

Section 03603
CEILCOTE® 648-CP PLUS
HIGH STRENGTH, HIGH TEMPERATURE EPOXY GROUT

NOTE TO SPECIFIERS

The purpose of this suggested specification is to assist the specifier while developing a specification for the use of Master Builders CEILCOTE® 648-CP PLUS. This specification has been prepared to be part of a complete project specification. It has not been prepared to be a “stand alone” item. This document is not intended to be copied directly into project specifications.

PART 1 - GENERAL

1.01 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.02 Summary

A. This section specifies a high strength, high temperature epoxy grouting material formulated to be used for applications requiring precision support and/or chemical resistance.

B. This product is a prepackaged three-component grout that is intended for grouting machine bases, sole plates, and equipment subject to dynamic and impact loading, anchors and dowels.

1.03 References

ASTM C 307-83	Test Method for Tensile Strength of Chemical Resistant Mortars, Grouts and Monolithic Surfacing.
ASTM C 531-85	Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical Resistant Mortars, Grouts and Monolithic Surfacing (Method B).
ASTM C 579-96	Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes - (Method B).
ASTM C 1181-91	Test Method for Compressive Creep of Chemical Resistant Polymer Machinery Grouts.
Bond Strength	MBT Test Methods for Bond to Steel in Shear and Tension.
Grout Flow and Bearing Area	MBT Test Method for Epoxy Grout Flow and Bearing Area.
Working Time	MBT Test Method for Epoxy Grout Working Time.

1.04 System Performance Requirements

- A. Provide high strength, high temperature epoxy grout that when cured produces the following properties:
1. Working Time (MBT Method): Minimum 2 hours at 5 °F (1 °C); 1.5 hours at 7 °F (2 °C); 50 minutes at 90 °F (32 °C)
 2. Compressive Strength (ASTM C 579, Method B): Minimum 11,000 psi (76.0 MPa) at 73 °F (23 °C); 6000 psi (41 MPa) at 170 °F (77 °C)
 3. Coefficient of Thermal Expansion (ASTM C 531) at 73 - 210 F (23 - 99 °C):
Maximum $24.0 \times 10^{-6}/^{\circ}\text{F}$ ($13 \times 10^{-6}/^{\circ}\text{C}$)
 4. Creep Resistance (ASTM C 1181) at 600 psi, 140 °F (4 MPa, 60 °C): Maximum 6.0×10^{-3} in./in. (cm./cm.)
 5. Bond Strength to Steel (MBT Method): Tension: minimum 3000psi (21 MPa), Shear: minimum 4000 psi (28 MPa).
 6. Tensile Strength (ASTM C 307); Minimum 2000 psi (14 MPa).
 7. Flexural Modulus of Elasticity (ASTM C 580): Minimum at 73 °F (23 °C), 1.5×10^6 psi (10 GPa); at 140 °F (60 °C), 1.2×10^6 psi (8 GPa); at 170 °F (77 °C), 0.5×10^6 psi (3.5 GPa).
 8. Flow (MBT Method): Maximum time to fill flow box not to exceed 40 seconds at 73 °F (23 °C).
 9. Bearing Area (MBT Method) - Minimum plate contact area after sandblasting 75%.

1.05 Submittals

- A. Submit grout manufacturers certification, laboratory data, and product literature indicating that the materials comply with specified requirements.

1.06 Delivery, Storage And Handling

- A. Deliver product in factory packages, clearly marked with manufacturers identification, printed instructions, lot numbers and shelf life expiration date on each component.
- B. Store materials at 65-85 °F (18-29 °C) in dry environment.

PART 2 - PRODUCTS

2.01 Materials

- A. High Strength, High Temperature Epoxy Grout: "CEILCOTE® 648-CP PLUS" by Master Builders, Inc. used at 25% reduced aggregate mix ratio.
- B. Forms: Wood, metal, or plastic, of sufficient strength to withstand pressure from the liquid grout.

PART 3 - EXECUTION

3.01 Surface Preparation

- A. Mechanically remove unsound concrete to the limits indicated on the drawings.
- B. Remove at least 1in. (25mm) of existing concrete surface and continue removal as required to expose sound aggregate.
- C. Thoroughly clean the roughened surface of oil, dirt, loose chips, and dust. Maintain substrate in a surface-dry condition.
- D. Adjust ambient temperature to maintain baseplate and foundation temperatures above 50 °F (10 °C). Consult manufacturer for recommendations before grouting at high temperatures.
- E. Shade the foundation from summer sunlight for at least 24 hours before and 48 hours after grouting.

3.02 Metal Preparation

A. Clean baseplates and other metal surfaces to be grouted. Remove loose rust and scale by grinding or abrasive blasting.

3.03 Formwork

A. Construct formwork to be liquid tight. Apply wax, polyethylene, or other nonbondable film as a release agent on the grout side of forms.

B. Construct head box(es) to assist flow on large/wide installations.

3.04 Mixing

A. Comply with Grout manufacturer's recommendations for mixing procedures.

High flow characteristics are achieved by using 3 bags of aggregate per unit vs. standard 4 bag unit.

3.05 Installation

A. Place grout mixture into formed areas by flowing one side to the other to prevent voids and air entrapment. Work material firmly into the bottom and sides to assure good bond.

B. Follow all manufacturer's written installation procedures.

3.06 Curing

A. Consult manufacturer's technical data for cure rates at different temperatures.

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