

GENERAL PURPOSE, CEMENTITIOUS, SHRINKAGE COMPENSATED, FLOWABLE CONSTRUCTION GROUT

Description

NIROGROUT GP65 is Portland Cement based, shrinkage-compensated, construction grout that conforms to Corps of Engineers CRD-C-621 and ASTM C 1107. Its non-metallic formula does not rust, bleed, or harm metals on contact. Its cost effectiveness makes it ideal for large jobs. The grout undergoes controlled expansion in the plastic stage to compensate for plastic shrinkage.

Uses

- To grout bearings, machine foundations, columns Joints in precast construction etc.
- To grout anchors in concrete
- To grout cavities, gaps and voids in concrete

Advantages

- Optimum contact with load bearing areas
- Pre-packed and pre-formulated
- Consistent performance
- Chloride free
- One component – Mixes easily with water
- Dimensionally stable
- Non - efflorescing – may be painted or coated
- Can be extended with clean water – graded coarse aggregates for large volume filling
- Lowest cost

Characteristics

Appearance	Free flow grey powder
W /P Ratio, by weight	0.16 – 0.17 (flowable)
Mix Density (Flowable)	2200 - 2250 Kg/m ³
Compressive strength (IS4031, Part 6)	
1 Day	20 MPa
3 Days	42 MPa
7 Days	55 MPa
28 Days	65MPa
Flexural Strength (ASTM C78)	
28 Days	10 MPa

Compressive strength with addition of aggregates

Age (days)	Compressive strength (N/mm ²) (W/P 0.17)		
	Aggregate by weight		
	50%	75%	100%
1	25	30	32
3	45	50	52
7	58	62	65
28	70	75	78

Note : Cubes cast were kept under resistant before testing to simulate site condition. Size of the cubes used 70.6mm x 70.6mm x 70.6mm tested at 30°C.

Young's modulus : 24 kN/mm²

Coefficient of thermal expansion : 11x10⁻⁶ per °C

Thermal conductivity : 1.04 W/m°C

Expansion characteristics:

Controlled expansion occurs in the unset material to ensure that the grout, when cured, will continue to occupy its original volume within the confines of the voids in which it has placed.

Unrestrained expansion : 1 to 4%

Time of expansion : Starts: 20 minutes

Finish: 150 minutes

Pressure to restrain plastic expansion : Approx. 0.004 N/mm²

Note: It is necessary to restrain free flow grout edges over 50mm wide. Otherwise unrestrained expansion may lead to some cracks.

Standards compliance

ASTM C1107, CRD C 621

Surface Preparation

All areas to be grouted must be clean and free of oil, grease, dirt and contaminants. Remove all loose materials. Concrete must be fully cured a minimum of 28 days. Where required, provide air-relief openings to avoid entrapment of air.

All metal components to be in contact with NIROGROUT GP65 must be free of rust, paint, or oils.

All concrete to come in contact with the grout must be thoroughly saturated with clean water for a minimum of 12 hours before placement of grout. Remove excess water from holes and voids just before grout placement.

Pre-soaking

Several hours prior to placing, the concrete substrates should be saturated with clean water. Immediately before grouting takes place any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

Base plate

It is essential that this is clean and free from oil, grease or scale. Air pressure relief holes should be provided to allow venting of any isolated high spots

Levelling shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Formwork

The formwork should be constructed to be leakproof. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints. In some cases, it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should include outlets for pre-soaking

Unrestrained surface area

This must be kept to a minimum. Generally, the gap width between the perimeter formwork and the plate edge should not exceed 150mm on the pouring side and 50mm on the opposite side. It is advisable, where practical, to have no gap at the flank sides.

Mixing

Precondition NIROGROUT GP65 to $23 \pm 3^{\circ}\text{C}$ before mixing. NIROGROUT GP65 is ready to use and requires only the addition of water. Use the minimum water required to achieve the desired placement consistency, approximately the following amounts

Pourable :4.65-4.95 litre /30 Kg bag of grout

Flowable :4.80-5.10 litre /30 Kg bag of grout

The water requirement may vary with mixing efficiency, temperature, and other variables. It is advisable to carry out a trial mix to access any adjustment necessary in the water demand before commencing large scale application.

Mechanical mixing is a must. For a large batch, use a concrete mixer and for a small batch (up to two bags at a time), use a heavy-duty, slow speed (approx. 600 rpm) drill fitted with a spiral paddle.

Place approximately 80% of the water in the mixer. Keeping the mixer running, add NIROGROUT GP65 slowly. Mix for at least 3 minutes until a lump-free mixture is obtained. Add the remaining water while continuing to mix for at least 5 minutes until the desired consistency is achieved.

Use 7-9 mm screen, to remove any unmixed lumps.

Placing

Placing should be without interruptions until completion. Place the mixed grout into the pouring hopper of the formwork within 15 minutes after mixing. Place from one side only.

NIROGROUT GP65 should be laid at a minimum thickness of 25mm and to a maximum depth of 100mm.

For grouting beyond 100 mm in depth, extend 1 bag of NIROGROUT GP65 with up to 30 kg of 5-12 mm sized, washed, saturated surface-dry (SSD), graded, low absorption, high density aggregates.

Please consult our local NIRMAL CHEMICALS representative for advice.

Unrestrained Surfaces It is advisable to design the grout casting, maintaining minimum exposed, unrestrained areas. In case it is not avoidable and are wider than 50mm, dress them with 10mm size aggregates to minimize any surface cracking, once grout attains initial set.

Curing

Cure the exposed grout shoulders as soon as the grout reaches touch hard state, for 2-3 days by water ponding and then with a uniform coat of curing compound

Cleaning

Clean tools and equipment with water before the grout hardens.

Consumption

Each bag of 30 kg of NIROGROUT GP65 when mix with 5.10L

of water (Flowable) yields will be 16.13 L i.e. approximately 62 x 30 kg bags / m³

When extended with 15 kg of aggregate (SG: 2.6) per bag of NIROGROUT GP65, the yield will be 21.96L, and with 30 kg of aggregate, the yield will be 27.36L

Packaging

NIROGROUT GP65 is supplied in 30 kg moisture resistant bags.

Storage and Shelf life

Store properly in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5 °C and +30 °C. Keep away from direct sunlight. Protect from moisture, water and rain.

Shelf life is 6 months when stored as above.

If stored in conditions of high humidity and/or temperature, the shelf life will be reduced. For specific storage advice please consult NIRMAL CHEMICALS representative.

Safety precautions

NIROCON MICRO HP should not be swallowed or allowed to come into contact with skin and eyes. Avoid inhalation of vapours and ensure adequate ventilation.

Suitable protective gloves and goggles should be worn. Some people are sensitive to resins and solvents. Resin Barrier creams provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream followed by washing with soap and water - do not use solvent. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately - do not induce vomiting

Fire

NIROGROUT GP65 is not flammable.

Cleaning of Tools

Clean all tools and equipment with water immediately after use. Hardened material can be removed using mechanical means.

Note

All Technical Data Sheets are updated on regular basis; it is the user's responsibility, to obtain the most recent issue. Field services where provided, does not constitute supervisory responsibility, for additional information contact our local NIRMAL CHEMICALS representative.

Disclaimer

Whilst any information contained herein is true, accurate and represents our best knowledge and experience, no warranty is given or implied with any recommendations made by us, our representatives or distributors, as the conditions of use and the competence of any labor involved in the application are beyond our control.



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COMPLETE CONSTRUCTION CARE

