

# KEM GROUT NS 1

## High Strength Free Flow Non Shrink Grout

Ref. GA/CG-V2-0213

### Description

KEM Grout NS 1 is a premixed powder, containing well graded aggregates cement and specialty chemical additives to enable achievement of high early strengths. When mixed with the right quantity of water, the product turns into a free-flowing grout and unlike conventional grouts, does not shrink on setting.

### Uses

- Machinery foundation and base plates
- Compressors and turbines
- Heavy duty grouting of pumps and motors
- Chemical and engineering plants
- Structural columns and bearing plates
- Anchor and seating bolts and pockets.

### Advantages

- **Easy to use:** Just add water on site. The product is pre-packed in controlled conditions for consistency in quality.
- **Free flowing:** Fills up all voids completely. There is no need for compaction of material in the voids.
- **Non-shrinking:** Occupies the filled space permanently without shrinking. It provides constant support to the load bearing areas.
- **High early and final strength:** Achieves high early and ultimate strength above 45 MPa at 28 days.
- **Non-metallic and chloride-free:** Does not contain chlorides and metals thus prevents any corrosion in the grouted foundation.

### Typical Properties

**Appearance:** Cementitious grey powder

**Chlorides:** Nil

**Flexural Strength at 28 days:** ≥ 6 MPa

**W/P Ratio:** 0.19 for flowable consistency

**Setting Time:** According to ASTM C191 at 25°C

**Initial Set:** 3 hours - 30 minutes

**Final Set:** 5 hours - 00 minute

**Typical Time for Expansion@ 25 °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.

**Compressive Strengths at 25° C of 50mm cubes as per ASTM C-109, cured under restraint in N/mm<sup>2</sup>:**

| Age (Days) | Trowellable | Flowable | Fluid |
|------------|-------------|----------|-------|
| 1          | 29          | 22       | 15    |
| 7          | 56          | 50       | 40    |
| 28         | 81          | 61       | 55    |

**Pullout Strength:** KEM GROUT NS 1 was placed in a 25mm diameter hole to bond a 20mm high tensile deformed bar for a length of 250mm.

The pull out force@ 20°C was 11.5 N/mm<sup>2</sup> at 7 days.

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

**Direct Shear Strength:** 50mm x 70mm cross section prism of KEM Grout NS 1 was 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. The above data is typical and could change marginally under site conditions. Site trials are recommended to ascertain exact results.

### Standards

ASTM C – 1107, ASTM C -191



## Direction for use

Determine the size of the grouting area or anchor bolt pocket.

Clean up the entire area to be grouted thoroughly. Remove all loose dirt, oil, grease, water, etc.

Since KEM GROUT NS 1 is a ready to use dry powder, add only water to make it a free-flowing, non-shrink grout. Typically, 170 ml of water should be added per kg of KEM GROUT NS 1, i.e. a water powder ratio of 0.17 should be maintained.

If the grout depth is more than 5 cm, addition of 30% aggregate by weight of KEM GROUT NS 1 is recommended. The aggregates should be pre-washed, dry and 4 - 8 mm in size. For example, if 20 kg of KEM GROUT NS 1 is initially taken; add 8 kg of pre-washed, dry coarse aggregates of size 4 - 8 mm. In this case, slight adjustment in water may be necessary. Water powder ratio shall not change more than 0.01, i.e. if original w/p was 0.17 then with additional 30% aggregates, it shall be maximum 0.18. Start placing the grout from one end, generally from longer side of the pocket. Which ensures that the poured grout, has the least travel distance. Do not pour from two sides. The material should be quickly poured or placed in order to avoid loss of workability. All grouting operations must be carried out without breaks, so that continuous flow of grout is ensured. Stoppages, may result in voids or air pockets in placed grout. Strike off the exposed areas as you keep placing the material. Ensure that the air displaced by fluid grout is allowed to escape. Cure the exposed area of KEM GROUT NS 1 by placing wet hessian cloth or use KEM Cure AID 10 W for controlled curing. Do not use vibrators for compaction of the material.

| KEM GROUT NS 1 in kgs | Water in ltrs | Consistency | Yield in ltrs |
|-----------------------|---------------|-------------|---------------|
| 25                    | 4.25          | Pourable    | 13.2          |
| 25                    | 4.75          | Flowable    | 13.7          |

## Packaging

25 kg moisture-resistant bags.

## Storage and Shelf life

In a cool and dry place away from moisture and direct sunlight. Close opened bags immediately after use.

**Shelf life** 12 months from manufacture if kept in original, unopened bags and stored in dry conditions.

## Technical Service

Chembond has established itself in various fields on the basis of its dependable technical service. For this purpose, we maintain a well equipped laboratory for research & quality assurance of all products. Our experienced personnel are always on call and would always be available for product demonstrations and product performance monitoring.

## Safety Precautions

KEM GROUT NS 1 is cementitious alkaline product. Care should be taken to avoid contact with eyes, skin, and mouth and food stuff. Any splashes on the human body must be washed with plenty of water.

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