which makes it easier to apply in irregular spaces.

#### Advantages

- Suitable for heavy duty support under machines base plates.
- After curing, the product has high mechanical resistance even after a short time of curing.
- Thermal expansion coefficient and permeability coefficient which is similar to high quality concrete.
- Low alkali content minimizes the risk of alkali-silica reaction.
- Exceptional bond to concrete substrates without primer.
- Suitable for placement by pumping or pouring techniques.
- Self compacting, flowable nature eliminates honey combing while applying without vibration (ensures a complete filling of damaged and irregular areas)
- Low permeability and high strength which cause very good protection against chlorides and carbon dioxide

#### Instructions for Use

##### Surface Preparation

The surface must be solid, compact, clean, free from dust, cement laitance, curing compound, oils, grease, etc. All loose parts of concrete should be removed. A coarse surface profile with the aggregate exposed is preferred.

Saturate the support with water several hours prior to grouting. Concrete surface should be only damped (with no free water) prior to grouting in order to avoid possible water absorption at the moment of casting. Base plate must be clean and free from oil, grease, rust, etc.

Formwork should be constructed to be leak proof as ESPOCEM HES is a free flowing grout. It should also include outlets for the pre-soaking water.

### Mixing

To prepare the mortar, pour into a cement mixer or into a container about 3.0-3.5 Liters of clean water (according to required consistency) for every 25kg bag of ESPOCEM HES.

Mix for 5 minutes using mixer or drill machine fitted with suitable paddle till obtaining a homogeneous mixture, free from lumps.

### Application

The mixed grout should be poured only from one side of the formwork to eliminate the entrapment of air. This can be achieved by pouring the grout across the shortest distance. Maintain a constant hydrostatic hand, preferably of at least 15 cm on the side where the grout has been poured, allow 10 cm clearance between the side of the form and the base plate of the machine.

Do not add extra water to the mix more than what specified. If the mix starts to harden, do not use the mix. Prepare a new one.

ESPOCEM HES can be placed in thicknesses up to 25 cm.

### Curing

The repaired area shall be cured in accordance with good concrete curing practice and protected from drying winds. Curing shall be done with non-degradable curing compound BETOCURE AR. Alternately; a wet Hessian cloth covered with polyethylene sheet can also be employed.

### Cleaning

ESPOCEM HES should be removed from tools and equipment and mixers with clean water immediately after use. Cured material should be removed mechanically.

### Recommendations

- Do not apply the product at a temperature less than +5°C. Variation of temperature will increase or reduce the initial and final setting time of the mortar.
- During the peak temperature of the day in the summer season, working area should be covered if work to be executed externally.
- In warm weather, store the material in cool place.
- Make sure to use cool water to keep the mixed mortar temperature below +25°C.

### Technical Data

Properties	Result
Appearance	Grey powder
Dry Density at 25°C	2.38 kg/L
VOC	2.0 g/L
Compressive strength at 24 hours at 7 days at 28 days (ASTM C579)	50 N / mm <sup>2</sup> 75 N / mm <sup>2</sup> 90 N / mm <sup>2</sup>
Flexural strength at 28 days (ASTM C580)	10 N / mm <sup>2</sup>
Expansion at 24 hours (UNI 8147)	Up to 1%
Initial Setting time	1.5 - 2 hours
Final Setting time	3 - 3.5 hours
Noxiousity according to ECM 88/379	No

All values are subject to 5-10 % tolerance

### Applicable Standards

- ASTM C 109, 1107, 827
- BS 1881, BS 4551 & BS 6319
- UNI 8147

### Yield

11.7 liters per 25kg bag

## Packaging

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ESPOCEM HES is supplied in 25kg bags

## Storage

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Keep the product in dry and sheltered place. In these conditions, product shelf life is 12 months from the date of production.

## Health & Safety

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ESPOCEM HES is a cement-based product. During application, wear appropriate protective clothing, goggles, gloves and respiratory equipment if necessary.

In case of contact with skin, rinse with water and again wash thoroughly with soap and water. In case of contact with eyes, rinse with plenty of water and seek medical advice accordingly.

If ingested, obtain medical attention immediately. Do not induce vomiting.

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