

MasterFlow 4800

Metallic aggregate reinforced, ultra-high strength precision grout

DESCRIPTION

MasterFlow 4800 is a single component, cement based, metallic aggregate reinforced, non-shrink, ultra high strength grout. It has ultra-high early and final strengths. When mixed with water, MasterFlow 4800 forms a mortar with a fluid consistency which can be easily applied by hand or machine. MasterFlow 4800 can be used in thicknesses from 20 mm up to 200 mm.

- For hand or machine application.
- Extra low shrinkage for durability.
- Excellent freeze/thaw resistance.
- Very low permeability to water and chlorides.

FIELD OF APPLICATION


MasterFlow 4800 is used for assembling and fixing of the following items:

- Industrial turbines, generators and compressors
- Rolling, stamping, grinding, drawing and finishing mills
- Forging hammers
- Rail tracks, crane rails
- Paper machine sole plates
- Machinery and equipment requiring high strength maximum bearing

Note: For wind turbine installations please refer to our MasterFlow 9000 series grouts.

FEATURES AND BENEFITS

- Meets the requirements of EN 1504-6.
- Sustainable and contributes to LEED points.
- Contains metallic aggregates to provide high strengths and increased impact resistance under dynamic and repetitive loading.
- Very high early strengths shorten the waiting time for starting the machinery process.
- Ultra high final strengths allow very high compressive loading.
- Provides solutions for various application details with wide application thickness: 20 – 150mm.
- Hardens without bleeding, settlement or drying shrinkage when mixed, placed and cured.
- Can be used at temperatures down to 2°C when mixing and placing recommendations are followed.
- Designed for use where thermal movement of equipment and machinery and other effects of heating/cooling and wetting/drying are anticipated.
- High flow for full compaction even in areas with congested steelwork.

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BASF Belgium Coordination Center Comm. V. Business Belux - Construction Chemicals Nijverheidsweg 89, B-3945 Ham	
13 BE0057/01	
EN 1504-6 Cement based grout EN 1504-6 Principles 4.2	
Pull-out strength	Displacement ≤ 0,6 mm at 75 kN load
Chloride ion content	≤ 0,05 %
Reaction to fire	Euroclass A1
Dangerous substances	Complies with 5.3

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APPLICATION METHOD

(a) Surface Preparation

The concrete should be free of frost, curing membranes, waterproofing treatments, oil stains, laitance, friable material and dust.

The concrete surfaces should be chipped and if there is a water leakage it must be drained or properly plugged. Soak area to be grouted with water for 24 hours prior to grouting to minimise localised absorption and to assist in the free flow of the grout. Surfaces should be damp but free of standing water. Particular attention should be paid to bolt holes to ensure that these are water-free. Use oil free compressed air to blow out bolt holes and pockets as necessary.

Base plates, bolts, etc. must be clean and free of oil, grease and paint etc. Set and align equipment. If shims are to be removed after the grout has set, then lightly grease them for easy removal.



Figure 1. Saturating and draining the excessive water in the anchor holes of the turbine foundation prior to grouting.

Ensure formwork is secure and watertight to prevent movement and leaking during the placing and curing of the grout. The area should be free of excessive vibration. Shut down adjacent machinery until the grout has hardened.

In hot weather, base plates and foundations must be shaded from direct sunlight. Bags of grout should be stored in the shade prior to use. In cold weather, the temperature of base plates and foundations should be raised to over 10°C.

(b) Mixing

Damp down the inside of the grout mixer with clean water prior to mixing the initial batch of MasterFlow 4800. Ensure the mixer is damp but free of standing water. The product should be mixed with approx. 2.5 l per 25kg bag. Add the pre-measured quantity of water. Slowly add the powder mixing continuously. Mix for at least seven minutes until a smooth, uniform consistency is achieved without lumps in the mortar.

In hot weather use cold water to bring the mixed grout temperature lower than 30°C. In cold weather use warm water to raise the mixed grout temperature over 10°C to hardening quicker.

