

EMBECO® 885

High precision, nonshrink, metallic aggregate grout with extended working time

DESCRIPTION:

EMBECO® 885 grout is high precision, nonshrink, metallic aggregate grout with extended working time. It is ideally suited for grouting machines or plates requiring optimum toughness and precision load-bearing support, including machine bases subject to thermal movement.

EMBECO® 885 grout meets the requirements of ASTM C 1107 and the Army Corp of Engineers CRD C 621, Grades B and C, at a highly fluid consistency over a temperature range of 45 to 90 °F (7 to 32 °C).

RECOMMENDED FOR:

- Precision nonshrink grouting of:
 - Machinery and equipment
 - Paper machine soleplates, including hooded dryer sections
 - Turbines, generators and centrifugal compressors
 - Rolling, stamping, drawing and finishing mills for the steel and aluminum industries
- Grouting anchor bolts, reinforcing bars and dowel rods
- Applications requiring high strength and impact-resistance
- Applications requiring nonshrink grout to achieve maximum bearing for optimum load transfer
- Application requiring a metallic grout to be pumped

FEATURES/BENEFITS:

- Meets ASTM C 1107 and CRD C 621, Grades B and C requirements at a highly fluid consistency over a temperature range of 45 to 90 °F (7 to 32 °C) over a 30 minute working time
- High fluidity and extended working time ensure proper placement under a variety of application conditions
- Hardens free of bleeding, segregation or settlement shrinkage
- Has a high tolerance to thermal movement of machinery and equipment, as well as other effects of heating/cooling and wetting/drying
- The high quality, well-graded blend of metallic and quartz aggregate provides high strength, impact resistance and optimum toughness under dynamic and repetitive load conditions

PACKAGING/ESTIMATING:

EMBECO® 885 grout is packaged in 55 lb (25 kg) moisture-resistant bags. It is also available in 3,300 lb (1,500 kg) bulk bags.

One 55 lb (25 kg) bag of EMBECO(885 grout mixed with approximately 10 lb (4.5 kg) or 1.2 U.S. gal (4.5 L) of water yields approximately 0.43 ft³ (0.012 m³) of grout.

Note: The water requirement may vary due to mixing efficiency and other variables.

PERFORMANCE DATA:

The following data was developed under controlled laboratory conditions. Reasonable variations from these results can be expected.

Typical Compressive Strengths

(ASTM C 109, Modified)

	Plastic ¹		Consistency Flowable ²		Fluid ³	
	psi	MPa	psi	MPa	psi	MPa
1-day	5,000	34	5,000	34	4,000	28
3-day	7,000	48	6,000	41	5,000	34
7-day	9,000	62	8,000	55	7,000	48
28-day	11,000	76	10,000	69	9,000	62

Volume Change

(ASTM C 1090)

	% Change	Requirement per ASTM C 1107, %
1-day	0.05	0.0 - 0.30
3-day	0.05	0.0 - 0.30
14-day	0.06	0.0 - 0.30
28-day	0.07	0.0 - 0.30

Setting Time

(ASTM C 191)

	Consistency		
	Plastic ¹	Flowable ²	Fluid ³
Initial Set (Hr.:Min.)	3:30	5:00	5:30
Final Set (Hr.:Min.)	4:30	6:00	7:00

Flexural Strength

(ASTM C 78)*

	psi	MPa
3-day	880	6.1
7-day	1,050	7.2
28-day	1,150	7.9

Modulus of Elasticity

(ASTM C 469, Modified)*

	psi	MPa
3-day	3.16 x 10 ⁶	2.18 x 10 ⁴
7-day	3.50 x 10 ⁶	2.41 x 10 ⁴
28-day	3.69 x 10 ⁶	2.54 x 10 ⁴

PERFORMANCE DATA (CONTINUED):

Coefficient of Thermal Expansion (ASTM C 531)*
 6.5×10^{-6} in./in./°F (11.7×10^{-6} mm/mm/°C)

Split Tensile and Tensile Strength (ASTM C 496 and ASTM C 190)*

	Split Tensile		Tensile	
	psi	MPa	psi	MPa
3-day	350	2.4	300	2.1
7-day	490	3.4	400	2.8
28-day	520	3.6	500	3.4

