

Master Builders  
Technologies

# EMBECO® 880 GROUT

**Cementitious, metallic,  
high-performance, non-shrink grout**

Among various types of grout, EMBECO 880 GROUT is formulated for use, in particular, for installation of various types of machinery and equipments.

Because EMBECO 880 GROUT contains tenacious and malleable metallic aggregate, it can fully withstand against both heavy impact and repetitive loading produced from the machine in operation, and transmit the loading uniformly into the concrete foundation.

EMBECO 880 GROUT can be used in flowable consistency, and is non-shrink. It develops compressive strength of 20 N/mm<sup>2</sup> at one day and 70 N/mm<sup>2</sup> at 28 days and maintains high strength and durability for a long period of time.

EMBECO 880 GROUT is a ready-to-use, premixed grout. It requires only the addition of water at the time of use. By mixing uniformly in a mixer, it becomes a grout of stable quality.

## CHARACTERISTICS

EMBECO 880 GROUT, being a pre-mixed grout with various excellent characteristics mentioned below, attains the following precision grouting :

(1) **Workable (Flowable)**

Particularly excellent in flowability, EMBECO 880 GROUT will easily fill ordinary spaces. It leaves no space or gap at all even around such flow obstacles as liner pads and anchor bolts installed in a small space.

(2) **Non-Shrink**

EMBECO 880 GROUT, mixed to consistencies which are in the range recommended, will have no material segregation or bleeding and develop a stable, non-shrink property.

(3) **Impact-Resistant**

Due to the effect of special metallic aggregate highly tenacious and malleable, EMBECO 880 GROUT will maintain stable impact-resistance for a long period of time, against both heavy impact and repetitive loading.

(4) **High Early Strength**

Its high early strength characteristic : 20 N/mm<sup>2</sup> or more at 1 day

Its extra high strength characteristic : 70 N/mm<sup>2</sup> or more at 28 days

(5) **Durable**

EMBECO 880 GROUT maintains stable durability for a long period of time against such environmental conditions as drying and wetting, temperature changes and freezing and thawing.

(6) **Resistant to Heat**

EMBECO 880 GROUT, when hardened, develops no deterioration even under high temperatures and shows excellent heat-resistance.

## WHERE TO USE

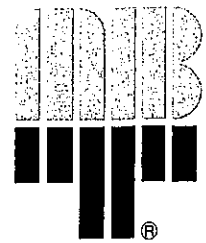
- (1) For installation of various types of machinery (a rolling mill, motor, turbine, compressor, etc.),
- (2) For installation of civil engineering and architectural structural members (large steel columns, nuclear power plant structural members, etc.).

## HOW TO USE

- (1) EMBECO 880 GROUT is a ready-to-use pre-mixed grout. Add only water at the time of use, mix the grout uniformly and use it.
- (2) Water quantities vary depending on material and air temperatures and performance of the mixer. Use the water quantities in the 4.1 to 4.7 liter range per bag to obtain consistency suitable for the grouting.
- (3) The yield of a 25 kg-bag of EMBECO 880 GROUT is about 11 liters. The standard quantity required for 1 m<sup>3</sup> is 2,250 kg (25 kg × 90 bags).

## PRECAUTIONS

- (1) EMBECO 880 GROUT should be used by the unit of bags (e. g., mix a full bag even when only 0.5 bag is needed).
- (2) Stock and handle EMBECO 880 GROUT as like as a cement. Do not use the contents of bags that are broken or left open or stocked long period of time.
- (3) Water to be used should be drinkable water and its equivalents. Water quantities should be determined by samples made by trial mixing.
- (4) Recommend to wear protective eye-glasses, dust-proof mask and rubber gloves at the time of mix.
- (5) As with other products containing portland cement, EMBECO 880 GROUT may cause irritation : Avoid contact with eyes, prolonged contact with skin and suction. In case of contact with the eyes and skin, wash away with water and in case of suction, move to fresh-air area and rinse mouth with water. Depending upon conditions, receive medical treatment.



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## SPECIFICATIONS

Standard quantity per m <sup>3</sup> (kg)	Water quantity (liter/bag)	Consistency range (in sec, with "J" flow cone)	Range of temp. as mixed. (°C)	Workable time (20°C)
2,250 (25 kg × 90 bags)	4.1 to 4.7	5 to 11	10 to 35	Abt. 30 min.

## PACKAGING

EMBECO 880 GROUT is packaged in 25 kg moisture resistant bags.

## EXAMPLE OF RESULTS OF TEST ON PHYSICAL PROPERTIES

Water (lit./bag)	1) Consistency (sec)	Temp. as mixed (°C)	Cured at (°C)	2) Bleeding (%)	3) Setting time (hr-min)		4) Expansion and contraction ratio (%)			
					Initial	Final	1 day	3 days	7 days	28 days
4.2	7.4	20.0	5	0.0	11-25	15-20	+0.14	+0.15	+0.15	+0.15
			20	0.0	5-00	6-25	+0.20	+0.21	+0.21	+0.21
			30	0.0	3-50	4-40	+0.23	+0.24	+0.24	+0.24

5) Compressive strength (N/mm <sup>2</sup> )				6) Modulus of elasticity (×10 <sup>4</sup> N/mm <sup>2</sup> )		7) Flexural strength (N/mm <sup>2</sup> )		8) Strength of bond to re-bars (N/mm <sup>2</sup> )		9) Strength of bond to concrete (N/mm <sup>2</sup> )
1 day	3 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	28 days
4.51	30.1	51.2	71.7	2.3	2.9	—	—	—	—	—
31.7	50.4	61.4	75.3	2.6	3.1	11.8	12.3	5.3	5.7	2 or more (concrete fractured)
43.4	60.0	64.7	75.8	2.7	3.1	—	—	—	—	—

- NOTES :
- 1) Consistency was determined in accordance with the Japan Society of Civil Engineer's (JSCE'S) specifications entitled, "Method for Test of Consistency" using a "J" flow cone, 70 mm in upper diameter, 14 mm in lower diameter and 395 mm long.
  - 2) Bleeding ratio was determined in accordance with JIS A 1123 entitled, "Method for Test of Bleeding of Concrete."
  - 3) Time of set was determined in accordance with Annex 1 entitled, "Method for Test of Set" to JIS A 6204 entitled, "Chemical Admixture for Concrete."
  - 4) Expansion and contraction ratio was determined in accordance with an annex entitled, "Method for Test of Expansion of Grouting Mortar Made with Expansive Material" to "Guidelines for Designing and Application of Expansive Concrete" proposed by JSCE.
  - 5) Compressive strength was determined in accordance with JIS A 1108 entitled, "Method for Test of Compressive Strength of Concrete" using cylinders, 5 cm in diameter and 10 cm in height.
  - 6) Modulus of elasticity was determined by a secant line at 1/3 of compressive strength, using a cylinder, 5 cm in diameter and 10 cm in height.
  - 7) Flexural strength was determined in accordance with JIS R 5201 entitled, "Method for Physical Test of Cement", using a square pillar of 4 cm × 4 cm × 16 cm.
  - 8) Strength of bond to reinforcement bars was determined in accordance with ASTM C 234 entitled, "Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel."
  - 9) Strength of bond to concrete was determined using a Ken-ken bond strength tester developed by building laboratories of the Ministry of Construction in Japan.

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