(c) Application

Lengths of metal strapping laid in the formwork prior to placing may be necessary to assist grout flow over large areas and in compacting and eliminating air pockets. Have sufficient manpower, materials and tools to make mixing and placing rapid and continuous. Where grout must flow some distance, make the initial batch slightly more fluid or flowable than required; this lubricates the surfaces and avoids blockage of the grout that follows. The grout shall be poured continuously and from one side only, to avoid entrapment of air while grouting.

Maintain a constant hydrostatic head, preferably of at least 15 cm. On the side where the grout has been poured, allow 10 cm clearance between the side of the form and the base plate of the machine. On the opposite side allow 5-10 cm clearance between the formwork and the base plate.

Due to differences in temperature between the grout under the base plate, and exposed shoulders that are subject to more rapid temperature changes, debonding and / or cracking can occur. Avoid shoulders wherever possible. If shoulders are required they should be firmly anchored with reinforcing to the substrate to prevent debonding.

MasterFlow 4800 grout is suitable for use with most types of pumping equipment. Immediately after MasterFlow 4800 grout is placed, cover all exposed grout with clean wet hessian and keep moist by covering with polythene to maintain effective curing the use of a curing membrane from the MasterKure range is recommended.

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Make sure grout fills the entire space to be grouted and remains in contact with the plate throughout the entire grouting placement.

Note: Do not use vibrator for placing the grout!

COVERAGE

Approx. 2,370 kg powder is needed to prepare 1 m³ of fresh mortar. 25 kg bag will yield approximately 10.5 litres of mortar.

FINISHING AND CLEANING

Tools and mixer must be cleaned immediately after use with water. Cured material can only be removed mechanically.

CURING

Full cure is reached in 28 days after the application at a constant temperature of 23 °C.

WORKING TIME

45 minutes in 20 °C ambient and substrate temperature.

PACKAGING

MasterFlow 4800 is available in 25 kg paper bags.

STORAGE

Store at ambient temperatures, out of direct sunlight, in cool, dry warehouse conditions and clear of the ground on pallets protected from rainfall prior to application.

SHELF LIFE

12 months if stored at above mentioned storage conditions.

WATCH POINTS

- Do not apply at temperatures below +2 °C nor above +35 °C.
- Do not add any other substance that could affect the properties of the product. In case of thicker applications and complex geometries consult your local Master Builders Solutions representative.

- Do not use water in an amount or at a temperature that will produce a consistency more than fluid or cause mixed grout to bleed or segregate.
- Under no circumstances should MasterFlow 4800 be re-tempered by the later addition of water.

HANDLING AND TRANSPORT

Usual preventive measures for the handling of chemical products should be observed when using this product, for example do not eat, smoke or drink while working and wash hands when taking a break or when the job is completed.

Specific safety information referring the handling and transport of this product can be found in the Material Safety Data Sheet. For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

Disposal of product and its container should be carried out according to the local legislation in force. Responsibility for this lies with the final owner of the product.

CONTACT DETAILS

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Product Data				
Property		Standard	Data	Unit
Chemical Base		-	Cement	-
Color		-	Grey	-
Layer Thickness	minimum maximum	-	20 150	mm
Fresh Mortar Density		-	Approx. 2.6	g/cm ³
Flow in the Channel ¹ (23 °C)	after mixing after 30 min. after 60 min. after 90 min.	Rili-SIB DAfStb	> 60 > 55 > 55 > 50	cm
Mixing Water for 25 kg Bag		-	ca. 2.5	l
Working Time ²		-	45	Minute
Application Temperature (ambient and substrate)		-	+2 - +35	Celcius
Compressive Strength (20 °C)	1 day 7 days 28 days	EN 196-1	≥ 60 ≥ 90 ≥ 100	N/mm ²
Compressive Strength (2 °C)	2 days 7 days 28 days	EN 196-1	≥ 30 ≥ 90 ≥ 100	N/mm ²
Flexural Strength (20 °C)	1 day 7 days 28 days	EN 196-1	≥ 9 ≥ 12 ≥ 17	N/mm ²
Flexural Strength (20 °C)	1 day 7 days 28 days	EN 196-1	≥ 5 ≥ 12 ≥ 16	N/mm ²
Elasticity Modulus (static)	90 days	EN13412	≥ 40,000	N/mm ²
Elasticity Modulus (dynamic)	90 days	EN13412	≥ 40,000	N/mm ²
Freeze – Thaw Resistance	28 days	EN 12390-9	No scaling	-
Adhesion to Concrete after Freeze-Thaw (50 cycles with salt)	28 days	EN 13687-1	≥ 2.0	N/mm ²

