

MasterFlow[®] 4800

Metallic Aggregate Reinforced, Ultra-High Strength Precision Grout

DESCRIPTION OF PRODUCT

MasterFlow[®] 4800 is a single part, 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 150 mm.

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

APPLICATION PROCEDURE

Preparation of Substrate

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 waterfree. 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.

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(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.

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.

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.

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Figure 2. Steel balls used for impact

Test Procedure

- 9 cubes of each **MasterFlow® 4800** and nonmetallic 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.

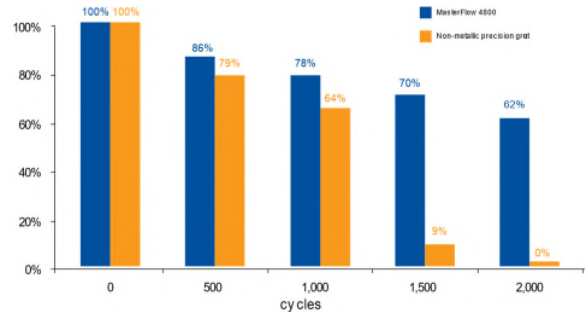


Figure 4. Comparison of weight loss during the Rattler test for **MasterFlow® 4800** and non-metallic precision grout.

DISCLAIMER

In view of widely varying site conditions and fields of application of our products, this technical data sheet is meant to provide general application guidelines only. This information is based on our present knowledge and experience. The customer is not released from the obligation to conduct careful testing of suitability and possible application for the intended use. The customer is obliged to contact the technical help-line for fields of application not expressly stated in the technical data sheet under "Fields of Application". Use of the product beyond the fields of application as stated in the technical data sheet without previous consultation with **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.** and possible resulting damages are in the sole responsibility of the customer. All descriptions, drawings, photographs, data, ratios, weights i.e. stated herein can be changed without advance notice and do not represent the condition of the product as stipulated by contract. It is the sole responsibility of the recipient of our products to observe possible Proprietary rights as well as existing laws and provisions. The reference of trade names of other companies is no recommendation and does not exclude the use of products of similar type. Our information only describes the quality of our products and services and is no warranty. Liability is accepted for incomplete or incorrect particulars in our data sheets only in the event of intent or gross negligence without prejudice to claims under product liability laws.

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TECHNICAL DATA

Property	Satndard	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 ⁰ 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	-	2,5	l
Working Time ²	-	45	Minute
Application Temperature (ambient and substrate)	-	+2 - +35	Celcius
Compressive Strength (20 ⁰ C) 1 day 7 days 28 days	EN 196-1	≥60 ≥90 ≥100	N/mm ²
Compressive Strength (2 ⁰ C) 2 day 7 days 28 days	EN 196-1	≥30 ≥90 ≥100	N/mm ²
Flexural Strength (20 ⁰ C) 1 day 7 days 28 days	EN 196-1	≥9 ≥12 ≥17	N/mm ²
Flexural Strength (2 ⁰ C) 2 day 7 days 28 days	EN 196-1	≥5 ≥12 ≥16	N/mm ²
Elasticity Modulus (static)	EN13412	≥40,000	N/mm ²
Elasticity Modulus (dynamic)	EN13412	≥40,000	N/mm ²
Freeze – Thaw Resistance	EN 12390-9	No scaling	-
Adhesion to Concrete After Freeze-Thaw (50 cycles with salt)	EN 13687-1	≥2,0	N/mm ²

Note: 1 Flow the channel in 300 seconds.

2 Hardening times are measured at 21⁰C ± 2⁰C 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.

CONTACT INFORMATION

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