QUIKRETE HIGH PERFORMANCE Cement

FastSet™ All-Crete™

Product No. 1587-27, -28 (CAN)

DIVISION 3 & 32

03 01 00 Maintenance of Concrete
03 31 00 Structural Concrete
03 62 00 Non-Shrink Grouting

PRODUCT DESCRIPTION

High Performance Cement (HPC) FastSet™ All-Crete™ is a high early strength commercial grade grout, and repair mortar, that requires only the addition of water.

PRODUCT USE

HPC FastSet™ All-Crete™ is a dual-purpose product.

- As a non-metallic fluid grout, the product meets ASTM C1107 and is used for anchoring and grouting of anchor bolts, retrofitted reinforcing steel, steel column bases, bearing plates, precast concrete keyways and other installations that require high early and high ultimate strength. Non-shrink characteristics make it stable and capable of handling load transfers.
- As a repair material, the product meets ASTM C928 Type R3 and is used to make partial depth or full depth repairs to roads, bridges, industrial floors, and other concrete surfaces.

SIZES

- 25 kg (55 lb) bags
- 9 kg (19.8 lb) pails

YIELD

- See Table 1

TABLE 1 - APPROXIMATE YIELD FOR QUIKRETE FastSet™ All-Crete™

Consistency	Material Quantity	Yield
Plastic	25 kg (55 lb) 9 kg (19.8 lb)	13.8 L (0.49 ft³) 4.8 L (0.17 ft³)
Flowable	25 kg (55 lb) 9 kg (19.8 lb)	14 L (0.50 ft³) 5 L (0.18 ft³)
Fluid	25 kg (55 lb) 9 kg (19.8 lb)	15 L (0.53 ft³) 5.3 L (0.19 ft³)
Repair Mortar	25 kg (55 lb) 9 kg (19.8 lb)	13.5 L (0.48 ft³) 4.8 L (0.17 ft³)
Repair Mortar Extended with Gravel	25 kg (55 lb) 9 kg (19.8 lb)	17.5 L (0.62 ft³) 6.5 L (0.23 ft³)

TECHNICAL DATA

APPLICABLE STANDARDS

- ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in or [50-mm] Cube Specimens)
- ASTM C143 Standard Test Method for Slump of Hydraulic-Cement Concrete
- ASTM C157 Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete
- ASTM C191 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
- ASTM C672 Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals
- ASTM C882 Standard Specification for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
- ASTM C928 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
- ASTM C939 Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
- ASTM C1090 Standard Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic-Cement Grout
- ASTM C1107 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
- ASTM C1437 Standard Test Method for Flow of Hydraulic Cement Mortar
- US Army Corps of Engineers (COE) CRD-C 621 Specification for Non-Shrink Grout
- ICRI Guideline No. 310.2R Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair
- ACI 305R Guide to Hot Weather Concreting
- ACI 306R Guide to Cold Weather Concreting

PHYSICAL/CHEMICAL PROPERTIES

HPC FastSet™ All-Crete™ complies with the physical requirements of ASTM C1107 and CRD 621 when used as a fluid grout. Typical results obtained for HPC FastSet™ All-Crete™ when used as a grout at 22 °C (72 °F) are shown in Table 3. HPC FastSet™ All-Crete™ also complies with the specifications of ASTM C928 Type R3 when mixed to a stiff gel-like consistency. Typical results obtained with HPC FastSet™ All-Crete™ used as a repair mortar are shown in Table 4.

INSTALLATION

SURFACE PREPARATION

Wear the appropriate personal protective equipment. All grouting surfaces should be clean and free of foreign substances including corrosion, if present on reinforcing steel. Remove all spalled areas and areas of unsound concrete. If using the material as a repair mortar, the repair area should have a vertical edge of 13 mm (½ in) or more. Preparation work done on the grouting surfaces should be completed by high pressure water blast, breaker, hammer, or other appropriate mechanical means to obtain a properly prepared surface. Saturate repair area with clean water before grouting to ensure saturated surface dry (SSD) condition. No standing water should be left in the repair area. Refer to current ICRI Guideline 310.2R for additional surface preparation information.

