MasterFlow® 870

Cementitious high strength non-shrink precision grout

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. Thicknesses greater than 100mm are possible with the addition of aggregate.

RECOMMENDED USES

MasterFlow 870 is used for all precision, non-shrink grouting applications with clearances of 10mm or more, 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.

FEATURES 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.
- **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 CRDC 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	10ºC	20ºC	30ºC
1 day	17	30	39
3 days	45	50	61
7 days	56	65	78
28 days	75	80	94

Test Method: AS1478.2 Appendix A

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

Age	10ºC	20ºC	30ºC
1 day	3.0	4.5	7.5
3 days	5.0	6.0	9.0
7 days	6.0	7.2	9.8
28 days	7.8	8.6	11.4

Test Method: JIS R 5201

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

Age	10ºC	20ºC	30ºC
1 day	2.2	2.6	3.3
3 days	2.4	3.1	5.0
7 days	4.1	4.5	5.5
28 days	4.8	6.3	7.4

Test Method: AS1012.10

Volume Change – effect of temperature on volume change at a flowable consistency.

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

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

Temp.	Bleeding %	Plastic Density kg.m3	Setting Time	
			Initial (hours)	Final (hours)
10ºC	0	2120	4.6	6.0
20 ºC	0	2155	4.5	5.2
30 ºC	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 25kg bag of **MasterFlow 870** to various consistencies.

Temperature	Consistency	
	Flowable [1]	Plastic [2]
20 ºC	4.2 litres	3.25 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 do not use cylinder moulds.

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

ESTIMATING DATA

One 25 kg bag of **MasterFlow 870** mixed according to directions will yield the following flowable grouts at 20°C:

Quantity of aggregate	Nil	13 kg	25 kg
Add 4.2 L water	13.0L	18.5L	23.1 L

The material requirement at flowable consistency without any aggregate is 18.5 kg/m2 for 10 mm thickness.

APPLICATION

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

PACKAGING

MasterFlow 870 is packaged in 25kg bag.

SELF LIFE

MasterFlow 870 has a shelf life of approximately 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 Material Safety Data Sheet (MSDS) from our office or our website.

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