Shieldgrout GP

General Purpose, Cement-based Non-shrink Grout

MICSHIELD®

TECHNICAL DATA SHEET

Description

Shieldgrout GP is a single-component, 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 GP** is designed to provide a controlled, positive expansion with high-strength properties grout, ideal for filling gaps at thicknesses of 10 – 100 mm.

Uses

- General purpose grouting applications.
- Under base plates, machine plates, and equipment supports.
- Fixing columns to the foundation in steel structures.
- Road and bridge connections, tie-rods, and 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

- Can be applied by pouring or pumping.
- Positive expansion in the plastic state.
- Shrinkage compensated in the hardened state.
- Easy to use and apply.
- Free from chlorides, nitrates, and sulphates
- Resistant to water, frost, and severe weather conditions, in addition to chloride and sulphate attacks.
- Does not cause cracks or shrinkage.
- Protects steel reinforcement against corrosion.
- No bleeding or segregation.

Standard Compliance

ASTM C1107/C1107M-20- Grade C

Packaging

Shieldgrout GP is supplied in 25 kg bags.

Typical Properties

Color / Appearance	Grey powder
Maximum Aggregate Size	1 mm
Application Thickness	10 – 100 mm
Fresh Wet Density (@ 23°C)	2.25 ± 0.05 g/ml
Water Ratio / 25 kg bag	Fluid: 4.00 Liters Flowable: 3.62 Liters Dry Pack: 3.25 Liters
Setting Time (ASTM C191)	
Fluid	Initial: 3.0 h Final: 4.5 h
Flowable	Initial: 2.5 h Final: 3.0 h
Dry Pack	Initial: 2.0 h Final: 2.5 h
Yield / 25 kg bag	
Fluid	12.9 Liters
Flowable	12.7 Liters
Dry Pack	12.5 Liters
Time for Expansion	Start: 15 – 20 minutes Finish: 1.5 – 2.0 hours
Flow (ASTM C939)	26 – 45 seconds (Flow Cone)
Flow (Brass Cone)	
Fluid	27 – 35 mm
Flowable	15 – 22 mm
Bleeding (ASTM C940)	Nil

Compressive Strength (ASTM C109)	Fluid	Flowable	Dry Pack
@ 1 day (**Req**. 7 MPa)	20 MPa	25 MPa	30 MPa
@ 3 days (**Req**. 17 MPa)	30 MPa	40 MPa	45 MPa
@ 7 days (**Req**. 24 MPa)	40 MPa	50 MPa	55 MPa
@ 28 days (**Req**. 34 MPa)	60 MPa	65 MPa	70 MPa

Flexural Strength (ASTM C348)	> 9 MPa @ 7 days > 11 MPa @ 28 days
Change in Height at Early Age (ASTM C827) (**Req**. < + 4.0%)	0.86% @ 24 hours
Length Change (ASTM C157) (**Req**. < +0.3%)	1 day: 0.05% 3 days: 0.21% 28 days: 0.29%

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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. Use grit blasting to achieve SA 2½ surface profile. The application and substrate temperatures must be +5 to +35℃.

2. Mixing

Shieldgrout GP requires 3.25 – 4.00 liters of potable water per 25 kg bag according to the desired consistency. Add 4.0 liters for fluid consistency, 3.62 Liters for flowable consistency, and 3.25 Liters for dry pack consistency.

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 GP** powder slowly to water whilst mixing and continue mixing for 2 – 3 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 GP 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 GP 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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