

MasterFlow[®] 4600

Cementitious ultra high strength, non-shrink, iron reinforced precision grout

DESCRIPTION

MasterFlow 4600 is a non-shrink, PCE plasticised iron reinforced precision grout with ultra-high early and ultimate strengths. It is formulated to provide extended working time even at high ambient temperatures when mixed and placed at any recommended consistency. **MasterFlow 4600** is normally placed at a flowable consistency to completely fill voids between 20mm and 150mm.

RECOMMENDED USES

MasterFlow 4600 is used for all ultra-high precision, non-shrink grouting applications with clearances of 15mm or more, particularly those requiring maximum dynamic load bearing and impact resistance such as:

- Critical equipment baseplates, soleplates & columns.
- Crane rails, ball mills, crushers.
- On-shore wind turbines requiring high torsional and dynamic loads.
- Rolling, stamping, drawing and finishing mills for the steel and aluminium industries.
- Turbines, generators, pumps and centrifugal compressors.
- "H" shaped steel columns, steel tube columns.
- Applications requiring ultra-high early compressive strengths and ultimate compressive strengths.
- High flow for full compaction even in areas with congested steelwork.

FEATURES AND BENEFITS

- **Iron reinforced** – contains inert iron aggregate as internal reinforcement. Provides improved resistance to heavy impact, vertical and horizontal repetitive loading as well as rotational torque.
- **High early strength** – ensures rapid commissioning of new equipment and structures.
- **High ultimate strength and resistance to dynamic loads** – ensures permanence of the installation under static and repetitive loads.
- **Flowable long life grout** – easy to grout intricate spaces normally inaccessible by conventional grouting techniques.
- **Extended working time** – facilitates grouting of large or difficult placements in a single pour, often without the use of a pump.
- **Pumpable** – greater volumes of grout can be mixed and handled with less labour.

- **Dense, non-shrink grout** – hardens free of bleeding, settlement and drying shrinkage, ensuring tight contact with all grouted surfaces.
- **Compliance with codes** – meets the non-shrink requirements of ASTM C1090 and CRD-C 621, Corps of Engineers Specification for Non Shrink Grout; tested to the requirements of AS1478.2 "Methods of sampling and testing admixtures for concrete, mortar and grout".

PROPERTIES

Strength development - Typical rates of strength development are as follows:

Compressive Strength (MPa)

(Test Method: AS1478.2 Appendix A)

Age	20°C
1 day	50
3 days	70
7 days	90
28 days	110

Flexural Strength (MPa) – Strength development at a flowable consistency. (Test Method: EN 196-1)

Age	20°C
1 day	8
7 days	14
28 days	15

Volume Change – Volume change when placed at flowable consistency.

Age	20°C
1 day	Positive
3 days	Positive
7 days	Positive
28 days	Positive

Test Method: ASTM C1090 (CRD-C621)

Flow Retention – Effect of temperature on flow retention when placed at flowable consistency.

Age	20°C
Initial	100%
After 1 hour	90%

Bleeding, Plastic Density and Setting Time – effect of temperature on plastic properties when placed at flowable consistency

Temp.	Bleeding (%)	Plastic Density (kg/m ³)	Setting Time	
			Initial (hr:min)	Final (hr:min)
20°C	0	2550	4:00	6:00



We create chemistry

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Test Method: Bleeding AS1012.6; Plastic density AS1012.5; Setting time ASTM C191

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. Field and laboratory tests should be conducted on the basis of the desired placing consistency rather than strictly on indicated water demand. If the project requires strength tests be made on site do not use cylinder moulds.

Water Demand – Actual water demand will depend on consistency required and temperature (both ambient and grout). Do not use too much water, as it will cause grout to bleed or segregate. As a guide, the following indicates the approximate quantity of water required to mix a 20kg bag of **MasterFlow 4600**.

Flowable¹ 2.3-2.4 litres

¹AS1478.2 Appendix D, 45-55cm lateral flow in the flow trough. Do not add sand, cement or other materials to the grout.

Do not use water at a temperature or volume that causes the grout to bleed or segregate.

ESTIMATING DATA

One 20 kg bag of **MasterFlow 4600** mixed according to directions will yield the following consistency grouts at 20°C:

Flowable – 8.7 litres, approx.

MasterFlow 810				
L	Thickness in mm /m ²	m ³	bags /m ³	m ² /mm thickness
8.7	8.7mm	(0.0087)	115	8.7 m ²

APPLICATION

For application directions on preparation, forming, mixing, placing and curing **MasterFlow 4600**, as well as the precautions to take in hot and cold weather, refer to the “Application Guide for **MasterFlow** Cementitious Precision Grouts” available from your local BASF Construction Chemicals representative or BASF website.

PACKAGING

MasterFlow 4600 is packaged in 20kg bags.

SHELF LIFE

MasterFlow 4600 has a shelf life of 12 months when stored in a cool dry environment.

PRECAUTIONS

For detailed Health, Safety and Environmental Recommendations, please consult and follow all instructions on the product BASF Safety Data Sheet (SDS) 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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