

# MAXGROUT<sup>®</sup> 45

Free Flow, Non-Shrink, General Purpose Cementitious Grout



MAXGROUT<sup>®</sup> 45 is supplied as a ready to use dry powder, requiring only the addition of water to produce a free-flowing, non-shrink grout. The material is blend of specially processed cement, pre-graded fillers and additives which impart:

- Good early and final strengths due to very low water requirement.
- Controlled expansion to retain the original volume filled even after setting.
- Free flow characteristics without any segregation and bleeding.

Maxgrout<sup>®</sup> 45, on setting will have a micro-cellular structure with high frost, fire and oil resistance.

## Uses

MAXGROUT<sup>®</sup> 45 is used for effective support beneath load bearing units especially where static and operational loads apply. Also as an efficient medium for transferring all operational loads to the foundation. For free flow grouting of machine base plates, crane and transporter rails, standing equipment bed plates, stanchion bases, steel rolling mill beds, pump sets etc.

## Benefits

- **Non Shrink**- Will continue to occupy the filled space without shrinkage. Continues to provide support to the bearing areas and dampens vibrations.
- **Free Flow**- Ensures high level of contact with load bearing area. Also helps complete filling without voids. No need for external aids like rodding, poking, chaining etc.
- **Pre-packed and Factory Controlled**- Consistency and reliability ensured. Site batching and blending variations eliminated.
- **Iron-free**- No chance of deterioration by uncontrolled rust expansion, corrosion and staining of grout.
- **Chloride-free**- Does not cause corrosion of machine parts, anchor bolts etc., in contact with grout.

## Technical Support

An experienced technical advisory team is available to give technical service on request.

## Properties

Compressive strength (N/mm <sup>2</sup> ) BS 1881: Part 116, 1983	
Age (Days)	Flowable Consistency (W/P- 0.19)
1	10
3	27
7	35
28	45

## Compressive Strength with addition of aggregates

Compressive strength (N/mm <sup>2</sup> ) W/P 0.19			
Age (days)	Aggregates by weight		
	50%	75%	100%
1	12	14	16
3	29	32	34
40	38	40	44
28	48	50	53

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

<b>Young's Modulus (ASTM 469 - 94)</b>	24 kN/mm <sup>2</sup>	
<b>Expansion Characteristics</b>	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 been placed.	
<b>Coefficient of Thermal Expansion</b>	11 x 10 <sup>-6</sup> /°C	
<b>Unrestrained Expansion</b>	1-4%	
<b>Time of expansion</b>	Start	20 minutes
	Finish	150 minutes
<b>Pressure to Restrain Plastic Expansion</b>	0.004 N/mm <sup>2</sup> approx.	
<b>Note:</b> It is necessary to restrain free flow grout edges over 50mm wide. Otherwise unrestrained expansion may lead to some cracks.		
<b>Thermal Conductivity</b>	1.04 W/m°C	

<b>Fresh Wet Density</b>	At flowable consistency 2180 kg/m <sup>3</sup>
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<b>Water Powder Ratio</b>		
<i>Consistency</i>	<i>W/P</i>	<i>Water required per 30kg bag</i>
<i>Flowable</i>	0.19	5.7 litres

**Flow characteristics:** The maximum distance of flow is governed by the gap width and the head of the grout. Typical data for flow design assuming grout is poured immediately after mixing is given in the table below:

<b>Grout Max. consistency</b>	<b>Gap width (mm)</b>	<b>Flow distance in mm</b>		
		50 mm head	100 mm head	250 mm head
Flowable	30	500	1000	2000
	50	1000	2000	3000+

**Note:** This table is based on the following factors temperature- 25°C; water saturated substrate; Minimum unrestricted flow width is 300mm.

## Specification Clauses

### Performance Specification

All grouting (specify detail sand areas of application) must be carried out with a prepackaged cement based product which shall be mixed with water on site at water powder ratio of 0.19. The grout must not bleed or segregate, must be iron free and chloride free. Expansion of 1 - 4% shall occur while the grout is plastic. The compressive strength of the grout must exceed 30 N/mm<sup>2</sup> at 7 days and 40 N/mm<sup>2</sup> at 28 days. The grout must be stored, handled and placed strictly in accordance with the manufacturer's instructions.

### Supplier Specification

All grouting (specify details and areas of application) must be carried out using MAXGROUT<sup>®</sup> 45 grout manufactured by Thermax applied strictly in accordance with the manufacturer's application manual for Maxgrouts.

## Instructions for Use

### Preparation

### Foundation surface

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes and fixing pockets must be cleaned of any debris.

### 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 form work should be constructed to be leakproof. It can be achieved by using foam rubber strip or mastic sealant beneath the constructed form work and between joints. In some cases it is practical to use a sacrificial semi-dry sand and cement form work. The form work 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

For best results a mechanically powered grout mixer should be used. When quantities up to 50kg are

used, a heavy duty slow speed drill (400-500 rpm) fitted with a paddle is suitable. Larger quantities will require a heavy duty mixer.

To enable the grouting operation to be carried out continuously, it is essential that sufficient mixing capacity and labour should be available. Use of a grout holding tank with provision to gently agitate the grout may be required.

## Consistency of Grout Mix

The quantity of clean water required to be added to a 30 kg bag to achieve the desired consistency is given below:

**Flowable:** 5.7 litres

The selected water content should be accurately measured into the mixer. The total content of the Maxgrout<sup>®</sup> 45 bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

## Placing

At 30°C place the grout within 20 minutes of mixing to gain full benefit of the expansion process. Maxgrout<sup>®</sup> 45 can be placed in thicknesses up to 100mm in a single pour when used as an underplate grout. For thicker sections it is necessary to fill out Maxgrout<sup>®</sup> 45 with well graded silt free washed and SSD condition aggregate to minimise heat build-up.

Typically a 5-10mm aggregate is suitable. 50-100% aggregate by weight of Maxgrout<sup>®</sup> 45 can be added. Any bolt pockets must be grouted prior to grouting between the substrate and base plate. Continuous grout flow is essential. And 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.

## Typical Hopper System

### Removable Hopper

For large pours the grout may be hand placed or pumped into a removable hopper (trough). 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 flow is achieved.

Where large volumes have to be placed Maxgrout<sup>®</sup> 45 may be pumped. A heavy duty diaphragm pump is recommended for this purpose. Screw feed and piston pumps may also be suitable.

## Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of Maxcure<sup>®</sup> CC 75 curing membrane and/or wet hessian.

## Cleaning

MAXGROUT<sup>®</sup> 45 grout should be removed from tools and equipment with clean water immediately after use.

## Health and Safety Instructions

Maxgrout<sup>®</sup> 45 is non-toxic but alkaline in nature. Gloves should be worn while handling this product. Splashes of grout on the skin or eyes should be washed off with clean running water. In the event of prolonged irritation, medical attention shall be sought immediately.

## Fire

Maxgrout<sup>®</sup> 45 is non-flammable.

## Storage

### Shelf life

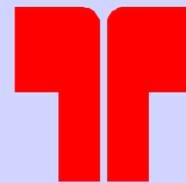
Maxgrout<sup>®</sup> 45 has a shelf life of 6 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity locations, the shelf life may be reduced.

## Packing

Maxgrout<sup>®</sup> 45 is supplied in 30 kg single lined HDPE bags.

### Yield

One bag of MAXGROUT<sup>®</sup> 45 will yield 16 litres at flowable consistency.



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