

**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**

- ▶ Precast wall panels
- ▶ Beams, columns, and heavy machinery or equipment bases

**ADVANTAGES**

- ▶ Just add water to use; will harden free of settlement or dry shrinkage with a unique controlled expansion
- ▶ Can be pumped into inaccessible areas
- ▶ Can be used at any consistency from fluid to plastic
- ▶ Appearance is very similar to natural concrete or mortar; will not rust or stain
- ▶ Low water/cement ratio results in early strength with exceptional bearing contact
- ▶ 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
	Minimum flow (Plastic)	Moderate flow (Pourable)	High fluidity (pumpable)	
<b>Compressive Strength</b>				
1 day	37,2 MPa (5400 psi)	30,4 MPa (4410 psi)	19,8 MPa (2870 psi)	ASTM C 109
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)	
<b>Expansion</b>				
3 days	+ 0,08%	+ 0,04%	0,00%	ASTM C 1090
14 days	+ 0,08%	+ 0,04%	+ 0,02%	
28 days	+ 0,08%	+ 0,08%	+ 0,04%	
<b>Height variation in the Final Setting Time</b>	0,48%	0,72%	0,75%	ASTM C – 827
<b>Flow Test</b>	CRD-C226 (5 drops) Flow Index: 100	CRD-C226 (5 drops) Flow Index: 124	CRD-C611 (26 sec) Cone	ASTM C – 191

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

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**DIRECTIONS FOR USE**

**Surface Preparation:** Clean all surfaces of grease, oil, dirt and loose material, down to sound concrete, to increase bonding. Roughen adjacent concrete surfaces where possible. 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 desired 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.

**Water requirements for 50-lb (22.7-kg) bag:**

	Plastic	Pourable	Fluid
<b>Clean Water</b>	3.3 l (3.5 qt)	3.8 l (4 qt)	4.3 l (4 qt)
<b>Yield</b>	11.0 l (0.39 ft³)	11.6 l (0.41 ft³)	11.9 l (0.42 ft³)

**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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## WARRANTY - DISCLAIMER

PENETRON HELLAS S.A. warrants that its products are manufactured under certified ISO Standard procedures, are of excellent quality and shall be free from material defects and contain all components in their proper proportion. Should any of the products be proven defective, the liability to PENETRON HELLAS S.A. shall be limited to replacement of the material proven to be defective, since the standard application procedures have been met and the suitability of the product for the particular application have been proven. PENETRON HELLAS S.A. makes no warranty as to merchantability of fitness for a particular purpose. User, after contacting the distributor of the product, shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith. While every care has been taken, the information provided in this product's data sheet make no part of any contract. All recommendations, technical data and test data contained in this product's data sheet are based upon the results of control laboratory tests or in actual field tests. However, PENETRON HELLAS S.A. makes no warranty of any kind, concerning this data. In any case, this data is given in good faith based in the PENETRON HELLAS S.A. experience, till the publication of this sheet. Due to variance in storage, handling and applications of the materials, PENETRON HELLAS S.A. accepts no liability for the results obtained. It is suggested that potential users try small applications to determine the suitability of each individual product for their specific requirements. The users should always refer to the most recent edition of the product's data sheet. PENETRON HELLAS S.A. may particularly differentiate its versions of the product's data sheet compared with those of PENETRON INTERNATIONAL LTD or respective PENETRON companies worldwide. These changes are due to text formatting, different application weathering and procedures or different product names and aim at the optimal consumer information.

## CERTIFICATION



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DOP NO: 10.20001D310322-01

EN 1504-3

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

Compressive strength: Class R4 ( $\geq 45$  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