

microfine[®] CEMENTS

DATA SHEET

MC300 [®] Ultrafine	D ₉₅ of 6µm
MC500 [®] Microfine [®]	D ₉₅ of 9.5µm
MC800 Fine	D ₉₅ of 16µm

Microfine[®] Cements are blast furnace slag based cements composed of ultrafine particles and are designed for injection into loose soils, rock and concrete. They feature a maximum grain size ranging from a D₉₅ of 6µm to a D₉₅ of 16µm. Depending on the application and the permeability of the strata, different grain size can be used. The composition is comparable to high sulfate – resistant cements. It is suited for stabilizing or sealing all earthen foundations; especially for permanent structures such as tunnels, dams, deep foundations and oil storage tanks. Because they cure into a hardened concrete, **Microfine[®] Cements** cause no pollution to underground soils or water supplies.

Microfine[®] Cements may be used for:

- ❖ Geotechnical grouting
- ❖ Oil well remedial cementing
- ❖ Seal off underground streams
- ❖ Seal gaps between sheetpiles
- ❖ Create cut off walls for dam construction
- ❖ Reinforce foundations in dams
- ❖ Reinforce and waterproof tunnel walls and roofs
- ❖ Create waterproof basins for reservoirs
- ❖ Reinforce foundations of buildings
- ❖ Facilitate all types of excavation for the construction of subways, breakwaters and bridge piers
- ❖ Stabilize hazardous waste and provide secondary containment for nuclear waste

Microfine[®] Cements' advantages are:

- ❖ Penetrating Power – Ultrafine particle size allows the grout to penetrate fine sands and finely cracked rock
- ❖ High Cured Strength – Ultrafine grains are chemically activated so curing provides rapid curing to high strength
- ❖ Excellent Durability – After curing by hydration, the grout acquires impermeability which protects it from underground as well as sea water to insure extremely long durability
- ❖ Low Permeability – Neat Microfine[®] Cements exhibit a 10⁻⁹ cm/sec permeability in laboratory testing. This allows them to be used for hazardous waste stabilization and nuclear waste secondary containment

 **de neef[®]** Construction Chemicals, Inc

PO Box 1219 • Waller, Texas 77484-1219 • Website – www.deneef.com
Phone 936/372-9185 • Fax 936/372-9897 • e-mail – info@deneef.com

FORMULATION ASTM C 150		MC300®	MC500®	MC800
Bulk Specific Gravity 0.7	(Kg/dm ³)	approx 0.7	approx 0.7	approx
Absolute Density 2.9	(Kg/dm ³)	approx 2.9	approx 2.9	approx
Surface (BET Method) 12,000	(cm ² /g)	approx 19,000	approx 16,000	approx
Grain Size d ₅₀ ASTM C 204	(µm)	[2.5	[3.5	[5.0
Grain Size d ₉₅ ASTM C 204	(µm)	[6.0	[9.5	[16.0
Water/Cement Ratio	(-)	2:1	2:1	2:1
Superplasticizer		NS-200	NS-200	NS-200
Superplasticizer Content	(% by mass)	2.0	2.0	2.0

PROPERTIES* at 208C

Run out time (Marsh's funnel device) 29	(sec/dm ³) 0 minutes	approx 29	approx 29	approx
30	30 minutes	approx 30	approx 30	approx
30	60 minutes	approx 30	approx 30	approx
30	90 minutes	approx 30	approx 30	approx
Sedimentation**	(% by vol.)			
	30 minutes	0	0	0
	60 minutes	[2	[3	[3
	90 minutes	[3	[5	[5
Compressive Strength***	N/mm ²			
psi)	3 days	<3.5 (508 psi)	<3.0 (435 psi)	<2.5 (363
psi)	7 days	<5.0 (725 psi)	<4.0 (580 psi)	<3.0 (435
psi)	14 days	<6.0 (870 psi)	<4.5 (653 psi)	<3.5 (508
psi)	28 days	<6.0 (870 psi)	<4.5 (653 psi)	<4.0 (580

* 2 liter batch; mixed with dissolving plate at 7000 rpm; mixing time 5 minutes; mixing sequence - water, NS200, Microfine® Cement. Suspension mixed continuously at 350 rpm until time of test.

