

## VARAGROUT GP

### NON SHRINK GENERAL PURPOSE GROUT

#### DESCRIPTION

**VARAGROUT GP** is a pre-packed cementitious grout requiring only the addition of clean water to produce at the job site nonshrink multi-application grout.

It is a special and unique blend of cements, microsilica, graded sands, water reducing agents and special auxiliary chemical to deliver expansion in the plastic state to compensate for shrinkage.

**VARAGROUT GP** can be mixed in a range of consistencies in varying the amount of water used to produce a fluid to trowellable consistency grouts.

#### USES

**VARAGROUT GP** is formulated for a wide range of applications such as grouting of machinery base plates - anchor bolts - structural grouting of precast elements - grouting of crane rails also bridge seats - beams and columns - handrails. It is suitable for use in marine environments.

#### ADVANTAGES

- ◆ **Non shrink** : Delivers positive expansion in plastic stage.
- ◆ **Non segregation**: Highly stable segregation free grout.
- ◆ **Workability**: Can be pumped, trowelled or poured.
- ◆ **High early strength**: Ensure rapid installation.
- ◆ **Iron free**: No metallic iron is included in the mix as it is capable to introduce future deterioration due to rust expansion.
- ◆ **Other features**: Can be blended with clean local aggregate from 6mm to 10mm. Consult **AKARSH** Sales Dept. for mixing proportions.
- ◆ **Chloride free**: Good early strength development without the use of chlorides.

#### TYPICAL PROPERTIES

**Wet Density** : 2250 kg/M<sup>3</sup> producing 12.5 litres of grout per 25 kg bag at a flowable consistency.

**Flowable at 25° C**: For a grout head of 250 mm with a gap of 30mm, it delivers a flow distance of 3 meters.

**Setting time**: According to **ASTM C191** at 25° C.

Initial set : 3 hours - 30 minutes  
Final set : 5 hours - 00 minute

**Compressive strengths**: At 25° C the Compressive strength of 100 mm cubes cured under restraint in N/mm<sup>2</sup>

Age	Trowellable	Flowable	Fluid
1 Day	29	22	15
7 Days	56	50	40
28 Days	81	61	55

**Young's Modulus**: 30 KN/mm<sup>2</sup>

**Coefficient of Thermal Expansion**:  $13 \times 10^{-6} / ^\circ \text{C}$ .

**Typical time for Expansion@ 20° C**:

Start : 20 minutes  
Finish : 3 hours

**Free expansion**: 1 - 4%.

**Pressure to restrain expansion**:

Approx .004 N/mm<sup>2</sup>.

**Note**: An unrestrained area should be kept to a minimum, otherwise grouting may be obscured.

**Pullout strength**: **VARAGROUT GP** was placed in a 25mm diameter hole to bond a 20 mm high tensile deformed bar for a length of 250 mm. The pull out force @ 20° C was 11.5 N/mm<sup>2</sup> at 7 days.

**Direct Shear Strength**: 50mmx70mm cross section prism of **VARAGROUT GP** were tested in direct shear across the section. The direct shear strength was found to be 5 N/mm<sup>2</sup> at 7 days @ 20° C.

## APPLICATIONS

**Planning :** Plan surface preparation, formwork, fixing base plate, mixing and placing equipment, manpower and quantity of grout required.

**Surface Preparation:** Remove oil and grease by blasting or scabbling. Clear entire area with oil free compressed air.

**Formwork:** Arrange pouring grout from one side only. Grout head should be sufficient for gap width and plate size. Side forms should be to height of plate and up to 50mm from it. End form should be 50mm from plate. Provide water outlet. Ensure forms are grout and water tight. Soak with water for at least 4 hours immediately before grouting. Release water and blow excess water away.

**Mixing:** Place water in mixer according to consistency required:

2.5 litres water for trowellable consistency

3.3 litres water to give flowable consistency

4.0 litres water to give fluid consistency.

Add gradually 25 kg bag of grout into the water stirring with slow speed drill (not exceeding 500 rpm) fitted with a paddle or use a mechanical mixer. Do not use colloidal mixer. Mix for 3 to 5 minutes after all the powder has been added to obtain a lump free grout.

**Placing:** Pour grout from one side only maintaining hydrostatic head with continuous supply of grout until grout comes part way up at end form. Alternatively grout can be pumped into position.

**Curing:** When grout is set, protect with wet rags and keep moist until form removal.

## PACKAGING

**VARAGROUT GP** is available in 25 kg bags.

## PRECAUTIONS

**Mixing water :** Water temperature must not exceed 35° C.

**Cleaning:** All equipment must be cleaned with water immediately after use.

**Mixes:** Mixes containing **VARAGROUT GP** must not be emptied into the drainage system.

**Protection:** All work must be protected from rain, frost and exposure to strong sunlight until fully cured.

**Storage:** Shelf life 12 months when stored in dry conditions at moderate temperature and humidity.

**Fire resistance:** **VARAGROUT GP** is not flammable.

## PERFORMANCES STANDARDS

The applicable standards for performance and testing are:

**ASTM C - 1107** Grade 'A'

**ASTM C -191**

**BS - 1881**

**BS - 4551**

## HEALTH & SAFETY

**VARAGROUT GP** is non-toxic but is mildly alkaline. Gloves should be worn during application. Splashes to the skin or eyes should be removed with clean water. In the event of prolonged irritation, seek medical advice.