Note: ¹ Flow in the channel in 300 seconds.

² Hardening times are measured at 21°C ± 2°C and 60% ± 10% relative humidity. Higher temperatures will reduce these times and lower temperatures will extend them. Technical data shown are statistical results and do not correspond to guaranteed minima. Tolerances are those described in appropriate performance standards.

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IMPACT RESISTANCE

Los Angeles Rattler Impact Test

This test method covers the determination of the impact resistance of cementitious and polymeric floor toppings and hardeners. The test procedure is developed to simulate the degradation of a floor due to repetitive impact loads along with some abrasion.

Apparatus

- Los Angeles Machine
- Scale - a laboratory scale or balance with a capacity of 10,000 g or more and capabilities of weighing to the nearest 1 g.
- Cube moulds - sized 5cm x 5cm x 5cm made from metal, brass, plastic, or any other rigid material that is waterproof and will not react with the product cast in it.
- Steel balls - eighteen steel balls each approximately 4.5 cm in diameter. The 18 steel balls shall weigh 7,500 collectively.



Figure 2. Steel balls used for impact

Test Procedure

- 9 cubes of each MasterFlow 4800 and non-metallic aggregate precision grout were manufactured and each set of cubes was tested separately as follows.
- A set of 9 cubes were weighed collectively to determine the initial weight of the cubes. With moist cured samples,

any free standing water was wiped from the surface of the specimens before weighing.

- After the initial weights were determined, 9 cubes and 18 steel balls were placed in the Los Angeles Machine. The Los Angeles Machine was set for 500 cycles and started.
- At 500 cycle intervals, all nine cubes were taken out of the machine and brushed off using a soft nylon bristle brush, and were weighed collectively. The Los Angeles machine was cleaned out after every 500 cycles.
- Each set of 9 cubes went through 2,000 cycles in the Los Angeles Machine and weights were taken at 500 cycle intervals.
- Scale - a laboratory scale or balance with a capacity of 10,000 g or more and capabilities of weighing to the nearest 1 g.

Results

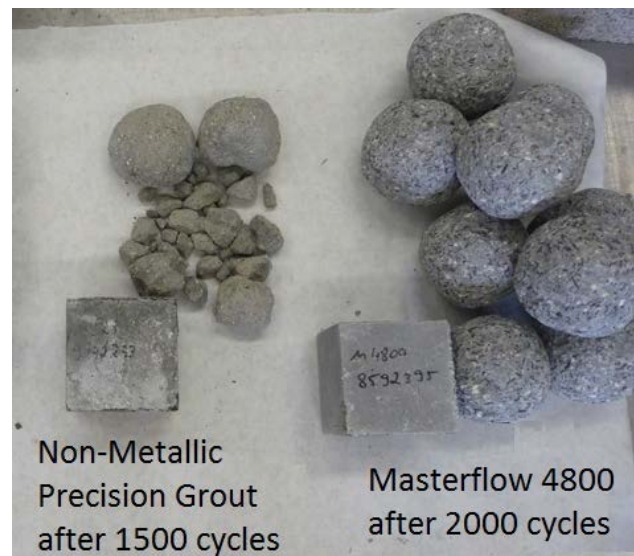


Figure 3. Grout samples after 1500 and 2000 cycles.

