



PULLDOWN® PILE GROUT

TYPES A, B, C

DESCRIPTION: PULLDOWN® PILE GROUT is a highly flowable Portland cement based grout with the benefit of an extended working time. It is available in unsanded, sanded and coarse mix designs.

USES: PULLDOWN® PILE GROUT is designed for use in Helical Pier Foundation Systems. It functions as a permanent grout to fill, stabilize, strengthen and stiffen Anchor Shafts or to form friction type piling.

PROCEDURES: TYPES "A and B"

1. Mix PULLDOWN® PILE GROUT "A or B" to the consistency required for placement. PULLDOWN® PILE GROUT's thixotropic properties make the grout appear thick and cohesive when in fact it is quite pourable or pumpable.

| MIX TYPE | RECOMMENDED MAX. WATER / 30 kg (66 lb) |
|----------|--|
| A | 8.4 liters (8.9 U.S. Qt.) |
| B | 6.0 liters (6.3 U.S. Qt.) |

Over-watering will result in reduced compressive strengths and inferior physical properties.

2. Introduce potable water into the high shear mixer, then add PULLDOWN® PILE GROUT "A or B" while operating at medium speed.
3. Mix at high speed for a minimum of five minutes. Mortar style mixers are not recommended for this purpose.
4. Decrease mixer speed to low and continue mixing while placing or pumping the grout. The grout's pot life is approximately two hours.

TYPE "C"

1. Add 1/2 amount of water into concrete mixer, paddle type is preferred. Empty the entire dry contents into the concrete mixer and mix thoroughly. Add remainder of water to a maximum of 2.6 litres (2.7 U.S. quarts) of water per full bag. Mix for a minimum of 5 minutes, until the material has been thoroughly blended. Exceeding the maximum recommended water per bag is not recommended and will weaken the grout.

| SLUMP | RECOMMENDED MAX. WATER / 30 kg (66 lb) |
|--------------------------|--|
| 150 to 200 mm (6" to 8") | 2.6 litres (2.7 U.S. quarts) |

Hand mixing PULLDOWN® PILE GROUT "C" is not recommended. Slump will vary with type and quality of concrete mixer.

2. PLACING: Place the mixed material uniformly. Consolidate the fresh material well to eliminate voids and honey-combing. The grout's pot life is approximately two hours.

CURING GROUT: PULLDOWN® PILE GROUT should be moist cured for a minimum of 48 hours after initial set. This is achieved most efficiently by covering the top surface of the grouted shaft with damp burlap, or plastic.

TECHNICAL DATA: The data outlined below is representative of typical values achievable under controlled laboratory conditions. Results obtained in the field may vary from those stated.

| | | <u>PULLDOWN® PILE GROUT TYPE</u> | | |
|-----------------------------------|--------------------|---|---|---|
| | | A | B | C |
| Anchor Shaft Diameter Application | | up to 13 cm (5") | 13 to 17 cm (5" to 7") | 17 to 30 cm (7" to 12") |
| Aggregate Content | | unsanded | sanded | coarse |
| Water per 30 kg (maximum) | | 8.4 liters | 6.0 liters | 2.6 liters |
| | | 8.9 US Qt. | 6.3 US Qt. | 2.7 US Qt. |
| W/C | | 0.28 | 0.35 | 0.40 |
| | <u>TEST METHOD</u> | | | |
| Consistency | | 30 to 40 sec. | 20 to 30 sec. | 150 to 200mm (6" to 8") |
| | ASTM | | C939 | C143 slump |
| | | C939 | | |
| Working Time | ASTM C 266 | 2 hours | 3 hours | 2 ½ hours |
| Final Set | ASTM C 266 | 12 hours | 14 hours | 13 hours |
| Expansion | ASTM C 940 | 2 to 4 % | 2 to 4 % | 2 to 4 % |
| Bleeding | ASTM C 940 | none | none | none |
| Segregation | ASTM C 940 | none | none | none |
| Density | | 1821 kg/m ³ (114 Pcf) | 1967 kg/m ³ (123 Pcf) | 2320 kg/m ³ (145 Pcf) |
| Air Content | ASTM C231 | 4 to 6 % | 4 to 6 % | 4 to 6 % |
| Compressive Strength @ | | <u>MPa (PSI)</u> | <u>MPa (PSI)</u> | <u>MPa (PSI)</u> |
| 1-Day | ASTM | C1107 | C1107 | C39 |
| 3-Days | | 10 (1450) | 9 (1305) | 7 (1015) |
| 7-Days | | 18 (2610) | 17 (2465) | 15 (2175) |
| 28-Days | | 25 (3625) | 28 (4060) | 22 (3190) |
| | | 35 (5075) | 34 (4930) | 31 (4495) |
| Yield per 30 kg sack | | 0.021 m ³ (0.75 ft ³) | 0.018 m ³ (0.65 ft ³) | 0.014 m ³ (0.50ft ³) |

LIMITATION: Adhering to recommended water additions is very important. Exceeding the maximum recommended water content per sack will result in inferior physical properties.

PACKAGING: PULLDOWN® PILE GROUT is packaged in 30 kg (66 lb) polyethylene lined bags.

**SAFETY
PRECAUTIONS:** PULLDOWN® PILE GROUT contains portland cement, pozzolans and other carefully selected additives. Normal safety wear such as rubber gloves, dust mask and safety glasses, used to handle conventional cement-based products, should be worn. Material Safety Data Sheets are available upon request.