# Shieldgrout Turbine

**Cement-based, Non-shrink Grout For Onshore Wind Turbine Installations**

MICSHIELD®

TECHNICAL DATA SHEET

## Description

**Shieldgrout Turbine** is a single-component, cement-based, non-shrink (precision) grout, that consists of advanced polymers and specially graded aggregates. **Shieldgrout Turbine** is supplied as a ready-to-use blend of dry powders and only requires the addition of clean water on site and is designed to provide a controlled, positive expansion with high-strength properties.

## Uses

- Onshore wind turbine installations.
- Grouting machinery and equipment base plates / /generators rolling mills / compressors.
- Soleplates / bridge seats / precast columns.
- Beams / steel column pads / precast beams.
- Grouting where high strength and excellent fatigue resistance characteristics are required.

## Characteristics / Advantages

- Ready to use, only requires the addition of water.
- Excellent fatigue resistance.
- Non-shrink characteristics.
- Free from chlorides, nitrates, and sulfates.
- High ultimate strength and low permeability.
- Hydrogen-free gaseous expansion
- No bleeding or segregation.

## Packaging

**Shieldgrout Turbine** is supplied in 25-kg and 1000-kg jumbo bags.

## Shelf Life and Storage

**Shieldgrout Turbine** 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.

## Typical Properties

| | |
|---|---|
| **Color / Appearance** | Grey powder |
| **Maximum Aggregate Size** | 4 mm |
| **Application Thickness** | 10 – 150 mm |
| **Fresh Wet Density** (@ 23°C) | 2.30 ± 0.1 g/ml |
| **Water Ratio / 25 kg bag** | 3.00 – 3.375 Liters |
| **Setting Time (ASTM C191)** | Initial: 5.5 h  Final: 7.0 h |
| **Yield / 25 kg bag** | ~ 12 Liters |
| **Time for Expansion** | Start:  15 – 20 minutes<br>Finish: 1.5 – 2.0 hours |
| **Compressive Strength (ASTM C109)** | |
| @ 3 days | > 65 MPa |
| @ 7 days | > 80 MPa |
| @ 28 days | > 100 MPa |
| **Flexural Strength (ASTM C348)** | |
| @ 7 days | > 9 MPa |
| @ 28 days | > 14 MPa |

## Safety Instructions

**Shieldgrout Turbine** 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.

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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 +40˚C.

### 2. Mixing

**Shieldgrout Turbine** requires 3.00 – 3.375 liters of potable water per 25 kg bag.

For optimum results, mixing should be performed using a proper grout mixer, or for small amounts, a forced action high-shear stirrer, powered by a heavy-duty electric mixing drill can be used.

Add the pre-measured amount of water to a clean mixing bucket. Add **Shieldgrout Turbine** 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 ˚C. 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 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 aggregates 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.

## 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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