MasterFlow 9200

Ultra-high strength, cement based grout with applied nanotechnology for grouting onshore VESTAS wind turbine installations

MATERIAL DESCRIPTION

MasterFlow 9200 is a shrinkage compensated, cement based grout which when mixed with water, produces a homogeneous, flowable and pumpable grout with exceptionally high early and final strength and modulus. The product exhibits increased ductility, fatigue and impact resistance. Latest best binder packing models and applied nanotechnology produces a grout with superior technical performance, exceptional rheological properties, and uniquely, extended open times.

AREAS OF APPLICATION

MasterFlow 9200 has been especially formulated for:

- Grouting of wind turbine installations, that are installed using pre-stressing techniques e.g. base plate grouting of onshore wind turbines
- Installations where excellent fatigue resistance is required
- Grouting under very harsh conditions, e.g. temperatures as low as 2°C.
- Anchoring anchor bolts of wind turbine towers
- All void filling from 25mm to 600mm where high strength, high modulus, high ductility is important

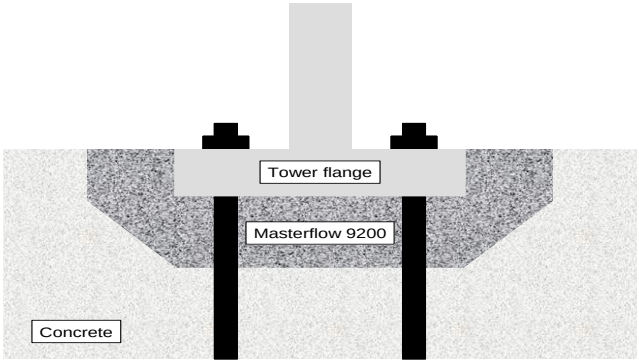
Contact the Technical Department of your local Master Builders Solutions office regarding any application or dimensions required not mentioned here.

CERTIFICATES & TEST REPORTS

- Gutachen über die Anwendung des Ermüdungsnachweises nach CEB-FIP Model Code 90 auf den Vergussmörtel MasterFlow 9200 für Druckschwellbeanspruchung
- Gutachen über die Anwendung des Ermüdungsnachweises nach fib-Model Code 2010 (Entwurf) auf den Vergussmörtel MasterFlow 9200 bei Druckschwellbeanspruchung
- Certification of conformity according to the “DAfStb-Richtlinie – Herstellung und Verwendung von zementgebundenem Vergussbeton und Vergussmörtel“ (QDB)
- Declaration of performance according to EN 1504-6
- Pull-out resistance tests according to DIN EN 1881 in wet concrete

CHARACTERISTICS AND BENEFITS

- Ultra-high compressive strength: > C100/115 according to EN 206-1
- Ultra-high modulus for exceptional stiffening properties
- Excellent fatigue resistance.
- Quick return to service and removal of temporary supports due to high early strength build-up ≥ 75 MPa @ 24hrs at 20°C
- No segregation or bleeding to ensure consistent final physical performance and to prevent pump blockages
- Extended pot life of ≥ 2 hours
- Can be pumped into complex areas or areas inaccessible to conventional grouting methods
- Specially graded sands and exceptional flow and low friction increases pump output, reduces installation times and costs as well as reducing pump pressures and wear
- Dust reduced for ease of handling
- Cement based
- Low chromate



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BE0088/02

EN 13504-6
Cement based grout

EN 1504-6 Principles 4.2

Pull-out strength	Displacement ≤ 0,6 mm at 75 kN load
Chloride ion content	≤ 0,05 %
Reaction to fire	Euroclass A1
Dangerous substances	Complies with 5.3

Master Builders Solutions Belgium nv

VeBMR

QDB
QUALITÄTSGEMEINSCHAFT DEUTSCHE BAUCHEMIE EV

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APPLICATION METHOD

MasterFlow 9200 has been especially formulated for use in specific applications. As such MasterFlow 9200 should be installed by experienced fully trained and licensed contractors.Full application procedures are available on request.

(A) MIXING

Do not add cement, sand or other materials that affect the properties of this quality-controlled product. Mix full bags only.
Use one or more mixers (forced action pan mixers are advised) to permit mixing and placing operations to proceed simultaneously without interruption.
Mix with potable water only. Put most of the water required in the mixer and add slowly the grout material. Mix until a homogeneous mortar (3 to 4 minutes), add the remaining water and continue mixing for at least another 2 minutes until the required fluid or flowable consistency is obtained.

