

# SmartNS Grout GP

## High Fluidity Non-Shrink Grout

**SmartNS Grout GP** is formulated for use in critical applications requiring controlled and precise expansion of the grout. It contains only graded sand, cement and an expansion agent with high flowability and non-staining characteristics. **SmartNS Grout GP** is the ideal product for all type of grouting needs. It is extremely flowable for gap widths of 10 to 100mm. When cured, it is similar in appearance to concrete.



### FIELDS OF APPLICATION

**SmartNS Grout GP** is used for free-flow, precision grouting in a wide range of applications.

- Structural members such as precast wall panels, beams and columns, post-tensioned girder
- Hand rails
- Anchor bolts
- Base plates
- Machine bases of all type
- Pressure grouting
- Concrete repairs
- Concrete bedding
- Pre-fabricated bathroom unit (PBU) grouting
- Partitions
- Bridge bearing plates

### BENEFITS

- Cost effective
- Positive expansion
- Excellent initial flow and flow retention
- Non-staining natural aggregate
- Chloride free
- No segregation
- Prepackaged materials overcomes potential on-site batching variations
- High early and ultimate strength

### TECHNICAL DATA (under laboratory conditions)

Different consistencies can be obtained by adding different amounts of water to **SmartNS Grout GP**:

- "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 five drops).
- "Plastic" mixture has a flow of 100% to 125% (when tested in accordance with ASTM C827 at five drops).
- "Stiff Plastic" mixture has a flow less than 100% (when tested in accordance with ASTM C827 at five drops).

PROPERTY	TYPICAL RESULTS	
Compressive Strength @ 28 days (ASTM C942)	≥ 40 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	Final set
	≥ 1 hour	≤ 10 hours
Wet Density	2000 - 2200 kg/m <sup>3</sup>	
Yield	0.013 m <sup>3</sup>	

- 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.

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#### Base plate

- Base plate must be cleaned from oil, grease or scale. 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 50mm for entry and 150mm minimum grout head.
- On the other side, allow 25mm horizontal clearance and 25mm vertical above the bottom of the base.
- The formwork should include outlets for the presoaking 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 GP** 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.
- Place the recommend amount of water in the mixer.
- Slowly add all the **SmartNS Grout GP** from the bag into the mixer and mix for 3 - 5 minutes until a smooth, even mix is achieved.
- Do not mix large amounts of grout if it cannot be placed quickly.
- Place grout within 30 - 45 minutes after mixing to gain full benefit from the expansion process.
- Do not mix extra grout or add extra water at this stage.

### PLACING

#### For Fluid consistency

- Place **SmartNS Grout GP** quickly and continuously. 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. Longer flow distances can be obtained with a larger gap width and a larger grout head.

#### For Stiff Plastic Consistency

- Hand placing or "dry packing" must be done with sufficient water to produce a stiff plastic consistency and to ensure hydration and strength development of the grout.
- For grouting thickness greater than 100mm in a single cast an addition of 10mm chipping 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

1 bag of **SmartNS Grout GP** (25 kg) will produce different yields when mixed with different amounts of water as tabled below :

CONSISTENCY	WATER / POWDER RATIO PER 25KG BAG
Fluid	4.4 - 5.0 litres
Flowable	4.0 - 4.4 litres
Plastic	3.5 - 4.0 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 GP** 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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