

# CETCO® C-GROUT

## HIGH COMPRESSIVE STRENGTH CEMENTITIOUS/BENTONITE GROUT



Certified to  
NSF/ANSI/CAN 60

### DESCRIPTION

CETCO C-GROUT is an engineered bentonite-based blend designed to produce optimal traits in cementitious, high compressive strength grouts. The specialized blend can reduce the complexity of formulating high performance grouts by containing all the admixtures necessary for optimal grouting. CETCO C-GROUT is designed to be mixed in common ratios of one 50 lb bag of bentonite to either one or two, 94 lb bags of Portland Cement - Types 1 or 1L. CETCO C-GROUT has proven to be very tolerant of saltwater and is able to maintain hydraulic-conductivity below 1.0E-07 cm/sec even in 50,000 µS/cm sea water. CETCO C-GROUT is certified to NSF/ANSI/CAN Standard 60, Drinking Water Treatment Chemicals - Health Effects.

### RECOMMENDED USE

CETCO C-GROUT is intended to be mixed with cement and freshwater to create a pumpable, self-hardening slurry. It is used for hole abandonment under roadways, around well-casings, as flowable fill under foundations, or in any other situation where void-filling with a high compressive-strength grout is required or where neat cement is not ideal. With CETCO C-GROUT, it is possible to achieve unconfined compressive strength values ranging from 100 psi to 300 psi after 28 days.

CETCO C-GROUT is also ideally suited to create thermally conductive, but high set-strength grouts for any geothermal application. When mixed with CETCO TC-BOOSTER and cement, CETCO C-GROUT can produce conductivity values between 0.60 and 1.95 Btu/hr/ft/F.

### CHARACTERISTICS (CETCO C-GROUT WITH CEMENT)

- Contains flowability and stability enhancers to produce an easy-pumping slurry and minimize water bleed
- Correctly formulated slurry has a pH of ~11
- Easy batch-dosing recipe in 1:1 or 1:2 bag ratio of CETCO C-GROUT with ordinary Portland Cement - Type 1 or 1L
- Good freeze-thaw resistance due to entrained air-bubbles
- High compressive strength potentials of between 100 psi and 300 psi after 28 days. Higher values are possible with extended aging. See chart below for typical grout properties
- Lack of aggregate means that it will flow into cracks and around obstacles better than concrete or typical "high-solids" cements
- Lower density compared to most neat cement or concrete mixes, ranging between 11.2 and 12.6 lb/gallon
- Lower permeability characteristics (like bentonite grouts) even immediately after mixing – able to achieve a hydraulic permeability value of less than 1.0x10<sup>-7</sup> cm/sec in both fresh and saltwater
- Minimal-shrinkage and minimal-cracking, even when completely dry
- Remains easy-mixing and pumpable for an extended period (beyond typical bentonite grouts)

### MIXING AND APPLICATION

A typical batch-mixer is used to blend cement and CETCO C-GROUT with water. The cement should be added to water before adding CETCO C-GROUT. Premix the cement portion for at least three minutes before adding CETCO C-GROUT. Upon adding CETCO C-GROUT, the viscosity will temporarily increase and, with continued mixing, thin out to an easily pumpable consistency. It is recommended to mix/agitate the CETCO C-GROUT and cement portions together for at least three minutes prior to pumping. The resulting fluid can be mixed for longer periods and will remain thin and pumpable for over 60 minutes.

Any addition of CETCO TC BOOSTER should be made after the addition of the CETCO C-GROUT is well blended into the cement. Adding CETCO TC BOOSTER to a smooth, homogenous mix will help improve graphite-dispersion, increase thermal conductivity, and reduce variability in compressive strength throughout the grouted column.

### PACKAGING

~50 lb (~22.7 kg) bag, 40 per pallet. All pallets are plastic-wrapped.



## CETCO® C-GROUT HIGH COMPRESSIVE STRENGTH CEMENTITIOUS/BENTONITE GROUT

### THERMALLY ENHANCED GROUT MIXING OPTIONS

#### 1 BAG CETCO C-GROUT TO 2 BAGS OF PORTLAND CEMENT - TYPES 1 & 1L

TARGET COMPRESSIVE STRENGTH (PSI)	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
TARGET THERMAL CONDUCTIVITY (Btu/fr/ft/F)	0.15	0.66	0.95	1.06	1.24	1.33	1.50	1.61	1.70	1.80	1.95
CETCO C-GROUT (LB)	50	50	50	50	50	50	50	50	50	50	50
PORTLAND CEMENT - TYPE 1 & 1L (LB)	188	188	188	188	188	188	188	188	188	188	188
CETCO TC BOOSTER (LB)	0	24	40	48	60	72	84	96	108	120	135
FRESHWATER (LB)	241.69	250.02	250.02	262.52	275.02	275.02	283.36	291.69	300.02	308.36	316.69
FRESHWATER (GAL)	29.00	30.00	30.00	31.50	33.00	33.00	34.00	35.00	36.00	37.00	38.00
TOTAL SOLIDS (%)	49.62	51.17	52.66	52.14	52.00	52.99	53.19	53.38	53.56	53.72	54.08
TOTAL VOLUME (GAL)	38.56	40.81	41.65	43.57	45.69	46.32	47.94	49.57	51.20	52.82	54.60
SPECIFIC GRAVITY (G/CC)	1.49	1.51	1.52	1.51	1.50	1.52	1.52	1.51	1.51	1.51	1.52
MUD WEIGHT (LB/GAL)	12.44	12.55	12.68	12.59	12.54	12.63	12.63	12.62	12.62	12.62	12.63

### THERMALLY ENHANCED GROUT MIXING OPTIONS

#### 1 BAG CETCO C-GROUT TO 1 BAG OF PORTLAND CEMENT - TYPES 1 & 1L

TARGET COMPRESSIVE STRENGTH (PSI)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TARGET THERMAL CONDUCTIVITY (Btu/fr/ft/F)	0.30	0.70	1.00	1.25	1.40	1.45	1.49	1.57	1.66	1.78	1.95
CETCO C-GROUT (LB)	50	50	50	50	50	50	50	50	50	50	50
PORTLAND CEMENT - TYPE 1 & 1L (LB)	94	94	94	94	94	94	94	94	94	94	94
CETCO TC BOOSTER (LB)	0	12	24	36	48	54	60	72	84	96	108
FRESHWATER (LB)	216.68	225.02	225.02	233.35	233.35	233.35	241.69	250.02	258.35	266.69	275.02
FRESHWATER (GAL)	26.00	27.00	27.00	28.00	28.00	28.00	29.00	30.00	31.00	32.00	33.00
TOTAL SOLIDS (%)	39.92	40.94	42.75	43.55	45.14	45.90	45.77	46.35	46.88	47.37	47.82
TOTAL VOLUME (GAL)	31.98	33.61	34.23	35.86	36.48	36.80	38.11	39.74	41.36	42.99	44.61
SPECIFIC GRAVITY (G/CC)	1.35	1.36	1.38	1.38	1.40	1.41	1.40	1.41	1.41	1.41	1.42
MUD WEIGHT (LB/GAL)	11.28	11.34	11.48	11.53	11.66	11.72	11.69	11.73	11.76	11.79	11.81

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