

# MasterFlow 9600

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**Bulk supplied, offshore grout with applied nanotechnology for grouting foundations of wind turbine installations**

## MATERIAL DESCRIPTION

MasterFlow 9600 is a shrinkage compensated grout which when mixed with water, produces a homogeneous, flowable and pumpable grout. Latest best binder packing models and applied cementitious nanotechnology produces a grout with superior technical performance, and exceptional rheological properties.

## AREAS OF APPLICATION

MasterFlow 9600 has been especially formulated for large scale, pump applications.

- Grouting of the non-structural parts of offshore wind turbine installations
- For use as high strength grout in offshore foundations like monopiles using bolted connections
- For skirt backfilling in offshore applications
- Grouting under very harsh conditions, e.g. at temperatures as low as 2°C.

Contact the Technical Department of your local Master Builders Solutions office regarding any application required not mentioned here.

## CHARACTERISTICS AND BENEFITS

- Compressive strength class C60/75, even at cold temperatures.
- Available as silo material.
- Can be applied in the shortest weather windows.
- Excellent strength gain.
- No segregation or bleeding to ensure consistent final physical performance.
- For applications in a wide temperature range.
- Excellent flow and pumping properties reduce installation times and costs.
- Very fast grout installation: no interference with the critical path of the installation vessel. Grout installed while bolts of the foundation are initially tensioned.
- Pumpable through 2" grout lines.
- Volume stable.
- Installation with continuous and closed grouting process. No batching of individual mixes.
- No dust formation during grouting, ensuring safe handling for grouting workers and other personnel.

## APPLICATION METHOD

MasterFlow 9600 has been especially formulated for use in specific applications. As such MasterFlow 9600 should be installed by experienced fully trained contractors. Full application procedures are available on request.

## CLEANING OF TOOLS

Tools and spillages can be cleaned with water while MasterFlow 9600 is still uncured.

Once hardened, the material can only be removed mechanically.

## CONSUMPTION

1000 kg powder will yield approximately 480 to 525 litre of mixed grout.

## PACKAGING

MasterFlow 9600 is supplied by bulk transport and is stored in special jobsite silos.

## STORAGE

Store under dry conditions in closed silos. Shelf life under these conditions is 6 months.

## NOTES

- Sands or other products that could affect the products properties must not be added.
- MasterFlow 9600 which will be exposed to strong drying conditions, e.g. mortar which is directly exposed to heavy wind and/or direct sunlight, should be protected using appropriate MasterKure curing agents.
- Seek advice for any application not covered in this datasheet.

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TECHNICAL DATA	Unit	Values
Density of mixture (DIN18555-2)	g/cm <sup>3</sup>	2.25 (± 0.05)
Mixing water demand	litres	130 / 1000 kg powder (± 10)
Pot life of mixed material	minutes	≥ 120
Air content (EN 1015-7)	%	≤ 4
Application temperature (substrate and material):	°C	2 ≤ T ≤ 30
Application thickness	mm	30 - 400
<b>Typical values</b>		
Compressive strength (75 mm cubes – EN 12390-3)	N/mm <sup>2</sup>	
- after 1 day		≥ 25
- after 7 days		≥ 60
- after 28 days		≥ 75
Concrete strength class (EN 206)	Class	C60/75
Early strength (acc. DAfStb guideline)	Class	B
<b>Installation / Additional information</b>		
Mixer and pump type		Continuous mixing and pumping system
Fire resistance (EN 13501-1)	Class	A1
Exposure classes (EN 206-1, DIN 1045-2)		XO, XC4, XD3, XS3, XF3, XA2, WA
<b>Independent test results - Testing in general accordance with Z.i.E. test program and DAfStb guideline</b>		
Workability – Slump flow (EN12350-8)	mm	≥ 650
Workability – Spread of flow (EN1015-3)	mm	≥ 290
Sedimentation stability (VeBMR, Annex B.4)		Given
Cylinder compressive strength (EN 12390-3)	MPa	94.4
Characteristic cylinder strength	MPa	90.6
Prism compressive strength (EN 196-1)	MPa	<u>2°C</u> 88.6 <u>20°C</u> 102.2 <u>30°C</u> 115.8
Flexural strength (EN 196-1)	MPa	<u>2°C</u> 13.1 <u>20°C</u> 14.3 <u>30°C</u> 14.0
Cubes compressive strength (75 mm cubes – EN12390-3)	MPa	
- after 1 day		40.2
- after 7 days		94.9
- after 28 days		106.3
Static E-modulus (EN 12390-13)	MPa	37300
Autogenous shrinkage – 14 days (Schleibinger method)	mm/m	-0.135
Data are given for conditions of 20°C and 65% R.H. unless otherwise stated. The technical data provided do not represent guaranteed minima.		

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## HEALTH AND SAFETY

Usual preventive measures for the handling of chemical products should be observed when using this product, for example do not eat or drink while working and wash hands when taking a break or when the job is completed. MasterFlow 9600 contains cement. Avoid contact with eyes and prolonged contact with skin. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Call a physician. In case of contact with skin, wash skin thoroughly.

Specific safety information referring to the handling and transport of this product can be found in the Material Safety Data Sheet.

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

### Hazards Identification

Symbol:



Possible hazards:

Irritating to respiratory system and skin.  
Risk of serious damage to eyes

Hazard Statement:

H318 Causes serious eye damage  
H315 Causes Skin irritation  
H335 May cause respiratory irritation

Precautionary Statements:

P102 Keep out of reach of children  
P280 Wear protective gloves and eye/face protection  
P261 Avoid breathing dust  
P264 Wash with plenty of water and soap thoroughly after handling  
P305/P351/P338 If in eyes: rinse cautiously with water for several minutes.  
Remove contact lenses, if present and easy to do.  
Continue rinsing.  
P315 Get immediate medical advice/attention.  
P304/P340 If inhaled: remove victim to fresh air and keep at rest in a position comfortable for breathing  
P302/P352 If on skin: wash with plenty of soap and water  
P332/P313 If skin irritation occurs: get medical advice/attention  
P362 Take off contaminated clothing and wash before reuse  
MAL-kode (1993):00-4

## Master Builders Solutions

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## DISCLAIMER:

Similar to all the other recommendations and technical information, this technical data sheet serves only as a description of the product characteristics, mode of use and applications. The data and information given are based on our technical knowledge obtained in the bibliography, laboratory tests and in practice. The data on consumption and dosage contained in this data sheet are based on our own experience and are therefore subject to variations due to different work conditions. Real consumption and dosage should be determined on the job by means of prior tests and are the liability of the client. Our Technical Service is at your disposal for any additional advice.

Master Builders Solutions reserves the right to modify the composition of the products provided these continue to comply with the characteristics described in the data sheet. Other applications of the product not covered by those indicated shall not be our liability. In the case of defects in the manufacturing quality of our products we provide a guarantee, any additional claims being exempt and our liability being only to return the value of the goods supplied. The possible reservations with respect to patents or third-party rights should be noted.

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The present data sheet becomes null and void on issuance of a new edition.

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