INSTRUCTIONS FOR USE AS A GROUT

MIXING AS A GROUT

HPC FastSet™ All-Crete™ should be mechanically mixed for minimum of 3 minutes utilizing a 13 mm (½ in) drill and paddle mixer. Use a 19 L bucket when mixing the 25 kg (55 lb) bag or a 7.6 L bucket when mixing the 9 kg (19.8 lb) pail. For larger applications, a standard mortar mixer may be used. Add only enough water to achieve the preferred consistency listed in Table 3. Add the powder to the water and mix to a lump free consistency. Typical starting water contents can be found in Table 2.

TABLE 2 - MIXING WATER FOR HPC FastSet™ All-Crete™

Consistency	Material Quantity	Water Required
Plastic	25 kg (55 lb)	4.1 L
	9 kg (19.8 lb)	1.5 L
Flowable	25 kg (55 lb)	4.7 L
	9 kg (19.8 lb)	1.77 L
Fluid	25 kg (55 lb)	5.4 L
	9 kg (19.8 lb)	2.0 L
Repair Mortar	25 kg (55 lb)	3.3 L
	9 kg (19.8 lb)	1.18 L

APPLICATION AS A GROUT

Place the grout quickly and continuously using proper consolidation techniques when possible (i.e. light rodding, vibrating, tamping, etc.) to eliminate air bubbles.

CURING AS A GROUT

A damp cure of at least 1 day is necessary to control the non-shrink characteristics and maintain strength levels.

INSTRUCTIONS FOR USE AS A REPAIR MORTAR

MIXING AS A REPAIR MORTAR

Mix by hand or mechanically mix HPC FastSet™ All-Crete™ for 3 to 5 minutes using a standard mortar mixer. Add only enough water to achieve a stiff gel-like consistency, see Table 2. Adjust water, if needed, to achieve a place-able consistency. Exceeding an ASTM C1437 flow of 120% is not recommended, as it may cause a reduction in performance of the product. Where large quantities of material are needed for patches deeper than 50 mm (2 in) HPC FastSet™ All-Crete™ may be extended with up to 12.4 kg (27.5 lb) of -13 mm (-1/2 in) aggregate per 25 kg (55 lb) bag or up to 4.5 kg (9.9 lb) of aggregate per 9 kg (19.8 lb) pail.

The coarse aggregate used should be in SSD condition and meet ASTM C33 requirements. Adjust water, if needed, to achieve a place-able consistency. Exceeding an ASTM C143 slump of 150 mm (6 in) is not recommended, as it may cause a reduction in performance of the product.

APPLICATION AS A REPAIR MORTAR

Fill the repair area completely working continuously from one end to the other. Avoid partial depth fills which could lead to cold joints. Consolidate the material using hand tamping and/or chopping with a shovel. It is particularly important to compact around the edges of the forms or patches. Mechanical vibration should be avoided in areas that will be exposed to de-icing salts.

After HPC FastSet™ All-Crete™ has been compacted and spread to completely fill the forms without air pockets, screed the surface and then apply a trowel or broom finish as desired.

CURING AS A REPAIR MORTAR

HPC FastSet™ All-Crete™ is often placed in service within a few hours after it sets, so conventional moist curing methods may not be practical. Curing compounds such as QUIKRETE® Acrylic Concrete Cure and Seal (No. 8730) provide the easiest and most convenient method of curing. Curing compounds should be applied via appropriate methods, after final set has been reached.

The application of epoxy coatings over HPC FastSet™ All-Crete™ may be done in as little as 6 hours. Consult with the epoxy coating manufacturer for their recommendations. Test a small area to evaluate epoxy performance and adhesion prior to applying full-scale.

PRECAUTIONS

- Additions of cement or other materials (other than gravel when extended as previously noted) will eliminate the designed product qualities.
- Water quantities may be affected by temperature, mixing method, and batch size.
- HPC FastSet™ All-Crete™ should not be re-tempered.
- Mix no more than can be placed in 15 to 20 minutes, depending on the consistency.
- Follow ACI 305R when using product in hot weather.
- Follow ACI 306R when using product in cold weather.
- Use a consistent water temperature, when mixing multiple batches, to prevent performance fluctuations.