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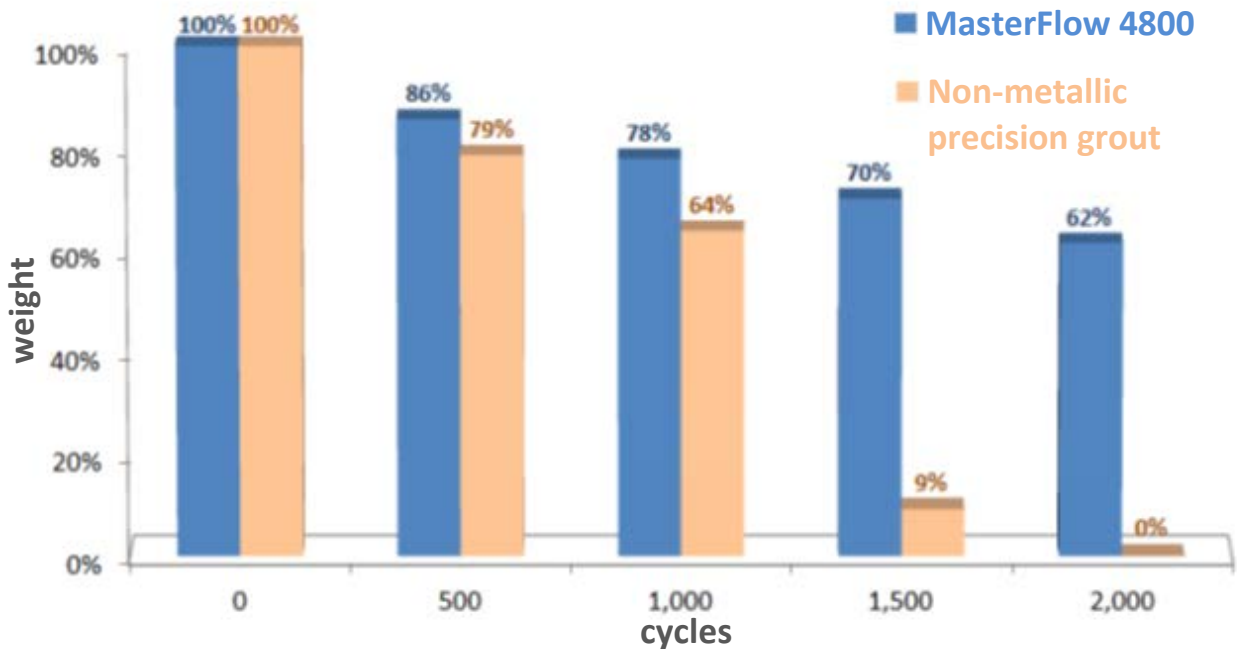


Figure 4. Comparison of weight loss during the Rattler test for MasterFlow 4800 and non-metallic precision grout.

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Health and Safety

*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

Solvent Based Products

Use in well ventilated areas; avoid inhaling. Suitable respiratory equipment may be needed, eg when spraying. Can cause skin, eye irritation. Wear protective eye shields and gloves during use. Do not smoke or allow sparks or naked lights when stored or in use.

Resin Products

Can cause irritation, dermatitis or allergic reaction. Use protective equipment particularly for skin and eyes. Use only in well ventilated areas.

Spillage

Chemical products can cause damage; clean spillage immediately.

DISCLAIMER

"BASF plc, Construction Chemicals" (the Company) endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, the Company has no control over the selection of its products for particular applications. It is important that any prospective customer, user or specifier, satisfies him/her-self that the product is suitable for the specific application. In this process, due regard should be taken of the nature and composition of the background/base and the ambient conditions both at the time of laying/applying/installing the material and when the completed work is to be brought into use.

Accordingly, no liability will be accepted by the Company for the selection, by others, of a product, which is inappropriate to a particular application.

Products are sold subject to the Company's standard conditions of sale and all customers, users and specifiers, should ensure that they examine the Company's latest Product Literature.