Shieldgrout HF

Hydrogen-free, Cement-based Non-shrink Grout

MICSHIELD®

TECHNICAL DATA SHEET

Description

Shieldgrout HF is a single-component, hydrogen-free, cement-based non-shrink grout, that consists of advanced polymers and specially graded aggregates. It is supplied as a ready-to-use blend of dry powders and only requires the addition of clean water on site. **Shieldgrout HF** is designed to provide free-flowing, controlled, and high early and ultimate strength properties, and is ideal for filling gaps at thicknesses 10 – 120 mm.

Uses

- Under base plates, machine plates, and equipment supports.
- Fixing columns to the foundation in steel structures.
- Road and bridge connections.
- Anchoring works.
- Filling of gaps between reinforced concrete and/or precast concrete elements.
- Bridge bearings.
- Installation of large, heavy machinery baseplates.
- Can be used for reinstating damaged structural elements by placing within formwork.

Characteristics / Advantages

- Non-shrink characteristics.
- Easy to use and apply.
- Flowable consistency to ensure a highly effective bearing area.
- High ultimate strength.
- Free from chlorides, nitrates, and sulphates
- Low permeability characteristics.
- Does not cause cracks or shrinkage.
- No bleeding or segregation.
- The total thickness can be extended to 150 – 200 mm by adding washed aggregates.

Typical Properties

Color / Appearance	Grey powder
Maximum Aggregate Size	2.1 mm
Application Thickness	10 – 120 mm
Fresh Wet Density (@ 23°C)	2.10 ± 0.15 g/ml
Water Ratio / 25 kg bag	Fluid: 4.50 Liters Flowable: 4.25 Liters
Setting Time (ASTM C191)	Initial: 2.0 – 3.0 h Final: 3.0 – 4.0 h
Yield / 25 kg bag	13.5 Liters
Time for Expansion	Start: 15 – 20 minutes Finish: 1.5 – 3.0 hours
Flow Characteristics (ASTM C939) Flow Cone	26 – 35 seconds for Fluid
Bleeding (ASTM C940)	Nil

Compressive Strength (ASTM C109)	Fluid	Flowable
@ 3 days	> 25 MPa	> 40 MPa
@ 7 days	> 40 MPa	> 50 MPa
@ 28 days	> 60 MPa	> 65 MPa

Flexural Strength (ASTM C348) @ 28 days	> 8 MPa

Standard Compliance

ASTM C1107/C1107M-20

Packaging

Shieldgrout HF is supplied in 25 kg bags.

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Application Instructions

1. Surface Preparation

Concrete surfaces must be free from dust, loose materials, surface contamination, and any materials that may reduce bond or prevent adhesion of the grout. Prior to application, thoroughly saturate the surface of the concrete with clean water to provide a saturated surface dry condition (SSD).

Poor quality concrete may require soaking for a significant time. Any surface water should be removed using an oil-free compressed air jet. Metal surfaces (iron and steel) should be free from scale, rust, oil, and grease. The application and substrate temperatures must be +5 to +40℃.

2. Mixing

Shieldgrout HF requires 4.25 – 4.50 liters of potable water per 25 kg bag according to the desired consistency.

For flowable consistency, add 4.25 liters of water to each 25 kg bag, and for fluid consistency, add 4.50 liters per 25 kg.

For optimum results, mixing should be performed using a proper grout mixer, or for small amounts, use a forced action high-shear stirrer, powered by a heavy-duty electric mixing drill. Add the pre-measured amount of water to a clean mixing bucket. Add **Shieldgrout HF** powder slowly to water whilst mixing and continue mixing for 3 – 5 minutes until a homogenous, lump-free consistency is achieved. Allow the mixed material to stand for 1 – 2 minutes prior to use.

3. Application

The desired ambient temperature for pouring is approximately 23℃. At this temperature, it is essential that the grout is placed within 20 minutes of mixing as this will ensure the expansion process is maximized. The application thickness is 10 – 100 mm, and the total thickness that can be achieved is up to 150 mm by applying multiple layers.

The following shall be done to ensure the entire grouted area is filled completely:

- Ensure all formwork is leak free.
- Use a suitable head box to ensure continuous flow of grout.
- Place / pour grout from one side, minimizing the likelihood of trapped air.
- The grout head must be always maintained so that a continuous grout front is achieved.
- Do not use mechanical vibrators to assist in flow as this will cause aggregate segregation.
- Discard any material that shows signs of stiffening.

4. Cleaning

All mixing and application equipment should be cleaned immediately with clean water. Hardened material should be mechanically removed.

5. Curing

Treat exposed surfaces with a curing compound or use other approved curing methods such as polyethylene sheeting or wet hessian.

Safety Instructions

Shieldgrout HF contains hydraulic cement and may cause irritation to the skin or eyes. Refer to the most recent Material Safety Data Sheet for information and advice on the safe handling, storage, and disposal of the product.

Shelf Life and Storage

Shieldgrout HF has a shelf life of 12 months when stored in its original unopened packaging in cool and dry conditions, protected from direct sunlight, heat, and moisture. Shelf life may be reduced if the recommended storage conditions are not followed.

Limitations

- Do not apply the product if the ambient temperature is less than 5°C.
- Hot weather practices should be adopted during application and curing if the temperature is above 35°C. In hot conditions, store the material in a cool environment prior to mixing.

Technical Support

Refer to technical information, method statement, or contract technical support team for any inquiry.

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