** 250 cm³ graduated cylinder filled after suspension made.

*** determined using 4X4X16 cm prisms with DIN standard sand.

MC300®, MC500®, and Microfine® are registered trademarks of De Neef® Construction Chemicals, Inc.

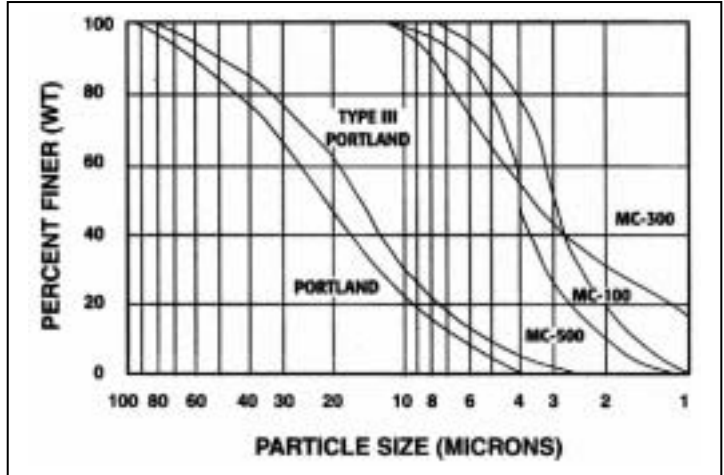
NS-200 DISPERSANT:

Appearance: Dark Brown Liquid

Composition: Naphthalene Sulfonate Formaldehyde Condensate

Solids: 40% 6 1%

GRADUATION CURVES:



TYPICAL GROUT FORMULATIONS - One Component Grout Mix

MC500[®] used for reinforcing foundations requires particular strength and durability. The one component grout mix consists of water, dispersant and **MC500[®] Microfine[®] Cement**. Typically, it will be a 2:1 water:cement ratio.

ONE COMPONENT GROUT MIX – MC500[®] (Large Batch 1:1, 2:1 & 3:1)						
Set Time 3-5 hours						
Batch Size	5 Bags	5 Bags	4 Bags	4 Bags	3 Bags	3 Bags
Bag Size	20 kilo (44lb)	25 kilo (55lb)	20 kilo (44lb)	25 kilo (55lb)	20 kilo (44lb)	25 kilo (55lb)
Water:MC500 [®]	1:1 ⁽¹⁾	1:1	2:1	2:1	3:1	3:1
Water	100 Liters ⁽²⁾ (26.4 gal)	125 Liters (33 gal)	160 Liters (42.3 gal)	200 Liters (53 gal)	180 Liters (47.6 gal)	227 Liters (60 gal)
NS-200	0.8 Liters ⁽³⁾ (0.2 gal)	1.0 Liters (0.28 gal)	0.66 Liters (0.17 gal)	0.83 Liters (0.22 gal)	0.5 Liters (0.13 gal)	0.6 Liters (0.16 gal)
MC500 [®]	100 kilos ⁽⁴⁾ (220 lb)	125 kilos (274 lb)	80 kilos (176 lb)	100 kilos (220 lb)	60 kilos (132 lb)	75 kilos (165 lb)
Total	134 liters (35 gal)	167 liters (44 gal)	187 liters (49 gal)	235 liters (62 gal)	200 liters (53 gal)	254 liters (67 gal)

ONE COMPONENT GROUT MIX – MC500[®] (Small Batch 1:1)						
Set Time 3-5 hours						
Batch Size	2 Bags	2 Bags	1-1/2 Bags	1-1/2 Bags	1 Bag	1 Bag
Bag Size	20 kilo (44lb)	25 kilo (55lb)	20 kilo (44lb)	25 kilo (55lb)	20 kilo (44lb)	25 kilo (55lb)
Water:MC500 [®]	1:1 ⁽¹⁾	1:1	1:1	1:1	1:1	1:1
Water	40 Liters ⁽²⁾ (11 gal)	50 Liters (13 gal)	30 Liters (7.8 gal)	37.5 Liters (9.75 gal)	20 Liters (5.28 gal)	25 Liters (6.5 gal)
NS-200	0.34 Liters ⁽³⁾ (.09 gal)	.42 Liters (.11 gal)	.25 Liters (.066 gal)	.30 Liters (.08 gal)	.15 Liters (.04 gal)	.21 Liters (.055 gal)
MC500 [®]	40 kilos ⁽⁴⁾ (88 lb)	50 kilos (110 lb)	30 kilos (66 lb)	37.5 kilos (82.5 lb)	20 kilos (44lb)	25 kilos (55 lb)
Total	54 Liters (14 gal)	67 Liters (17.4 gal)	40 Liters (10.4 gal)	50 Liters (13.05 gal)	27 Liters (7 gal)	34 Liters (8.71 gal)

