

MASTERFLOW® 816

Cementitious aggregate free cable grout

DESCRIPTION

MASTERFLOW 816 is a ready-to-use aggregate free grout specially formulated for applications that require a fluid, shrinkage compensating grout where clearances are shallow, and the grouting of tensioned cables and rods stressed above 550MPa.

RECOMMENDED FOR

- Shrinkage compensated grouting in restricted spaces between precast wall panels, beams and columns where grout will be in contact with highly stressed steel
- Grouting of anchor bolts, rods and pipes where the annular space is too small for conventional aggregate containing grouts (clearances of 6 to 25mm)
- Repairs to concrete, such as cracks and honeycombing, filling small voids
- Pumping into areas around pre-tensioned or post-tensioned cables and rods to encapsulate the steel and protect it against corrosion, and to provide maximum anchorage
- Placing around end sections of unanchored cables and rods to provide anchorage for subsequent tensioning
- Grouting cable anchor plates or other types of plates where grout will be in contact with highly stressed anchorages

FEATURES AND BENEFITS

- **Pumpable** - into areas inaccessible to conventional grouts or grouting methods.
- **No bleeding or settlement shrinkage.**
- **Long open time** - can be pumped and/or recirculated for relatively long periods of time.
- **Non shrink** - hardens without shrinkage within the sheath or hole ensuring maximum bond and protection against ingress of water while in service.
- **Specially formulated** - to enhance flow and protect stressed tendons, bolts or bars from corrosion.

PERFORMANCE DATA

Age	Compressive Strength (MPa)*
1 day	22
3 days	41
7 days	48
28 days	58

VOC content: 5g/L Test method: SCAQMD 304-91

* Typical compressive strengths of 50mm cubes cured at 22°C, 25 second flow by flow cone. (Test Methods: AS 1478.2, Appendix A and Appendix C).

The performance data is typical and based upon controlled laboratory conditions. Actual performance on the job site may vary from these values based on actual site conditions.

Water Demand

Actual amount of water required will depend on desired consistency for the job and temperature (both ambient and grout). **MASTERFLOW 816** is designed to be placed at fluid consistency (20 to 30 seconds on the flow cone, CRD-C 611 or ASTM C939). As a guide, 20kg of **MASTERFLOW 816** placed at 23°C requires approximately 6.6 litres of water to provide a fluid grout. DO NOT use water in an amount or at a temperature that will cause the mixed grout to bleed or segregate.

ESTIMATING DATA

20kg of **MASTERFLOW 816** when mixed to fluid consistency produces approximately 13.6 litres (0.0136m³) of grout.

APPLICATION

Preparation - Clean cables and ducts of all oil, grease, dirt, loose particles or coatings that may interfere with grout contact or bond, react unfavourably with Portland cement or attack the steel after stressing. Cables should be free of oxidation.

Check proposed method of mixing and pumping grout to ensure continuous placement occurs once pumping starts. It is recommended to have a source of high pressure wash water with connections for flushing out grout hoses or partially grouted cable ducts in the event the pumping is interrupted.

Test the pump and grout lines with water to make sure they are capable of providing and withstanding the required pressure, and to see that all connections are drip-tight. Loss of water from slow or non-moving grout can result in a blocked line.

Ball or gate valves, or plugs, should be provided at the pump outlet, at the inlet ends of vertical cable ducts and at both ends of the horizontal ducts. Also, a valved by-pass hose or pipe from the pump discharge line back to its hopper is strongly recommended. This is so that grout recirculation from pump to hopper can be maintained during connection changes and other pumping delays.

The inside diameter of pipe, hose and valves through which **MASTERFLOW 816** is to be pumped should be at least 19mm to 50mm I.D. Piping should be designed to meet the requirement of the proposed pumping rate, height and distance. The grout line should be the same size or larger than the opening at the end of the duct. Reductions at connections should be discouraged but, if made, should be made smoothly through tapered fittings without abrupt changes or sharp edges. Avoid elbows and any line restrictions where grout is to be pumped through a hose, pipe or placed along with wires, rods or stands.

Temperature - The recommended temperature range of the grout as mixed and of the hole or duct into which the grout is to be pumped is 10°C to 24°C. Higher temperatures increase the amount of mixing water needed for a given fluidity of the grout and limit working time. Lower temperatures retard set and early strength gain but

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permit reduced mixing water content for a given fluidity and, thus, increase ultimate strength.

When ambient and/or duct temperatures are above 38°C, consider mixing the grout at as cool a temperature as possible, but not below 10°C. Ducts should be cooled by

circulating cold water. Cool the bags of **MASTERFLOW 816** by storing them in a shaded area or a cool place, and use cold

or iced water for mixing the grout. (Never use dry ice to cool mixing water. Do not add water ice directly into the mixer, only into the mixing water).

Mixing - Jobsite conditions such as the size and complexity of the space to be grouted, pumping line diameters, height, mixing and pumping methods, and temperatures are factors which determine the actual amount of water needed. It is advisable to make the initial batch more fluid than required in order to lubricate the pump and grout lines, but do not continue with the more fluid grout for longer than necessary. Have available one or more mixers with the capacity to allow mixing and pumping to proceed simultaneously and continuously.

Place water in the mixer first, then, with the mixer operating, steadily add **MASTERFLOW 816**. Mix for 2 to 3 minutes until the grout is uniform and essentially free of lumps. Pour grout into pump hopper through a screen with 3mm openings to catch lumps and start pumping.

CAUTION: Some high-speed, shear mixers require only 20 to 30 seconds to mix the grout, after which the grout must be immediately transferred to a slow speed agitator for holding until it is pumped. Failure to do so will cause the grout to overheat and cause loss of flow.

Do not mix more grout than can be put through the pump in 10 to 15 minutes. Grout that becomes unworkable should be discarded.

Pumping - Before mixing grout, fill pump hopper with water and pump through grout lines to wet the pump, hose and pipe. Close valve at the end of the line, run pressure to above expected level and check for leaks. Then pump water out until pump hopper is empty. Make sure free water from pump lines has been removed before grout placement. Pour mixed grout into pump hopper

through a screen with 3mm openings. Start pump, then

catch and dispose of discharge until proper grout mixture flows out. For vertically drilled anchor holes, pre-saturate holes for 24 hours prior to grouting. Remove free water just before grouting.

For information about application, please obtain a copy of the BASF "Application Guide for MASTERFLOW Cable Grouts" from your local representative.

CURING

Cover any exposed grout with wet rags for 24 hours. Coat with **Masterkure 402** curing compound after removal of wet rags. In cold weather, keep grout temperatures above 4°C until after final set. Thereafter keep grout temperature above freezing until a compressive strength of 28MPa is achieved.

PACKAGING

MASTERFLOW 816 is packaged in 20kg moisture resistant bags.

SHELF LIFE

MASTERFLOW 816 has a shelf life of approximately 6 months when stored in a cool dry environment.

PRECAUTIONS

Do not use:

- where concrete or rock surfaces with which the grout will be in contact cannot be pre-saturated.
- for the precision grouting of heavy operating machinery, crane rails, structural plates and column bases, except for repairs where grout will be pumped into small clearances, i.e., less than 25mm.

For the full health and safety hazard information and how to safely handle and use this product, please make sure that you obtain a copy of the BASF Construction Chemicals **Material Safety Data Sheet (MSDS)** from our office or our website.

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STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this **BASF** publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

NOTE

Field service where provided does not constitute supervisory responsibility. Suggestions made by **BASF** either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not **BASF**, are responsible for carrying out procedures appropriate to a specific application.

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