

## 4.4 Grout

### 4.4.1 CB-G MG Multipurpose Grout

#### 4.4.1.2 Material Specifications

##### Listings, Approvals & Testing Standards

ASTM C 1107  
Corps of Engineers CRD-C-621

##### Product Features

- Non-metallic
- Positive expansion, non-shrink
- Non-corrosive contains no chlorides or other salts
- Pumpable
- Excellent freeze/thaw resistance

##### Purposes and Uses

- Structural grouting of baseplates, columns, beams, precast concrete, dowels, etc.
- General construction grouting applications
- Can be used above or below grade
- Grouting applications where shrinkage must be eliminated and corrosion (staining) cannot be accepted

#### 4.4.1.1 Product Description

Hilti Multipurpose Grout is a Buy-American compliant, non-shrink, non-metallic ready to use grout ideal for general construction grouting applications. This versatile grout can be used at various consistencies including pumping and meets the standards of ASTM C-1107.

For applications requiring better flow characteristics and higher initial and ultimate strengths, refer to Hilti Precision Grout.

#### 4.4.1.3 Material Specifications / Technical Data

Color: Concrete gray			
	Plastic	Flowable	Fluid
Compressive Strength psi (MPa) ASTM C 109			
1 day	4,000 (27.6)	3,500 (24.1)	2,500 (17.2)
3 days	6,000 (41.4)	5,100 (35.2)	4,500 (31.0)
7 days	7,000 (48.3)	6,000 (41.4)	5,200 (35.9)
28 days	7,800 (53.8)	7,000 (48.3)	6,500 (44.8)
Water Requirements qts. (L) per 50 lb. bag			
per 50 lb. bag	3.1 qts. (2.9 L)	3.4 qts. (3.2 L)	4.1 qts. (3.9 L)
Setting time (hrs/min) ASTM C 191			
Initial	3 Hrs 15 Min	5 Hrs 30 Min	7 Hrs 30 Min
Final	4 Hrs 45 Min	6 Hrs 45 Min	8 Hrs 00 Min
Volume Change (% expansion) ASTM C 1090			
3 days	0.04%	0.03%	0%
28 days	0.04%	0.03%	0.01%

#### 4.4.1.4 Installation Instructions

Read product instructions and MSDS before use

##### Preparation

The surfaces to be grouted must be solid, clean and free from oil, grease, and other contaminants that may act as a bond breaker. Remove all loose material and laitance. Concrete surfaces must be sound and roughened to obtain proper bond. Prior to grouting, area should be saturated to an SSD (saturated surface-dry) condition with water after which all excess water is removed.

The grout and the affected grouting area should be kept between 40° F

and 95° F (4° C and 35° C) and shaded from direct sunlight until fully cured. For application temperatures outside this range please refer to ACI 305 for hot weather and ACI 306 for cold weather application advice or contact Hilti. Set times and strength developments are dependent on temperature. Hot temperatures will accelerate the setting process of the grout while cold temperatures will have a retarding effect.

All metal components to be in contact with grout must be free of rust, paint, or oils.

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### Form Work

The formwork must provide rapid, continuous grout placement and needs to retain grout without leakage. For baseplate forms should be at least 1" (2.54cm) higher than the bottom of the baseplate, as referenced in ACI 351. The clearance between the formwork and the baseplate should be sufficient to allow for a headbox. The clearance for the remaining sides shall be 1" – 3" (2.54cm – 7.62cm).

### Mixing

An optimal, homogeneous mix can only be achieved by means of mechanical mixing. For small quantities, up to the size of a single bag, a low speed drill (400-600rpm) and paddle mixer is acceptable. For large quantities and continuous pours a mortar mixer or grout pump is recommended.

Place 3/4 of the required mixing water into the mixer, start the mixer and slowly add the grout. After all of the powder has been added, put in the remaining 1/4 water necessary to achieve the desired consistency and continue mixing. For applications greater than 3" (7.62cm), up to 50% by weight weight of clean, washed and dried 3/8" (9mm) pea gravel may be added.

Thoroughly mix for a minimum of 5 minutes until a lump free, uniform consistency is achieved.

\*\* The water requirements are listed in the table above.

### Application

Immediately after mixing, place grout into the form, pouring from one side and allowing it to flow to the opposite and adjacent sides thereby avoiding air entrapment. Provide vent holes where needed to prevent air entrapment. Compaction can be achieved by rodding, chaining or light vibration.

Minimum application thickness per pour: 1/2" (13mm)

Maximum application thickness per pour, without the extension of pea gravel: 3" (76mm)

Maximum application thickness per pour, with the extension of pea gravel: 10" (254mm)

### Finishing

Forms may be removed after the grout has hardened to an initial set and is completely self-supporting. This time period will vary according to temperature. When grouting at higher temperatures, shade the area to be grouted and prevent rapid water loss by covering the exposed grout surfaces with wet burlap during the first 48 hours or apply an acceptable amount of water based cure and seal agent.

For placement and curing please also refer to ACI 351.

### Clean-up

Clean equipment with water and detergent immediately after use.

### Storage

Always keep in cool dry place unexposed to sunlight.

### Limitations

- Do not use if bag is damaged
- Do not re-temper after mixing
- Do not over water or add other cements or additives

### Yield

- One 50lb. (22.7kg) bag yields approximately 0.44ft<sup>3</sup> (0.012m<sup>3</sup>) at 4.1qts. (3.9 L) of water
- One 50lb. (22.7kg) bag extended with 25lbs. (11.3kg) of 3/8" (9mm) washed pea gravel yields approx. 0.60 ft<sup>3</sup> (0.017 m<sup>3</sup>) at 4.1qts. (3.9L) of water

### Packaging

- 50lb. (22.7kg) moisture resistant bag

### Shelf life

12 months from date of manufacture when stored in original unopened container



### 4.4.1.5 Ordering Information

Description	Package Contents	Qty
Multipurpose Grout	50 lb. Bag, large pallet	50