

MASTERFLOW[®] 9200

Ultra high strength, cement based grout with applied nanotechnology for grouting onshore 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.

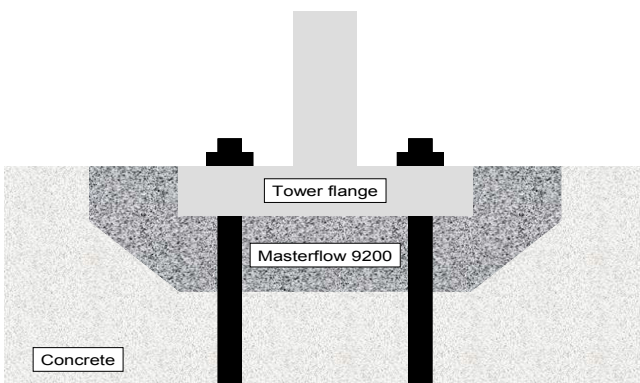


Fields of application

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 (RIL): "Production and application of cement based flowing concrete and grouting mortar" (VeBMR).
- Ultra high compressive strength: class C100/115.
- 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. $\geq 55 \text{ MPa @ 24hrs at } 20^\circ\text{C}$
- No segregation or bleeding to ensure consistent final physical performance and to prevent pump blockages.
- Pump able over long distances and large heights.
- Extended pot life of ≥ 2 hours
- Can be pumped or poured 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.

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.

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.

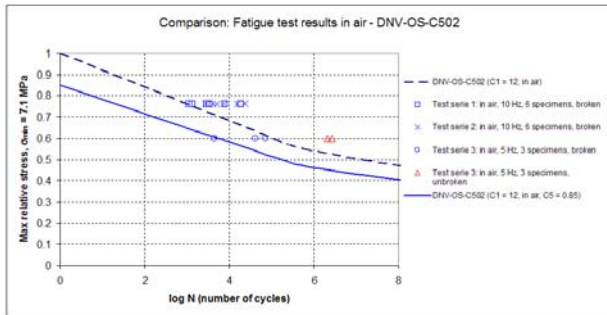
S46 If swallowed, seek medical advice immediately and show this container or label.

MAL-Kode (1993): 00-4

Technical data

Property	Unit	Values												
Density of mixture (DIN18555-2)	g/cm ³	Approximately 2.4												
Mixing water demand	litres	1.85 / 25 kg powder (0.075 / kg)												
Pot life of mixed material	minutes	Approximately 180												
Setting time	hours	≤ 8												
Air content (EN 1015-7)	%	≤ 4												
Application temperature (substrate and material):	°C	From +2 to +30												
Minimum total application thickness	mm	25												
Maximum total application thickness	mm	300												
Typical values														
Compressive strength (40 x 40 x 160 mm prisms – EN 12190) - after 1 day - after 7 days - after 28 days	MPa	<table border="1"> <thead> <tr> <th>20°C</th> <th>30°C</th> <th>2°C</th> </tr> </thead> <tbody> <tr> <td>≥ 55</td> <td>≥ 70</td> <td>≥ 3</td> </tr> <tr> <td>≥ 80</td> <td>≥ 90</td> <td>≥ 60</td> </tr> <tr> <td>≥ 110</td> <td>≥ 120</td> <td>≥ 90</td> </tr> </tbody> </table>	20°C	30°C	2°C	≥ 55	≥ 70	≥ 3	≥ 80	≥ 90	≥ 60	≥ 110	≥ 120	≥ 90
20°C	30°C	2°C												
≥ 55	≥ 70	≥ 3												
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Flexural strength (40 x 40 x 160 mm prisms – EN 12190) - after 1 day - after 7 days - after 28 days	MPa	<table border="1"> <tbody> <tr> <td>≥ 7</td> </tr> <tr> <td>≥ 10</td> </tr> <tr> <td>≥ 14</td> </tr> </tbody> </table>	≥ 7	≥ 10	≥ 14									
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Static modulus of elasticity (EN 13412)	GPa	≥ 40												
Tensile splitting test (EN 12390-6)	MPa	≥ 8.0												
Capillary water absorption (EN 13057)	kg / m ² .h ^{-0.5}	≤ 0.05												
Adhesion strength to concrete (EN 1542)	MPa	≥ 2												
Adhesion strength after freeze/thaw (EN 13687-1)	MPa	≥ 2												
Drying shrinkage (EN 12617-4)	mm/m	≤ 0.3												
Crack resistance - Coutinho-ring		No cracking after 120 days												
Pull-out strength of rebar (EN 1881) displacement at 75kN load	mm	≤ 0.6												
Data are given for conditions of 20°C and 50% R.H. unless otherwise stated. The technical data provided do not represent guaranteed minima.														
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 cm	61 22												
Compression strength classification		C100/115												
Early compression strength classification		A												
Shrinkage classification		SKVM I												
Exposure classes (EN 206-1, DIN 1045-2)		XO, XC4, XD3, XS3, XF4, XA2, XM2												

Fatigue resistance



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NOTE:

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.

BASF Construction Chemicals 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.

Edition 07/2013

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