



# 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 100 mm. 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 such as:

- 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

PROPERTY	TYPICAL RESULTS	
Compressive Strength (ASTM C942)	Consistency	
	Plastic	Flowable
@ 7 days	≥ 50 N/mm <sup>2</sup>	≥ 40 N/mm <sup>2</sup>
@ 28 days	≥ 70 N/mm <sup>2</sup>	≥ 50 N/mm <sup>2</sup>
Slant Shear Strength (BS EB 12615) @ 28 days	≥ 20 N/mm <sup>2</sup>	–
Consistency Fluid Flow (ASTM C939)	10 - 30 seconds	
Expansion	≤ 0.4% @ 3 & 28 days	
Shrinkage (ASTM C940)	0% @ 28 days	
Setting Time (ASTM C953)	Initial Set	≥ 1 hour
	Final Set	≤ 10 hours
Wet Density	2000 - 2200 kg/m <sup>2</sup>	
Yield	approx. 0.013 m <sup>3</sup>	
Pot Life	30 to 45 min depend on ambient temperture	

• All the data shown are based on controlled laboratory test (T=2732°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 recommend to reduce temperature of grout.

- Mix 12.5 kg gravel to 25 kg of **SmartNS Grout GP** until a smooth even mix is achieved.

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

#### 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.
- Add in 25 kg of **SmartNS Grout GP** slowly into the recommended amount of clean water in the mixing pail. 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 100 mm in a single cast an addition of 10 mm 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.
- For more info, refer to our Grouting and Anchoring Application Guidelines.

#### COVERAGE / YIELD

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).

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 25 kg 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 clean 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.

#### 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.