

# SmartNS Grout HF

## High Fluidity Non-Shrink Grout

**SmartNS Grout HF** is a high flow cementitious grout suited for a wide range of grouting needs. It is non-shrink and chloride free. It consists of selected sand, cement and chemical additives. **SmartNS Grout HF** is a cost effective grout with high fluidity. It is extremely flowable for use with gaps width of 10 to 100 mm. When cured, it is similar in appearance to concrete.



### FIELDS OF APPLICATION

**SmartNS Grout HF** is used for free-flow, positive expansion grouting in a wide range of applications such as:

- Base plates
- Hand rails
- Anchor bolts
- Bridge bearing plates
- Machine bases of all type
- Pressure grouting
- Structural members such as precast wall panel, beam and column/ retaining walls
- Concrete repairs
- Pre-fabricated bathroom unit (PBU) grouting

### BENEFITS

- High fluidity
- Positive expansion
- No segregation
- Chloride free
- Pre-packed convenience and factory assured quality

### TECHNICAL DATA (under laboratory conditions)

- "Fluid" mixture has a flow of 10 to 30s (when tested in accordance with ASTM C939).
- "Flowable" mixture has a flow of 125% to 145% (when tested in accordance with ASTM C827 at 5 drops).
- "Plastic" mixture has a flow of 100% to 125% (when tested in accordance with ASTM C827 at 5 drops).
- "Stiff Plastic" mixture has a flow less than 100% (when tested in accordance with ASTM C827 at 5 drops).

PROPERTY	TYPICAL RESULTS
<b>Compressive Strength (ASTM C942) @ 28days</b>	≥ 70 N/mm <sup>2</sup>
<b>Consistency : Fluid Flow (ASTM C939)</b>	10 - 30 seconds
<b>Expansion / Shrinkage (ASTM C940)</b>	Expansion ≤ 0.4% @ 28 days 0% Shrinkage @ 28 days
<b>Setting Time (ASTM C953)</b>	Initial Set ≥ 1 hour
	Final Set ≤ 10 hours
<b>Wet Density</b>	2000 - 2200 kg/m <sup>3</sup>
<b>Yield</b>	0.013 m <sup>3</sup>

\* All the data shown are based on controlled laboratory test (T=27±2°C and RH=60%)

\* In actual site application, slight water/ powder ratio adjustment can be made to achieve consistency desired.

### SURFACE PREPARATION

#### Foundation Surface

- Surfaces to be grouted should be clean, free from rust, laitance, grease and oil.
- Defective concrete surfaces must be cut back to a sound base.
- Bolt holes or fixing pockets must be blown clean of any dirt or debris.

#### Pre-soaking

- Several hours prior to grouting, the cleaned substrate should be flooded with fresh water.
- Immediately before grouting takes place, any free water should be removed. Particular care should be taken to blow out water in all bolt holes and pockets.

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### Chipping Method

- For grouting exceeding 100 mm thickness, the addition of 10 mm pea gravel is recommended to reduce temperature of grout.
- Mix 12.5 kg gravel to 25 kg of **SmartNS Grout HF** until a smooth even mix is achieved.

### Base Plate

- Base plate must be cleaned and free from oil, grease or scales. Air pressure relief holes should be provided to allow venting of any isolated high spots.

### Formwork

- A head box (a form sloped at 45° angle) should be built on the placement side of the installation. Allow a minimum clearance of 50 mm for entry and 150 mm minimum grout head.
- On the other side, allow 25 mm horizontal clearance and 25 mm vertical above the bottom of the base.
- The formwork should include outlets for the pre-soaking water to be removed.
- Forms should be strong and leakproof, properly braced and oiled to retain the grout and provide relief holes if needed.

### MIXING

- **SmartNS Grout HF** should be mixed in a mechanically powered mixer. For quantities up to 50 kg, a slow speed drill fitted with a high shear paddle is suitable. Large quantities above 50 kg will require a high shear vane mixer. Do not use colloidal impeller mixer.
- Add in slowly 25 kg of **SmartNS Grout HF** into recommended amount of clean water in a mixing pail. Mix for 3 - 5 minutes until a smooth, even mix is achieved.
- Place grout within 30 - 45 minutes after mixing to gain full benefit of the expansion process. Do not mix extra grout or add extra water at this stage.

### PLACING

- Place **SmartNS Grout HF** quickly and continuously. Normally the grout should be placed within 30 - 45 minutes of mixing to gain the full benefit of the expansion process. Placing should be from one side of the void to prevent air or pre-soaking water being trapped.
- A grout head must be maintained at all times so that a continuous grout front is achieved. It is advisable to use a hopper for this purpose.
- The flow distance is based on gap width and fluid head.
- For grouting thickness greater than 100 mm in a single cast, addition of chipping gravel is recommended.

### CURING & TREATMENT

- All exposed areas should be thoroughly cured after the placement of the grout is completed.
- This should be done by continuous application of water and/or wet hessian until the grout shoulders are ready to be finished.
- After finishing has been completed, all exposed grout should be coated with a quality-curing compound or by continuous application of water and/or wet hessian.

### COVERAGE / YIELD

CONSISTENCY	MIXING WATER	YIELD
Fluid	4.3 - 4.5 litres	13.5 litres
Flowable	3.75 - 4.2 litres	13.0 litres
Plastic	3.0 - 3.5 litres	12.5 litres
Stiff Plastic	2.5 - 2.9 litres	12.0 litres

### PRECAUTIONS

- Avoid eye and skin contact as the product is alkaline.
- Gloves, goggles and dust mask should be worn.
- Avoid inhalation of dust during mixing.
- Wash thoroughly after handling.
- In case of eye contact, flush with plenty of water. Seek medical help immediately.

### PACKAGING & STORAGE

**SmartNS Grout HF** is supplied in 25 kg bags and has a shelf life of 12 months if stored in a cool and dry place in sealed packing with sheltered protection from rain and sunlight.

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