

CEMENT-BASED NON-SHRINK NON-CORROSIVE GROUT
DESCRIPTION

PENETRON® GROUT is a ready-to-use, expansion-controlled, non-shrink, non-corrosive, cement-based, high strength grout for concrete repairing and anchoring. It consists of excellent quality cement and specially graded quartz aggregate. PENETRON® GROUT is an excellent grout for a wide range of applications, due to its controlled expansion, excellent flow properties, high strength and low cost.

RECOMMENDED FOR

- ▶ Screws and connection pins anchoring
- ▶ Anchors industrial cables
- ▶ Non-shrink repairs and protection from corrosion effect
- ▶ Precast wall panels
- ▶ Beams, columns, and heavy machinery or equipment bases
- ▶ Factories, refineries, chemical industries, etc.

ADVANTAGES

- ▶ Excellent pumping abilities and compressive strength in the early stages, ensuring short setting time and low cost
- ▶ Can be pumped into inaccessible areas
- ▶ Can be used at any consistency from fluid to plastic
- ▶ Highly fluid for pumped or poured application
- ▶ No corrosive effect
- ▶ Non-shrink grout, excellent flow properties and controlled expansion, ensuring total filling of the confined space for excellent grouting and repair
- ▶ For large pours, control pouring and increase yield with addition of up to 50% by weight of clean, well graded aggregate. The use of aggregates lowers the total cost and allows repairs in greater thickness.
- ▶ Contains zero volatile organic content (VOC) and is safe for use both outdoors and in indoor spaces

TECHNICAL CHARACTERISTICS

Characteristic	Test Result			Test Method
	Plastic	Pourable	Liquid	
Compressive Strength				ASTM C 109
1 day	37,2 MPa (5400 psi)	30,4 MPa (4410 psi)	19,8 MPa (2870 psi)	
3 days	56,0 MPa (8120 psi)	52,2 MPa (7570 psi)	44,3 MPa (6420 psi)	
7 days	64,3 MPa (9330 psi)	58,5 MPa (8490 psi)	57,5 MPa (8340 psi)	
28 days	85,1 MPa (12340 psi)	77,7 MPa (11270 psi)	67,3 MPa (9760 psi)	
Expansion				ASTM C 1090
3 days	+ 0,08%	+ 0,04%	0,00%	
14 days	+ 0,08%	+ 0,04%	+ 0,02%	
28 days	+ 0,08%	+ 0,08%	+ 0,04%	
Height variation in the Final Setting Time	0,48%	0,72%	0,75%	ASTM C – 827
Flow Test	CRD-C226 (5 drops) Flow Index: 100	CRD-C226 (5 drops) Flow Index: 124	CRD-C611 (26 sec) Cone	ASTM C – 191

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All data are average values, obtained under laboratory conditions. Impractical use, temperature, humidity and absorption of the substrate may influence the above given values

DIRECTIONS FOR USE

Surface Preparation: Clean all surfaces of grease, oil, dirt and loose material, down to sound concrete, to increase bonding. Wet area thoroughly for 12 – 24 hours prior to grouting. Remove excess water, before placement. Maintain ambient and surface temperatures between 4 °C and 35 °C (40 °F and 95 °F). Setting time and strength growth greatly depend on the temperature.

NOTE: Proper surface preparation is crucial in obtaining a successful result. Consult ACI guidelines "No 305 – Guide to Hot Weather Concreting" and "No 306 – Cold Weather Concreting".

Mixing: For best results, add dry grout to water; not water to dry grout. Add ¾ of the clean water required in the mixing pail and mix thoroughly, while adding the additional quantity of PENETRON® GROUT. Add the rest of the water and continue mixing, until the mixing has the desired consistency. Use the mechanical mixer for approximately another 5 minutes, to ensure a uniform mixture. Mix only grout that can be placed in 30 minutes. Working time is approximately 30 minutes at 21°C (70°F).

For small jobs, use a trowel or a stainless steel paddle with a ½" min. (400-600 rpm) drill mixing to a lump free consistency. For large quantities of PENETRON® GROUT, use the appropriate pumping equipment, which ensures continuous flow, as well. Minimum mixing time is 5 minutes. Always use the least requisite amount of water for the desire consistency. For grouting over 50 mm (2") in thickness, add washed, dry 9,5 mm (3/8") quartz aggregates (QUARTZ SAND MIX 3,0-6,0 MM or 1,5-8,0 MM or similar) at 50% by weight of grout.