(B) PREPARATION OF THE CONCRETE SUBSTRATE

Remove all formwork, formwork release agents and other materials that can prevent good adhesion of MasterFlow 9200 to the concrete foundation.
Thoroughly clean out the foundation area to be grouted back to a clean and structurally sound concrete.
Saturate the cleaned foundation with plenty of water. Remove all free standing water just prior to grouting.

(C) PLACEMENT OF GROUT

Mix and place the grout as close as possible to the area to be grouted. Have sufficient manpower, materials and tools to make mixing and placing rapid and continuous.
MasterFlow 9200 should be pumped into the area to be grouted.
The grout shall be placed continuously and from one side only, to avoid air entrapment while grouting. Make sure grout fills the entire space to be filled and remains in contact with the base plate and foundation throughout the entire grouting process.
DO NOT VIBRATE MasterFlow 9200
Special care is to be taken when placing the grout at high thickness (consult application method which is available to the Licensed Contractor).

CLEANING OF TOOLS

Tools and spillages can be cleaned with water while MasterFlow 9200 is still uncured.
Once hardened, the material can only be removed mechanically.

CONSUMPTION

ca. 2.2 kg powder for 1 litre of mixed mortar

PACKAGING

MasterFlow 9200 is supplied in 25 kg bags or 500 kg big bags.

STORAGE

Store in cool and dry conditions. Shelf life under these conditions is 12 months in unopened original bags.

NOTES

- Sands or other products that could affect the products properties must not be added.
- MasterFlow 9200 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 with moist cloth or plastic foil, or by using appropriate MasterKure curing agents.
- The temperature of the grout material, mixing water and elements added in contact with the mixed grout should be in the range of +2°C to +35°C.
- When grouting in environments below +2°C or above +35°C contact the Technical Department of your local Master Builders Solutions office.

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TECHNICAL DATA	Unit	Values			
Density of mixture (DIN18555-2)	g/cm^3	Approximately 2.4			
Mixing water demand	temperatures	2-15 °C	16-25 °C	26-30 °C	31-35 °C
	litre / 25 kg bag	1.70	1.75 ± 0.05	1.85 ± 0.05	1.95 ± 0.05
	litre / 500 kg bag	34.0	35.0 ± 1.0	37.0 ± 1.0	39.0 ± 1.0
Pot life of mixed material	hours	≥ 2			
Setting time	hours	9			
Air content (EN 1015-7)	%	≤ 4			
Application temperature (substrate and material):	°C	From +2 to +35			
Application thickness	mm	25 - 600			
Mechanical properties:					
Compressive strength @ 20 °C (40 x 40 x 160 mm prisms – EN 12190)	N/mm²	1 day	7 days	28 days	
		> 80	> 115	> 135	
Flexural strength (40 x 40 x 160 mm prisms – EN196-1)	N/mm²	≥ 18			
Static modulus of elasticity (EN 1048-5)	GPa	≥ 45			
Fatigue tested following, Model Code 2010 and Model Code 90		See test report from, Leibnitz Universität Hannover			
Adhesion strength to concrete (EN 1542)	N/mm²	≥ 2			
Adhesion strength after freeze/thaw (EN 13687-1)	N/mm²	≥ 2			
Pull-out strength of rebar (EN 1881) displacement at 75kN load	mm	≤ 0.6			
Installation / Additional information					
Maximum grain size	mm	4			
Mixing time	minutes	Approximately 5			
Mixer type		e.g. pan mixer			
Application method		One continuous pour			
Fire resistance (EN13501-1)	class	A1 (fl)			

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Classification according to DAfStb VeBMR Rili			
Flow class	class	f2	
Consistency flow channel slump cone	mm	680 295	
Expansion	volume %	≥ 0.1	
Compressive strength class	class	> C100/115	
Early strength class	class	A	
Early strength (at 2°C / 40 x 40 x 160 mm prisms) - 24 / 48 hours	MPa	At 2 °C 24 / 48 hours	At 20 °C 16 / 24 hours
		≥ 3 / ≥ 42	≥ 45 / ≥ 80
Shrinkage	class	SKVM 0	
Exposure class (EN 206-1, DIN 1045-2)		XO, XC4, XD3, XS3, XF4, XA2, WF	
Data are given for conditions of 20ºC and 65% R.H. unless otherwise stated. The technical data provided do not represent guaranteed minima.			

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 9200 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 advise/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 advise/attention
P362 Take off contaminated clothing and wash before reuse

MAL-kode (1993): 00-4

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DISCLAIMER

Edition 20/06/2023 The present data sheet becomes null and void on issuance of a new edition.