ONE COMPONENT GROUT MIX – MC500® (Small Batch 2:1)

Set Time 3-5 hours

Batch Size	2 Bags	2 Bags	1-1/2 Bags	1-1/2 Bags	1 Bags	1 Bags
Bag Size	20 kilo (44lb)	25 kilo (55lb)	20 kilo (44lb)	25 kilo (55lb)	20 kilo (44lb)	25 kilo (55lb)
Water:MC500®	2:1 ⁽¹⁾	2:1	2:1	2:1	2:1	2:1
Water	80 Liters ⁽²⁾ (21 gal)	100 Liters (26 gal)	60 Liters (15.6 gal)	75 Liters (20 gal)	40 Liters (10.4 gal)	50 Liters (13 gal)
NS-200	.34 Liters ⁽³⁾ (.09 gal)	.42 Liters (.11 gal)	.25 Liters (.066 gal)	.30 Liters (.08 gal)	.15 Liters (.04 gal)	.21 Liters (.055 gal)
MC500®	40 kilos ⁽⁴⁾ (88 lb)	50 kilos (110 lb)	30 kilos (66 lb)	37.5 kilos (82.5 lb)	20 kilos (44 lb)	25 kilos (55 lb)
Total	94 Liters (24.3 gal)	117 Liters (30.4 gal)	70 Liters (18.2 gal)	88 Liters (23 gal)	47 Liters (12.16 gal)	59 Liters (15.2 gal)

- (1) Kilogram water:kilogram dry MC500® (one liter of dry MC500® weighs 1.0 kg, 63lb/ft³)
 (2) Liters X 0.2642 equals gallons
 (3) One wt. % dispersant on cement (density NS-200 1.2 kg/L, 10 lb/gal)
 (4) Kilograms X 2.205 equals pounds (20 kg MC500® displaces 6.6 liters of water)

For example using the 2:1 water/MC500® grout mix, start with 160 liters (42.3 gal) water and add 0.66 liters (0.17 gal) NS-200 dispersant and mix well. Next add 80 kilos (4 bags) MC-500® to the tank and shear mix with colloidal mixer. Set time for the one component grout mix is 3-5 hours. Initial hardening time is 30-40 hours.

PACKAGING:

MC500® 20 kg (44 lbs) PE/Paper bags – 50 bags per pallet (1 metric ton)
 25 kg (55 lbs) PE/Paper bags – 40 bags per pallet (1 metric ton)

NS-200 20 kg (55 lbs) lined, plastic pails

SAFE HANDLING AND STORAGE

Freshly mixed cement grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin promptly with water. Use dust mask when breaking bags and mixing. If cement grout gets into the eye, rinse immediately and repeatedly with water for 15 minutes and seek prompt medical attention. Microfine® cement may deteriorate after long periods of storage. Keep in dry area stored on pallets in cool location.

Product Warranty

De Neef Construction Chemicals, Inc. products are warranted under the following policy:

All recommendations, statements and technical data contained herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty either expressed or implied. User shall rely on his or her own information and tests to determine suitability of this product for the intended use and user assumes all risk and liability resulting from his or her use of the product. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product of this manufacturer which proves to be defective. Neither seller nor manufacturer shall be liable to buyer or any third person for any injury, loss or damage directly or indirectly resulting from use or inability to use this product. Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer

11/25/03

EMERGENCY RESPONSE – CALL CHEMTREC 800/424-9300

 **de neef®** Construction Chemicals, Inc.

PO Box 1219 • Waller, Texas 77484-1219 • Website – www.deneef.com
 Phone 936/372-9185 • Fax 936/372-9897 • e-mail – info@deneef.com