MasterFlow 870

Cementitious high strength non-shrink precision grout

Material Description

MasterFlow 870 is a non-shrink, natural aggregate precision grout with excellent high early and ultimate strengths. It is specially formulated to provide extended working time even at high ambient temperatures when mixed and placed at any recommended consistency. MasterFlow 870 is normally placed at a flowable consistency to completely fill voids between 10mm and 100mm.

Areas of Application

MasterFlow 870 is used for all precision, non-shrink grouting applications with clearances of 10mm to 100mm, including:

- Critical equipment baseplates, soleplates & columns
- Precast wall panels, beams, columns, structural building members and curtain walls
- Patching poured in place concrete structures, e.g. honeycombing, using preplaced aggregate techniques
- Underpinning
- Concrete repair applications where a form and pour material is required
- Applications requiring high early compressive strengths and high ultimate compressive strengths

Characteristics and Benefits

- High early strength – ensures rapid commissioning of new equipment and structures.
- High ultimate strength – ensures permanence of the installation under static and moderate repetitive loads. Provides good early and ultimate strengths which ensure quick return to service and long-term durability.
- Flowable long life grout – easy to grout intricate spaces normally inaccessible by conventional grouting technique.
- Extended working time – facilitates grouting of large or difficult placements in a single pour, often without the use of a pump.
- Dense, non-shrink grout – hardens free of bleeding, settlement and drying shrinkage, ensuring tight contact with all grouted surfaces.
- Easy to use – requires no special mixing equipment, it can be mixed in a standard concrete mixer or in a pail using a grout stirrer.
- No added chloride – does not add to chloride load of structure
- Compliance with codes – meets the non-shrink requirements of ASTM C1090 and CRD-C 621, Corps of Engineers Specification for Non Shrink Grout; provides complete non shrink performance when tested in accordance with simulated Bedplate Technique; 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 under variable conditions are as follows:

Effect of consistency on compressive strength (MPa) strength development at 20°C.

Age	Flowable	Plastic
1 day	30	42
3 days	50	61
7 days	65	69
28 days	80	94

Test Method: AS1478.2 Appendix A

Compressive Strength (MPa) effect of temperature on strength development at a flowable consistency

Age	10°C	20°C	30°C
1 day	17	30	33
3 days	45	50	55
7 days	56	65	70
28 days	75	80	85

Test Method: AS1478.2 Appendix A

Flexural Strength (MPa) - effect of temperature on strength development at a flowable consistency.

Age	10°C	20°C	30°C
1 day	3.0	4.5	6.0
3 days	5.0	6.0	7.0
7 days	6.0	7.2	8.1
28 days	7.8	8.6	10.1

Test Method: JIS R 5201

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Indirect Tensile Strength (MPa) - effect of temperature on strength development at a flowable consistency

Age	10°C	20°C	30°C
1 day	2.2	2.6	3.0
3 days	2.4	3.1	4.0
7 days	4.1	4.5	5.0
28 days	4.8	6.3	6.5

Test Method: AS1012.10

Volume Change

Effect of temperature on volume change at a flowable consistency.

Age	10°C	20°C	30°C
1 day	Positive	Positive	Positive
3 days	Positive	Positive	Positive
7 days	Positive	Positive	Positive
28 days	Positive	Positive	Positive

Test Method: ASTM C1090 (CRD-C621)

Flow Retention

Effect of temperature on flow retention at a flowable consistency.

Age	10°C	20°C	30°C
Initial	100%	100%	100%
After 30 minutes	75%	90%	65%
After 1 hour	60%	75%	60%

Bleeding, Plastic Density and Setting Time

Temp.	Bleeding (%)	Plastic Density (kg/m³)	Setting Time	
			Initial (hours)	Final (hours)
10°C	0	2120	4.6	6.0
20°C	0	2155	4.5	5.2
30°C	0	2245	3.0	4.0

Test Method: Bleeding AS1012.6; Plastic density AS1012.5; Setting time AS1012.18

Water Demand

Actual water demand will depend on consistency required and temperature (both ambient and grout). As a guide, the following table indicates the approximate quantity of water required to mix a 20kg bag of MasterFlow 870 to various consistencies.

Temperature	Consistency	
	Flowable[1]	Plastic[2]
20°C	3.3-3.4 litres	2.6-2.7 litres

[1] AS1478.2 Appendix D, 45-55cm lateral flow in the flow trough.
[2] ASTM C230/C230M, 100-120% flow by flow table after 5 drops in 3 s or AS1478.2 Appendix D, 20-30cm lateral flow in the flow trough.
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 us 50mm cube moulds as indicated in AS 1478.2. do not use cylinder moulds and request a test method from Master Builders Solutions.

VOC content: 6g/L Test method: SCAQMD 304-91

Application

For information about application, please obtain a copy of the "Application Guide for MasterFlow Cementitious Precision Grouts" from your local Master Builderes Solutions Technical Sales Representative. For 'dry pack' (damp pack) application, refer to MasterFlow 700.

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Estimating Data

One 20 kg bag of **MasterFlow 870** mixed according to directions will yield the following consistency grouts at 20°C:
Flowable – 10.8 litres, approx.
Plastic – 10.4 litres, approx.

MasterFlow 870					
	L	Thickness in mm./m^2	M^3	Bags /m^3	M^2/mm thickness
Flowable	10.8	10.8 mm	(0.0108)	93	10.8 m^2
Plastic	10.4	10.4 mm	(0.0104)	96	10.4 m^2

Packaging

MasterFlow 870 is packaged in 20kg bags.

Storage & Shelf Life

MasterFlow 870 has a shelf life of 12 months when stored in a cool dry environment.

Precautions

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

Disclaimer

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