

CEILCOTE® 648 CP

High strength foundation grout

DESCRIPTION:

CEILCOTE 648 CP is a high performance epoxy grouting material for support of heavy equipment to ensure the proper transmission of static and dynamic loads to the equipment foundation.

RECOMMENDED FOR:

- Precision alignment of machinery, compressors and prime movers in the gas transmission and other industries
- Foundations under crusher ball mills, slab tables and other equipment in the steel industry
- The pulp and paper, chemical processing, mining and power industries for a wide variety of applications
- Applications requiring fast turnaround with high early and seven day compressive strengths

FEATURES/BENEFITS:

- High early and seven day strengths
- Superior physical properties at high temperatures
- Excellent bearing area and flow
- Variable fill ratio for the optimum mix of flowability, bearing area and economics on a project by project basis
- Good chemical resistance

PACKAGING/ESTIMATING:

CEILCOTE 648 CP Grout is unitized for convenience.

230 lb Full Unit (1.73 ft³, 0.05 m³)

- Grout Liquid one 22 lb 5 oz pail (10.1 kg)
- Hardener one 7 lb 9 oz bottle (3.4 kg)
- Grout Aggregate four 50 lb bags (22.7 kg each)

PERFORMANCE DATA:

Compressive Strength

(ASTM C 579-82, Method B, Modified 1-1/2 Cubes)

Fill Ratio*	Test Temp	(°C)	7-Day Cure @ 73°F		24-Hr. Room Temp., 16-Hr. @ 140°F	
			Conditioned 1 Hr. at Test Temp.		Conditioned 1 Hr. at Test Temp.	
	°F		psi	(MPa)	psi	(MPa)
5.75	73	(23)	18,000	(127)	22,400	(157)
	140	(60)	7,800	(55)	15,200	(107)
	170	(77)	6,600	(45)	7,800	(55)
6.25	73	(23)	18,000	(127)	22,400	(157)
	140	(60)	7,800	(55)	15,200	(107)
	170	(77)	6,800	(47)	7,800	(55)
6.75	73	(23)	18,000	(127)	22,400	(157)
	140	(60)	7,800	(55)	15,200	(107)
	170	(77)	7,000	(48)	7,800	(55)

NOTE: "Fill Ratio" is the ratio by weight of the aggregate to the combined resin and hardener.

Tensile Strength

(ASTM C 307-83, filled 6.25)

2,300 psi (16 MPa)

Modulus of Elasticity

(ASTM C 580-74)

Test Temp.	°F (°C)	5.75		6.25		6.75	
		x 10 ⁶ psi	(GPa)	x 10 ⁶ psi	(GPa)	x 10 ⁶ psi	(GPa)
76	(24)	2.5	(18)	2.5	(18)	2.6	(18)
110	(43)	2.1	(15)	2.3	(16)	2.3	(16)
125	(52)	2.0	(14)	2.1	(15)	2.1	(15)
140	(60)	1.6	(11)	1.7	(12)	1.8	(12)
155	(68)	0.7	(5)	0.7	(5)	0.9	(6)

Flexural Strength

(ASTM C 580-74, Cured 7 Days @ 73°F, Filled 6.25)

4,600 psi (32 MPa) @ 76°F (24°C)

4,200 psi (30 MPa) @ 140°F (60°C)

2,100 psi (15 MPa) @ 170°F (77°C)

Creep

(Test Method STS 22.2)

2.8 x 10⁻³ in/in. over 24 hours

3.7 x 10⁻³ in/in. over 1 year

4.0 x 10⁻³ in/in. over 10 years

Cure Rate (Filled 6.25)

Compressive Strength when Cured at:

Time Hrs.	55°F (13°C)	73°F (23°C)	90°F (32°C)
	psi (MPa)	psi (MPa)	psi (MPa)
8	—	700 (5)	9,400 (66)
16	—	7,000 (49)	13,700 (96)
24	1,300 (9)	11,500 (81)	16,000 (112)
48	9,400 (66)	16,400 (115)	18,500 (130)
72	13,900 (98)	17,100 (120)	19,000 (134)
96	16,700 (117)	18,000 (127)	20,000 (141)

Shrinkage, unrestrained linear

(ASTM C 531-85, Filled 6.25:1)

Exotherm - 12 °F

.00065 in/in.

Coefficient of Thermal Expansion

(ASTM C 531-81, Filled 6.25:1)

31 to 74 °F, 11.8 x 10⁻⁶ in/in/°F (21.2 x 10⁻⁶ cm/cm/°C)
 74 to 110 °F, 13.0 x 10⁻⁶ in/in/°F (23.4 x 10⁻⁶ cm/cm/°C)
 74 to 210 °F, 21.8 x 10⁻⁶ in/in/°F (39.2 x 10⁻⁶ cm/cm/°C)

Water Absorption
(ASTM C 413-83, Filled 6.25)

0.076%

Gallons of aggregate that may be removed from each full unit:

Bond Strength to Steel-Tension

73 °F	3,100 psi (22 MPa)
140 °F	2,000 psi (14 MPa)

Bond Strength to Steel-Shear

73 °F	5,000 psi (35 MPa)
140 °F	2,000 psi (14 MPa)

Density

(ASTM C 905-79)