¹ 100-125% flow on flow table per ASTM C 230

² 125-145% flow on flow table per ASTM C 230

³ 25 to 30 seconds through flow cone per ASTM C 939

*Test conducted at a fluid consistency

Typical Ultimate Tensile and Shear Loads

Anchor Bolt Tests (ASTM E 488)*

	Ultimate Tensile Load		Ultimate Shear Load	
	lb	kg	lb	kg
1-1/4 in. Bolts - 9 in. embedment in a 2-1/2 in diameter hole	49,500	22,500	27,500	12,500
7/8 in. Bolts - 6 in. embedment in a 1-3/4 in diameter hole	24,000	10,910	9,550	4,340
1/2 in. Bolts - 4 in. embedment in a 1-1/8 in diameter hole	7,840	3,560	2,400	1,090

(Data based on threaded anchor bolts with washer and nut,
 1 in. = 25.4 mm)

Punching Shear Strength (MB Method)*

3 in. x 3 in. x 11 in (76 mm x 76 mm x 279 mm) beam

	psi	MPa
3-day	1,600	11.0
7-day	1,800	12.4
28-day	2,600	17.9

*Test conducted at a fluid consistency

INSTALLATION:

Consult the EMBECO(885 grout Installation Bulletin and the product bag for details on the installation of EMBECO® 885 grout.

Master Builders recommends that the user request the services of the local representative for a prejob conference to plan the installation.

Mixing

EMBECO® 885 grout should be mixed with a mechanical mixer for a least 5 minutes. For a fluid consistency, start with 9 lb (4 kg) [1.1 U.S. gal (4.2 L)] per 55 lb bag. Adjust mixing water, as needed, to establish the recommended flow of 25 to 30 seconds through a flow cone (ASTM C 939/CRD C 611). Less mixing water will be required to achieve stiffer consistencies.

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Placing

EMBECO® 885 grout should be placed in a continuous pour. Discard grout that becomes unworkable. Grout should be placed from one side to avoid entrapment of air. Make sure that the grout fills the entire space to be grouted and remains in contact with the plate throughout the grouting process. Straps may be used to move the grout to ensure that the entire space is filled. DO NOT VIBRATE.

Curing

Immediately after placement, wet cure the EMBECO® 885 grout by covering all exposed grout with clean, damp rags (not burlap). Keep moist until grout surface is ready to be finished or until final set. Following the removal of the damp rags, immediately coat with a Master Builders recommended curing compound, such as MASTERKURE.

Jobsite Testing

If strength tests must be made at the jobsite, use 2 in. (50 mm) CUBE molds per ASTM C 109. DO NOT use cylinder molds. Testing should be controlled on the basis of the desired placing consistency rather than strictly on the water content. Consult with your local Master Builders representative for special procedures required when mixing and casting compressive strength tests of fluid, nonshrink grout.

LIMITATIONS:

- The ambient and initial material temperature of the grout should be in the range of 45 to 90 °F (7 to 32 °C) for both mixing and placing. Ideally, the amount of mixing water used should be that which is necessary to achieve a 25 to 30 second flow per ASTM C 939 (CRD C 611). For placement outside of 45 to 90 °F (7 to 32 °C), contact your local Master Builders representative.
- For pours greater than 6 in. (150 mm) deep, consult your local Master builders representative for special precautions and installation procedures.
- When the grout will be in contact with steel which is or will be stressed over 80,000 psi (550 MPa) use MASTERFLOW® 816 cable grout.
- EMBECO® 885, one-component, cement-based grout is formulated for industrial and professional use only, and must be kept out of the reach of children. This product contains chemicals which may be potentially HARMFUL to your health, if not stored and used properly. Hazards can be significantly reduced by observing all precautions which are found on Material Safety Data Sheets (MSDS), product labels, and technical literature. Please read this literature carefully before using product.

RELATED BULLTEINS:

Installation Bulletin 9I51 #112664 - EMBECO® 885 & MASTERFLOW® 928

Installation Bulletin 9I52 #112665 - Bulk Bags

Specification Bulletin 9S32 #112635 - EMBECO® 885

Material Safety Data Sheet (MSDS) - EMBECO® 885