



# 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

PROPERTY	TYPICAL RESULTS	
Compressive Strength (ASTM C942) @ 28days	≥ 70 N/mm <sup>2</sup>	
Consistency : Fluid Flow (ASTM C939)	10 - 30 seconds	
Expansion / Shrinkage (ASTM C940)	Expansion ≤ 0.4% @ 28 days 0% Shrinkage @ 28 days	
Setting Time (ASTM C953)	Initial Set	≥ 1 hour
	Final Set	≤ 10 hours
Slant Shear Bond Strength (BS EN 12615:1999)	≥ 20 N/mm <sup>2</sup>	
Flexural Strength (BS 6319-3:1990)	≥ 9 N/mm <sup>2</sup>	
Filler	Graded Sand	
Density	Wet	2000 - 2200 kg/m <sup>3</sup>
Yield	0.013 m <sup>3</sup>	
Pot Life	30 to 45 min, depends on ambient temperature	

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

### 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.

#### 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.
- For more info, refer to our Grouting and Anchoring Application Guidelines.

#### **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 25 kg of **SmartNS Grout HF** slowly into the recommended amount of clean water in the 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.
- For more info, refer to our Grouting and Anchoring Application Guidelines.

#### **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.
- For more info, refer to our Grouting and Anchoring Application Guidelines.

#### **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.
- For more info, refer to our Grouting and Anchoring Application Guidelines.

#### **COVERAGE / YIELD**

- “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).

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 clean 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.

#### **DISCLAIMER**

All information was prepared carefully, using current references available to us. Information provided is to the best of our knowledge and belief, accurate and reliable as of the date indicated. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself/herself as to the suitability and completeness of information provided here for their intended use. We do not accept liability for any loss or damage that may occur from the use of this information.