Ducon NS Grout

TECHNICAL DATA SHEET (TDS)

Ducon Polymer Flooring

Free Flow Non-Shrink High Strength Expensive Grout

Product Description

Ducom NS Grout is recommended for precision grouting where it is essential to with stand static load in typical applications like base plate of Generators, compressors, boilers etc. It is basically a free flow no shrink, high strength expansive grout. It is based on port land cement with graded aggregates and additives which impart controlled expansion in the plastic state. The non-shrink grout function is three folds, to fill the voids between the base plate and the concrete foundations completely and permanently without shrinkage or separating from either to transfer all loads from the base plate to the concrete foundation and to maintain precise alignment. It effectively transfers all operational loads to the foundation.

Uses

- Precision grouting
- Grouting of base plates of turbines,
- compressors, boiler feed pumps
- Anchoring for a wide range of fixings.
- Masts, anchor bolts and fence posts.

Features and Benefits

- Develops very high early and final strengths
- Non-shrink: basically, a non-shrink
- Excellent flow characteristics
- Ensures high level contact with bond area
- Chloride free
- Does not affect the steel or foundation bolts.
- Gaseous expansion system compensates for shrinkage and settlement in the plastic state
- No metallic iron content to cause staining
- Pre-packed material overcomes onsite batching variations
- Free flow ensures high level of contact with load bearing area.

Application Methodology

Step no 1: Surface Preparation:
The substrate must sound clean and free from contaminations, all loose particles must be removed. The steel and concrete surfaces must be etched mechanically to enhance the bonding properties. Bolt holes and fixing pockets must be blown clean of any dirt or debris.

Pre-soaking
Pre soak the concrete surface with lots of clean water before the application is carried out. All the surplus water is removed before the grouting application.

Step no 2: Product Mixing:
For better results mix the material mechanically. To enable the grouting operation continuously it is essential that sufficient man power and mixing capacity are available at the site.

Step no 3: Product Application:
Water Powder Ratio: W/P:0.18
Consistency: Flow able Grout
Water required for 25 Kgs bag: 4.5 Lts

Flow Characteristics:
The flow is basically depends on the gap width and the head of the grout and governed by the gap width.
Yield:
13.0 Lts at flow able consistency for 25 Kgs Bags
Placing:
At 30°Celsius the grout within 20 minutes of mixing to gain the full benefits of the expansion process
Working Condition:
Do not place the grout when the ambient temperature is 5^{o} .Use hot water to gain the strength when the temperature is low and cold water when the temperature is high.
Working time:
Following mixing the material should be placed within 15minutes depending upon the temperature and other conditions for best results.
Curing:
The entire exposed surface must be adequately cured with clean water.
Shuttering: The form work should be constructed to be leak proof. This can be achieved by using suitable material or by using foam rubber strip or mastic

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sealant benefit the constructed form work and between joints.

Technical Data

Fresh density	Approximately 2220 Kg/m^3 depending on actual consistency used
Time for expansion (after mixing)	Start : 20 minutes Finish: 120 minutes

Compressive strength: (BS 1881- Part 116: 1983)

Age Days	Compressive Strength
Flowable W/P 0.18	
1 Day	24 N/mm^2
3 Days	45 N/mm^2
7 Days	55 N/mm^2
28 Days	66 N/mm^2

Note: Size of the cubes used 70.6mm*70.6mm*70.6mm tested at 30°C.

Age Days	Flexural Strength (ASTM) C 348)
7 Days	4N/mm^2
28 days	10N/mm^2
Pullout bond strength Young's modules (ASTM 469 - 94)	3.5N/mm^2 @ 7 days 20N/mm^2 @ 28 days 28kN/mm^2
Tensile Strength: (ASTM C 307)	3.5N/mm^2 @ 28 days 30°C.
Coefficient of thermal expansion	11 x 10$^{-6/0}$ C
Unrestrained expansion	2 - 4 % in the plastic state enables to overcome shrinkage.
Pressure to restrain: plastic expansion	0.004 N/mm^2 approx.
Dynamic load resistance:	Specimens of Ducon NS Grout showed no signs of distress after subjecting them to alternate loads of 5 N/mm2 & 25 N/mm2 at the rate of 500 cycles/ minute for 20,00,000 cycles of Fatigue loading.

Compressive strength with addition of aggregates			
Age (Days)	Compressive strength (N/mm^2) W/P 0.18% of aggregates (IS 516 - 1959)		
	50%	75%	100%
1	29	30	33
3	49	51	56
7	61	62	66
28	68	74	77

Specification Clauses

Performance specification

All grouting shown on the drawing must be carried out with a pre packed cement based product which is chloride free.

It shall be mixed with clean water to the required consistency. The grout must not bleed or segregate.

A positive volumetric expansion shall occur while the grout is plastic by means of gaseous system.

The compressive strength of the grout must exceed 50 N/mm^2 at 7 days and 60 N/mm^2 at 28 days.

The flexural strength of the grout must exceed 9N/mm^2 @ 28 days. The fresh wet density of the mixed grout must exceed 2150 kg/m^3.

The storage, handling and placement of the grout must be in strict accordance with manufacturer's instructions.

Packaging

25 Kg bags

Storage and Shelf Life

Store under covered, in unopened bags clear of the ground in cool dry condition, protected from frost and excessive draught when stored in the above conditions to be used with 12 months from the date of manufacture.