SAFETY

IMPORTANT: Read Safety Data Sheet carefully before using.
WEAR IMPERVIOUS GLOVES,
such as nitrile, mask, and eye protection.
DANGER: Causes severe skin burns and serious eye damage. Prolonged or repeated inhalation of dust may cause lung damage or cancer.
KEEP OUT OF REACH OF CHILDREN

TABLE 3 - TYPICAL GROUT PROPERTIES AT 22 ºC (72ºF)

Consistency	Plastic
Flow, ASTM C939	N/A
Flow @ 5 Drops, ASTM C1437	100 to 125%
Working Time	About 15 minutes
Final Set Time, ASTM C191	25 to 50 minutes
Compressive Strength, ASTM C109 (Modified)	
Age	*MPa (PSI)*
3 hr	20.6 (3000)
1 day	34.5 (5000)
7 days	41.4 (6000)
28 days	55.1 (8000)
Height change, ASTM C1090	
@ 1, 3, 7 & 28 days	0.0 to 0.2%
Slant Shear Bond, ASTM C882	
Age	*MPa (PSI)*
1 day	≥ 6.8 (1000)
7 days	≥ 10.3 (1500)
Consistency	Flowable
Flow, ASTM C939	N/A
Flow @ 5 Drops, ASTM C1437	125 to 145%
Working Time	About 15 minutes
Final Set Time, ASTM C191	30 to 55 minutes
Compressive Strength, ASTM C109 (Modified)	
Age	*MPa (PSI)*
3 hr	17.2 (2500)
1 day	31.1 (4500)
7 days	38.0 (5500)
28 days	51.7 (7500)
Height change, ASTM C1090	
@ 1, 3, 7 & 28 days	0.0 to 0.2%
Slant Shear Bond, ASTM C882	
Age	*MPa (PSI)*
1 day	≥ 6.8 (1000)
7 days	≥ 10.3 (1500)
Consistency	Fluid
Flow, ASTM C939	20 to 30 seconds
Flow @ 5 Drops, ASTM C1437	N/A
Working Time	About 20 minutes
Final Set Time, ASTM C191	30 to 55 minutes
Compressive Strength, ASTM C109 (Modified)	
Age	*MPa (PSI)*
3 hr	13.8 (2000)
1 day	27.6 (4000)
7 days	34.5 (5000)
28 days	44.8 (6500)
Height change, ASTM C1090	
@ 1, 3, 7 & 28 days	0.0 to 0.2%
Slant Shear Bond, ASTM C882	
Age	*MPa (PSI)*
1 day	≥ 6.8 (1000)
7 days	≥ 10.3 (1500)

TABLE 4 - TYPICAL REPAIR MORTAR PROPERTIES

Consistency	Stiff gel-like
Flow @ 25 Drops, ASTM C1437	100 to 120%
Working Time	About 15 minutes
Final Setting Time, ASTM C191	20 to 45 minutes
Compressive Strength, ASTM C109 (Modified)	
Age	*MPa (PSI)*
3 hr	24.1 (3500)
1 day	38.0 (5500)
7 days	44.9 (6500)
28 days	58.6 (8500)
Length Change, ASTM C157	
Age, Condition	
28 days, air	≥ -0.05%
28 days, water	≤ 0.05%
Slant Shear Bond Strength, ASTM C882	
Age	*MPa (PSI)*
1 day	≥ 6.8 (1000)
7 days	≥ 10.3 (1500)
Scaling Resistance after 25 Cycles, ASTM C672	
Scaled Material	≤ 1 lb/ft^2 (5 kg/m^2)

WARRANTY

NOTICE: Obtain the applicable **LIMITED WARRANTY** at www.quikrete.com/product-warranty Or send a written request to Quikrete Canada Holdings, Limited, Five Concourse Parkway, Atlanta, GA 30328, USA.

** Refer to www.highperformancecement.com for the most current technical data and SDS*

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