Mixing ratios: Use 3,3 kg to 4,3 kg (7 lb to 9,5 lb) of clean water per 22,7 kg (50 lb) PENETRON® GROUT or 3,6 kg to 4,8 kg (8 lb to 10,5 lb) of clean water per 25 kg (55 lb) PENETRON® GROUT, as described above.

Amount water required per 22,7 kg (50 lb)

Plastic	3,3 L (0,9 gal) Clean water
Pourable	3,8 L (1,0 gal) Clean water
Liquid	4,3 L (1,1 gal) Clean water

Yield per 22,7 kg (50 lb)

Plastic	11,0 L (2,9 gal)
Pourable	11,6 L (3,0 gal)
Liquid	11,9 L (3,1 gal)

Application: Grout must be placed in a proper modified form. Forms must be strong, securely anchored, shored and sealed, to prevent water and grout leakage, while continuous flow of PENETRON® GROUT must be ensured. When placing, provide an angle in the forms, high enough to assist in grouting. For pouring, minimum openings of 7,6 cm (3") for entry and 15 cm (6") for "head" are recommended. Forms should be at least 2,5 cm (1") higher than the bottom of the base plate.

Apply PENETRON® GROUT continuously and from one side avoiding the entrapment of air pockets. Sufficient vent holes should be provided. Remove voids through rodding and vibrating. Do not exceed mixing time or water required to avoid separation of the mixture. Mix only grout that can be placed in 30 minutes. Working time is approx. 30 minutes at 21 °C (70 °F).

Curing: Forms may be removed after PENETRON® GROUT has hardened to an initial set and retains in shape. This time period may vary, according to temperature. At this stage, finishing and curing procedures may take place. Prevent rapid water loss, by covering the exposed grout surfaces with wet burlap, during the first 48 hours or apply a curing compound.

Coverage:

One 22,7 kg (50 lb) bag of PENETRON® GROUT will yield approximately 12 L (3,2 gal). For thickness, over 5 cm (2") add 50% of clean, washed, dry 9,5 mm (3/8") quartz aggregates (QUARTZ SAND MIX 3,0-6,0 MM or 1,5-8,0 MM or similar), that is 11,5 kg to 12,5 kg (25 lb to 27,5 lb) aggregates per 22,7 kg (50 lb) PENETRON® GROUT and yield will increase up to 17-18 L (4,5-4,8 gal).

SPECIAL CONSIDERATIONS

DO NOT use this product, if bag is damaged or opened. This product is ready to use with the addition of water.

PENETRON® GROUT is available in two types. Fast strength growth [22,7 kg (50 lb)] and normal strength growth [25 kg (55 lb)].

Consult PENETRON HELLAS S.A. for additional information regarding your project.

PACKAGING

PENETRON® GROUT is available in 22,7 kg (50 lb) and 25 kg (55 lb) multi-wall bag, reinforced with a polyethylene inner lining, to ensure moisture resistance.

STORAGE / SHELF LIFE

PENETRON® GROUT has a nominal shelf life of 12 months from the date of manufacture, when unopened bags are properly stored in a cool, dry and shaded environment.

SAFE HANDLING INFORMATION

Contains cement, which is alkaline. May irritate eyes and skin. Avoid contact with eyes. Wearing rubber gloves and safety goggles is recommended. If eye contact occurs, flush immediately with water and contact physician. DO NOT RUB EYES. For further information please refer to Safety Data Sheet. PENETRON HELLAS S.A. has recently updated Safety Data Sheet on the safe use of PENETRON® products. Each Safety Data Sheet contains health and safety information for the protection of your employees and your customers. KEEP OUT OF THE REACH OF CHILDREN.

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CERTIFICATION



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NON-FERROUS NON-SHRINKAGE GROUT
Products and systems for structural and non-
structural protection and repair of concrete
structures

Compressive strength: Class R4 (≥ 45 MPa)Chloride ion content: $< 0.05\%$ by mass

Adhesive bond: NPD

Restrained shrinkage, expanding: NPD

Elastic modulus: NPD

Thermal compatibility (Part 1): NPD

Carbonation resistance: deemed to have no
corrosive effect

Dangerous substances: NPD

Reaction to fire: NPD