Filled 5.75	129 lbs/ft ³ (2070 kg/m ³)
6.25	131 lbs/ft ³ (2100 kg/m ³)
6.75	133 lbs/ft ³ (2130 kg/m ³)

Volume Per Unit (Filled 6.75)

1.73 ft³ (.049 m³)

Impact Strength

Better Than Concrete

Abrasion Resistance

Better Than Concrete

Color

Dark Grey

Flash Points

(Pensky-Martens Closed Cup)

CEILCOTE 648 CP Grout Liquid	229 °F (109 °C)
CEILCOTE 648 CP Hardener	230 °F (110 °C)

APPLICATION:

Fill Ratios

CEILCOTE 648 CP Grout is packaged in units containing 6.75 fill ratios, that is, the ratio by weight of aggregate to the combined resin and hardener components. Because the foundation temperature and geometry will vary on each installation, CEILCOTE 648 CP is designed so that the amount of aggregate can be adjusted to provide maximum bearing area while maintaining good flow and handling properties.

The following chart lists the amount of aggregate, in gallons, that may be withheld from each full unit. However, it is always preferable to use the greatest amount of aggregate that will allow for proper placement.

Temp.	Thin pours or long flow distances	Thick pours Normal conditions	or open areas
>90 °F	1 gal	0	Add 1 gal
70 to 90 °F	2 gal*	1 gal	0
50 to 70 °F	2 gal*	2 gal	1 gal

*Do not remove more than 2 gallons of aggregate without first consulting manufacturer.

Chemical Resistance

CEILCOTE 648 CP grout resists non-oxidizing mineral acids and salts, caustics, dilute oxidizing acids and salts, plus some organic acids and solvents. For more specific information contact your Master Builders Representative.

Cure Time vs. Temperature

Cure time of the grout will depend upon the temperature of the base and foundation rather than the ambient air temperature. Unless the ambient air temperature has been constant for several days the base/foundation temperature will generally be lower than air temperature. A surface thermometer and field judgment should be used to determine actual cure rates. Cured grout should have solid, almost metallic ring when struck lightly with a hammer, checking as close to the base as possible.

Working Time

The following chart is a guide for the working time of a fresh grout mix at various ambient temperatures. The working time of a CEILCOTE 648 CP Group mix begins when the hardener is added to the liquid.

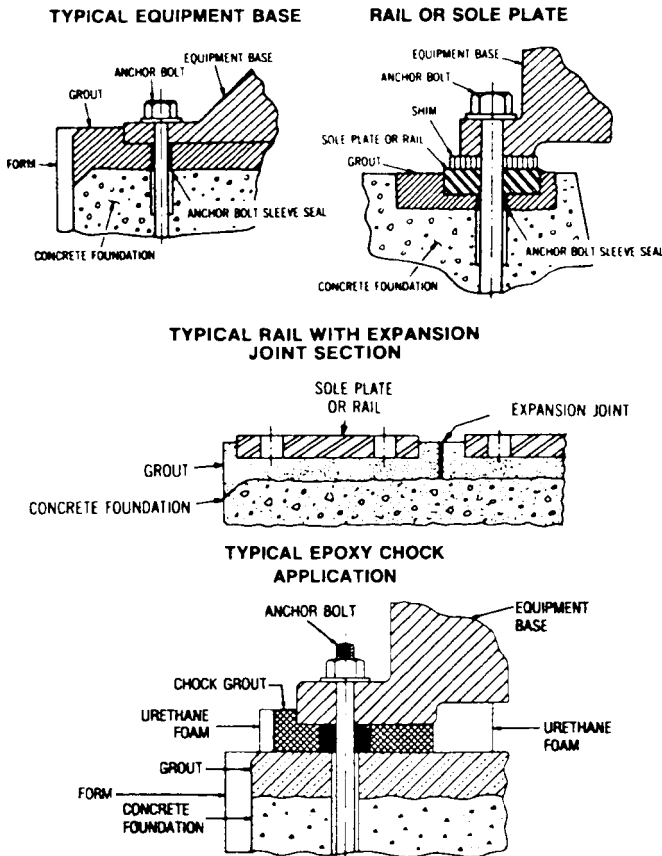
50 to 60 minutes @ 90 °F
90 to 120 minutes @ 70 °F
120 to 150 minutes @ 50 °F

Consult the CEILCOTE 648 CP Installation Bulletin or the product bag for details on the installation of CEILCOTE 648 CP grout

CEILCOTE 648 CP can be used for deep pours. When pour thickness exceeds 6 inches, use of steel rebar is recommended. See Installation Bulletin on expansion joint and reinforcement bar suggestions. Grout thickness of 2 to 4 inches is typical for new installations.

Master Builders recommends that the user request the services of the local representative for a pre-job conference to plan the installation.

EXAMPLES OF PROPER EPOXY FOUNDATION GROUT INSTALLATION:



LIMITATIONS:

CEILCOTE 648 CP Grout is a three component epoxy grout formulated for industrial and professional use only and must be kept out of the reach of children. These products contain chemicals which may be COMBUSTIBLE and potentially HARMFUL to your health if not stored and used properly. Hazards can be significantly reduced by observing all precautions which are found on material safety data sheets, and product labels. Please read this literature carefully before using product.

RELATED BULLETINS:

Material Safety Data Sheet — CEILCOTE 648 CP
Installation Bulletin 911 — CEILCOTE 648 CP

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