

MasterFlow[®] 9200

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

PRODUCT DESCRIPTION

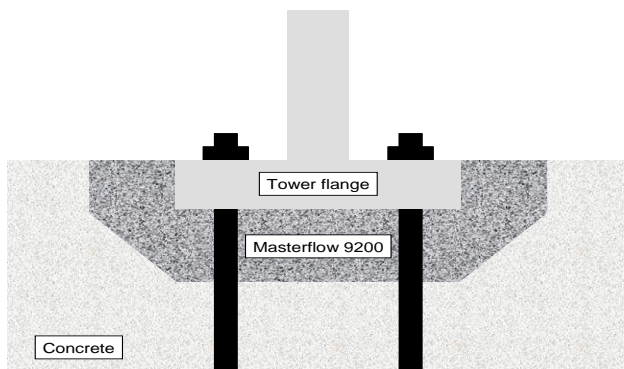
MasterFlow[®] 9200 is a shrinkage compensated, cement based grout which when mixed with water, produces a homogeneous, flowable and pumpable grout with exceptionally high early and final strength and modulus. The product exhibits increased ductility, fatigue and impact resistance. Latest best binder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

FIELDS 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 300mm where high strength, high modulus, high ductility is important

Contact the Technical Department of your local BASF Construction Chemicals office regarding any application or dimensions required not mentioned here.



FEATURES AND BENEFITS

- Validated according the German DAfStb guideline (RILI): "Production and application of cement based flowing concrete and grouting mortar" (VeBMR).
- Ultra high compressive strength: > C100/115.
- The actual strength class is not covered by EN206, but is in the order of C110/125 or higher
- 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. ≥ 55 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.

APPLICATION METHOD

MasterFlow[®] 9200 has been especially formulated for use in specific applications. As such **MasterFlow 9200** should be installed by experienced fully trained contractors.

Full application procedures are available on request.

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.

MasterFlow[®] 9200

Preparation of the concrete substrate:

Remove all formwork, formwork release agents and other materials that can prevent to 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.

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**

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 coming in contact with the mixed grout should be in the range of +2°C to +30°C
- When grouting in environments below +2°C or above +30°C contact the Technical Department of your local BASF Construction Chemicals office.

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.

Safety phrases

Symbol: Xi Irritant

Contains: Cement, Portland, chemicals.

After adding water the mixture is alkaline. Contains less than 2 mg water soluble chromate per kg of cement.

R37/38 Irritating to respiratory system and skin.

R41 Risk of serious damage to eyes.

S2 Keep out of the reach of children.

S22 Do not inhale dust.

S24/25 Avoid contact with skin and eyes.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S28.1 After contact with skin, wash immediately with plenty of water and soap.

S27 Take off immediately all contaminated clothing.

S37/39 Wear suitable gloves and eye/face protection.

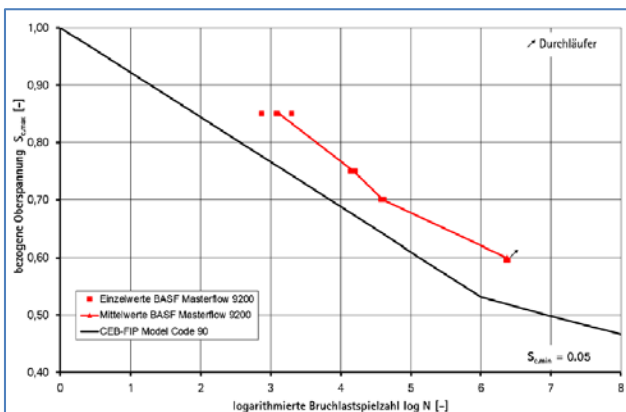
S46 If swallowed, seek medical advice immediately and show this container or label.

MAL-kode (1993): 00-4

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TECHNICAL DATA	Unit	Values		
Density of mixture (DIN18555-2)	g/cm ³	Approx. 2.4		
Mixing water demand	litres	Approx. 1.875 / 25 kg powder (0.75 / kg)		
Pot life of mixed material	hours	≥ 2		
Setting time	hours	≤ 8		
Air content (EN 1015-7)	%	≤ 4		
Application temperature (substrate and material):	°C	From +2 to +30		
Application thickness	mm	25 - 300		
Mechanical properties:				
Compressive strength (40 x 40 x 160 mm prisms – EN 12190) - after 1 day - after 7 days - after 28 days	N/mm ²	<u>20°C</u>	<u>30°C</u>	<u>2°C</u>
		≥ 55	≥ 70	≥ 3
		≥ 80	≥ 90	≥ 60
		≥ 110	≥ 120	≥ 90
Flexural strength (40 x 40 x 160 mm prisms – EN196-1)	N/mm ²	≥ 14		
Tensile splitting strength (EN12390-6)	N/mm ²	≥ 8		
Static modulus of elasticity (EN 13412)	GPa	≥ 40		
Capillary water absorption (EN 13057)	kg / m ² .h ^{-0.5}	≤ 0.05		
Crack resistance - Coutinho-ring		no cracking after 180 days		
Adhesion strength to concrete (EN 1542)	N/mm ²	≥ 2		
Adhesion strength after freeze/thaw (EN 13687-1)	N/mm ²	≥ 2		
Pull-out strength of rebar (EN 1881) displacement at 75kN load	mm	≤ 0.6		
Installation / Additional information				
Maximum grain size	mm	3		
Mixing time	minutes	Approximately 7		
Mixer type		e.g. pan mixer		
Application method		One continuous pour, from one side only		
Fire resistance (EN13501-1)	class	A1 (fl)		
Classification acc. DAfStb VeBMR Rili				
Flow channel classification		f1 (after 2 min)		
Correlation consistency: - Flowing channel after 2 min. - Flow after 2 min.:	cm	61		
	cm	22		
Compression strength classification		> C100/115		
Early compression strength classification		A		
Shrinkage classification		SKVM 0		
Exposure classes (EN 206-1, DIN 1045-2)		XO, XC4, XD3, XS3, XF3, XA2, WF		
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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Fatigue resistance measured according CEB-FIB Model Code 90

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

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