

F-77 Construction Grout

BONSAL® F-77 Construction Grout is a nonshrink, nonmetallic structural Portland Cement material designed for high strength grouting.

FEATURES AND BENEFITS:

- Noncorrosive, Will Not Attack Reinforcement
- Nonshrink, No Loss of Volume
- Nonmetallic, Non-Staining, Grey Color
- Meets ASTM C 1107 Packaged Dry, Hydraulic - Cement Grout (Nonshrink)
- Meets Corps of Engineers Specification CRD-C 621
- Dry Pack, Plastic, or Flowable Consistency
- Pumpable for Easy Placement
- Super Plasticized for Improved Strength

USES:

Grouting OF

- Concrete - poured in place, precast, tilt-up and prestressed
- Heavy Machinery
- Sole Plates
- Anchor Bolts
- Reinforcing Steel in Block Cells
- Steel Bearing Plates
- Concrete Columns
- Dowel Rods

PREPARATION:

Selection of the grout is to be done by the engineer. Remove all unsound concrete, grease, oil, paint, and any other foreign material that will inhibit performance. Prior to grout placement, all surfaces must be clean and saturated with water for 24 hours. Remove excess water before placing the grout. Provide air relief holes where necessary if grouting is beneath structural systems.

Suggestions in Form Work

Wood form work or other absorbent forms should be coated with a form release oil to prevent grout adherence and excessive water absorption. Design form work to facilitate rapid, continuous and complete filling of the space to be grouted.

Use methods that will enable the grout to flow by gravity between the surfaces and keep the grout in full contact with these surfaces until it has hardened.

For dry pack application, refer to: Portland Cement Association - Cementitious Grouts and Grouting (EB111.01T). The form work must be rigid and well secured to withstand the impact of grout placement.

MIXING:

Add only clean water. The water quantities shown are approximate and may vary slightly with type of equipment and application conditions.

For optimum application and product performance, the mix temperature should be 60°F (15.5°C) to 70°F (21.1°C) at time of placement. This can be done when applying at temperature extremes by storing F-77 Construction Grout bags at 60°F (15.5°C) to 70°F (21.1°C), 12 to 24 hours prior to mixing. Addition of cold water (45°F) (7.2°C) at high temperatures (90°F) (32.2°C) or warm water (80°F) (26.6°C) at low temperatures (50°F) (10.0°C) will also aid in adjusting the mix temperature.

Water demand and mix temperature must be determined using standard test methods for consistency and temperature measurement at the time of application.

Desired Grout Consistency

Plastic (Trowel Consistency), 55 lbs. (24.9 kg) Grout, approximately 1.1 Gallon Water (4.16 l) (9.2 lbs.) (4.17 kg) will yield 0.51 cu. ft. (0.014 m³) with a Unit Weight of 126 lbs./cu. ft. (2018 kg/m³)

Flowable (Pumping Consistency), 55 lbs. (24.9 kg) Grout, approximately 1.25 Gallon (4.73 l) Water will yield 0.52 cu. ft. (0.014 m³) with Unit Weight of 125 lbs./cu. ft. (2002 kg/m³)

Use a mixer large enough to permit continuous placement before any part of the grout has set.

PLACEMENT:

Place the grout quickly. Rodding the grout lightly will help remove air bubbles. Avoid vibration which can cause bleeding and segregation. Shut down nearby machines.

Placement Temperature

	Minimum	Maximum
Substrate	50°F (10.0°C)	90°F (32.2°C)
Mix	60°F (15.5°C)	70°F (21.1°C)
Air	50°F (10.0°C)	90°F (32.2°C)

CURING:

Forms may be removed as soon as the grout is firm and cannot be penetrated by a pointed masonry trowel. Exposed shoulders can be left in place or trimmed. After the forms are removed, prevent evaporation by keeping the exposed surfaces wet for several hours. Protect from freezing for a minimum of 48 hours after placing.

CURING (Cont.):

F-77 Construction Grout can be exposed under normal weathering conditions. For installations where acids and sulfates are present, a protective coating is required.

Cure per Portland Cement Association - Design and Control of Concrete Mixes (EB001.12T) and/or American Concrete Institute 308 - Standard Practice for Curing Concrete.

TECHNICAL DATA:

	<u>Plastic</u>	<u>Flowable</u>
<u>Water</u>	16.7%	19.0%

Compressive Strength

ASTM C 942

24 hours	3,400 psi (23.4 Mpa)	2,200 psi (15.1 Mpa)
3 days	6,700 psi (46.2 Mpa)	6,500 psi (44.8 Mpa)
7 days	7,800 psi (53.7 Mpa)	7,400 psi (51.0 Mpa)
28 days	9,000 psi (62.0 Mpa)	8,800 psi (60.6 Mpa)

Set Time

ASTM C 191

Initial	4:40	5:30
Final	6:30	7:30

Consistency Flow

ASTM C 230

113	141
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Volume Change, % Expansion

ASTM C 827

At final set	+ .38	+ .08
After 24 hours	+ .30	+ .04

TECHNICAL DATA (Cont.):

Volume Change, % Expansion

CRD-C 621

3 days	+ .07	+ .07
7 days	+ .07	+ .07
14 days	+ .07	+ .05
28 days	+ .07	+ .05

LIMITATIONS:

- **DO NOT** mix more than can be placed in 15 minutes.
- **DO NOT** retemper.
- **DO NOT** add excessive amounts of water.
- **DO NOT** use vibrators in placing the grout.
- **DO NOT** add any other materials.
- **DO NOT** apply on substrates that are frozen or contain frost.

COLOR: Grey

COVERAGE:

1 cu. ft.(0.028 m³): 2 bags/110 lbs. (50 kg)
1 cu. yd.(0.76 m³): 54 bags/2970 lbs.(1348 kg)
100 sq. ft. (2.8 m³)@ 1”(2.5 cm): 17 bags/935 lb.
(424 kg)

PACKAGING:

55 lb./(24.9) kg multiply bag

SHELF LIFE:

One year from date of manufacture.

CAUTION: Contains Silicon Dioxide, Portland Cement and Calcium Hydroxide. Your skin may be sensitive to cement. Wearing rubber gloves is recommended. Avoid contact with eyes or prolonged contact with skin. In case of contact, flush thoroughly with water. For eyes, flush with clean water for at least 15 minutes and get prompt medical attention

KEEP OUT OF REACH OF CHILDREN.

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RES Architectural Sales, Inc.

143 S. Franklin St., Chagrin Falls, OH 44022 • Phone: 440-247-4070 • Fax 440-247-4069
Website: www.resarch.com • Email: sales@resarch.com