ArmGrout M-65 E

(Formerly known as MYK Grout M-65 E)

Free Flowing, High Precession, Non-Shrink High Strength Grout

MYK arment®

TECHNICAL DATA SHEET

Product Description

ArmGrout M-65 E is recommended for precision grouting where it is essential to with stand static & dynamic load in typical applications like base plate of Generators, compressors, boilers etc. It is basically a free flow non shrink, high strength expansive grout. It's formulation is based on port land cement, 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 base plates of machines such as, compressors, turbine ,boiler & other equipments
- Anchoring for a wide range of fixings.
- Masts, anchor bolts and fence posts.

Features and Benefits

- Easy to mix and only addition of water is needed
- Develops very high early and final strengths
- Excellent flow characteristics
- Ensures high percentage of contact area /EBA
- High impact and vibration resistant
- Chloride free
- Does not affect the steel or foundation bolts.
- Gaseous expansion compensates shrinkage in plastic state
- No metallic iron content to cause staining
- Pre-packed material overcomes onsite batching variations

Application Methodology

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

Pre-soaking
Pre soak the concrete surface with sufficient amount of clean water before the application of grouting is carried out, so that the substrate becomes SSD. All the surplus water to be removed before the grouting operation started /application

Step no 2: Product Mixing:
Use drill machine of 300-500 RPM fitted with suitable Stirrer /propeller to mix a bag at a time. Take 80 to 90% of water first in the mixing bucket and then add ArmGrout M65 E into the bucket. Continue the stirring /rotating it and add the balance water and mix for additional 2 minutes for fine mixing. Leave the mix for 2 to 3 minutes for any entrap air bibles to escape from the mix.

Step no 3: Product Application:

Consistency	Flow-able grout	Pourable grout
W/P Ratio	0.14 - 0.16	0.12 - 0.14
water required for 25 kg bag	3.5 - 4.0 Liter	3.0 - 3.5 Liter
Water required for 30 kg bag	4.2 - 4.8 Liter	3.6 - 4.2 Liter

Yield:
12.5 Liter at flow-able consistency for 25 Kg Bags
14.8 Liter at flow-able consistency for 30 Kg Bags

Recommended thickness:
The minimum gap for cement based grout fluid recommended is up to 20 mm and the maximum thickness permitted in single layer is 100 mm

For Higher thickness:
For thickness of more than 100 mm, addition of 10mm down silt free aggregates (washed air dried) is advised. The grout to aggregate ratio is 2:1 to 1:1 depending upon flow ability. The more the aggregate the less is the flow.

Working Condition:
Do not place/mix the grout when the ambient temperature is 5 deg Celsius or below. Use hot water to gain the initial strength when the temperature is low and cold water when the temperature is high to improve working life

Removable Chute:
For large pours the grout may be hand placed or pumped into a removable chute (trough). Pouring should be from one side of the void to eliminate any air or presoaked water becoming trapped under the base plate. It is advisable to pour the grout across the shortest distance of travel. The grout head must be maintained at all times so that a continuous grout front is achieved.

Note: While pumping, ensure that the material does not segregate.

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A heavy duty diaphragm pump is recommended where the grout needs to be pumped; otherwise suitable gravity head is adequate.

Working time:

For best results the mixed material should be placed within 15 minutes depending upon the temperature and other surrounding conditions.

Curing:

On completion of the grouting operation, the grout exposed to sun light areas should be thoroughly cured. This should be achieved by the use of Armix Cure PB White curing membrane, or curing by wet hessian cloth for a period of minimum 7 days.

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 sealant beneath the constructed form work and between joints.

Form Work:

Ensure formwork is secure and watertight to prevent movement and leaking during placing and curing.

Technical Data

Fresh wet density	Approx.2220-2300 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 0.15	
1 Day	25N/mm²
3 Days	35N/mm²
7 days	45N/mm²
28 Days	65N/mm²

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

Flexural Strength: (ASTM C 348) , 28 days	Min 9 N/mm²
Tensile Strength @ 28 days 30°C (ASTM C 307)	3 N/mm^2
Controlled Expansion: (in the plastic state)	0 – 4.0%
Pressure to restrain : Plastic expansion	0.004 N/mm^2 approx.
Static modulus of elasticity, Ec (IS 456)	~37000 N/mm^2

Dynamic load resistance	Specimens of Arm Grout M 65 E showed no signs of distress after subjecting them to alternate loads of 5 N/ mm^2 & 25 N/mm^2 at the rate of 500 cycles/ minute for 20,00,000 cycles of Fatigue loading.
Pullout bond strength (0.15 W/P RATIO)	17 N/mm^2 @ 7 days 20 N/mm^2 @ 28 days
Young's modulus (ASTM 469 - 94)	28 KN/mm^2

Compressive strength with addition of 10 mm down washed SSD dust free aggregates			
Age (days)	Compressive strength (N/mm²) W/P 0.15 % of aggregates (IS 516 - 1959)		
	50%	75%	100%
1	29	30	33
7	48	50	52
28	68	67	66

Specification Clauses:

a. Performance specification

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 in plastic state by means of gaseous system.

The compressive strength of the grout must exceed 45 N/mm^2 at 7 days and 60 N/mm^2 at 28 days.

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

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

b. Flow Characteristics:

The flow basically depends on the gap width and the head of the grout and governed by the gap width.

Typical data for flow design assuming grout is poured immediately after mixing is given in the table below:

Continuous grout flow is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch must be regulated to the time to prepare the next one.

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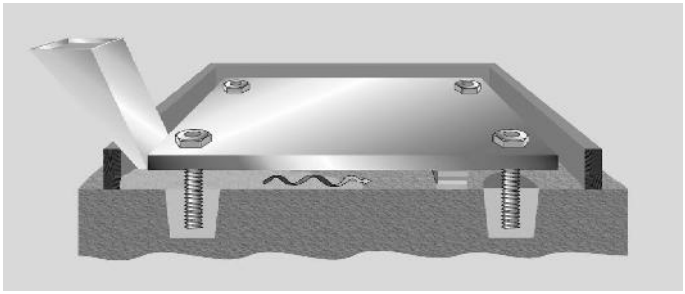
Grout consistency	Gap width in mm	Maximum flow distance in mm		
		At 50 mm Head	At 100 mm Head	At 300 mm Head
Flowable	30	300	1000	1600
	40	500	1500	2000
	50	800	2000	3100+

Typical finish of base plate grouting

Stanchion with head: For large pours the grout may be hand placed or pumped into a removable hopper to adjustable Head height as per table above



Pouring should be from one side of the void to eliminate any air or pre soaked water becoming trapped under the base plate. It is advisable to pour the grout across the shortest distance of travel. The grout head must be maintained at all times so that a continuous grout front is achieved.

Where large volumes have to be placed ArmGrout M65 E may be pumped. A heavy duty diaphragm pump is recommended for this purpose. Screw feed and piston pumps may also be suitable.

Packaging

25 Kgs/ 30 Kgs HDPE 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 6 months from the date of manufacture.

Product Categories Available

Legal Note

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