

INSTALLATION PROCEDURE

Ceilcote® 505/510 Coroline

Reinforced Trowel Applied Epoxy Lining/Topping

Description

Installation information contained in this procedure is as specific as possible but cannot cover all variations in field conditions. If anticipated conditions do not permit following these guidelines, do not hesitate to call your CEILCOTE Representative.

CEILCOTE 505 Coroline is a silica filled system. CEILCOTE S-1 powder is used as the filler for this standard system.

CEILCOTE 505AR Coroline is an abrasion resistant system. CEILCOTE S-9AR powder is used as the filler for abrasion resistance.

CEILCOTE 505BR Coroline Basecoat/Saturant is optional and recommended when surface conditions are exposed to high humidity and/or low temperature, creating the potential condition for excess amine blush, common with outside applications.

Ceilcote 510 Coroline is a carbon filled system. Ceilcote B-4 powder is used as a filler to provide chemical resistance of HF, fluorides, or hot caustic environments.

If hot caustic or fluorides are present and a black lining is not desired, use CEILCOTE S-10AR powder to provide chemical resistance as well as resistance to abrasion.

Materials Required

The materials used for application and installation consists of:

- a. Primer – CEILCOTE 680 Primer
680 Primer Resin and #9 Hardener
(add C-1 powder for conductive primer)
- b. Basecoat – CEILCOTE 505 Coroline
505 Coroline Resin and #4A Hardener
*Option – CEILCOTE 505BR Coroline
505 Coroline Resin and #9 Hardener
- c. Topcoat – CEILCOTE 505 Coroline
505 Coroline Resin and #4A Hardener
- d. Smoothing – T-420
Liquid

Equipment

For Surface Preparation:

- Abrasive blasting
- Blastrac (Horizontal)
- Scarification or other mechanical means

For Mixing:

- Volume measure for liquid (1qt. or 1 gal)
- Volume measure for Hardener (cubic centimeters or ounces)
- Measuring bucket (1 gal – qt increments)
- 3 or 5 gal pail if mixing with drill (3 gal is easier to trowel from)
- Heavy duty ½" (1.27 cm) drill motor
- Plaster whip for mixing
- Scale (in pounds for measuring powder)

For Application:

- Shears or utility knife for cutting glass cloth/mat
- Plaster or cement finishing trowel (generally 4"x12")
- Marginal trowels 2" x 5" or 2" x 8"
- Wallpaper brush (for dry pressing glass cloth/mat before saturating)
- Smoothing brush – good grade horsehair, nylon, and/or short nap mohair paint roller (for topcoat)
- Paint roller covers (short 3/8" nap mohair or equivalent) and frames
- Steel or aluminum ribbed roller if using mat instead of cloth
- 1 gal (3.78 liter) pail for smoothing liquid (T-420)
- 1 gal (3.78 liter) pail for cleaning solvent
- Clean Pails -3 or 5 gal (minimum 5 required for mixing, saturating and cleaning tools and buckets)
- Surface thermometer for environmental monitoring
- Psychrometer for determining air temperature, relative humidity, and dew point.
- Surface comparator for steel profile
- Wet film thickness gage Disc sander
- Cleaning rags
- Scoop for powder

SURFACE PREPARATION

Contamination levels should be checked prior to abrasive blasting. These normally include checking for oils, chloride and sulfate levels, and any other known forms of contamination.

1. Steel

Grit blast the surface to "White Metal" in accordance with Steel Structures Painting Council specification SSPC SP5 or NACE No. 1, using a clean and dry blasting abrasive of such mesh size that will give a 3 mil minimum profile. Refer to SSPC 10 or NACE #2 for fumes and dry environments.

The air supply for each blasting nozzle should be at least 250 CFM continuous input volume at 100 psi. Separators and traps should be used to assure both a dry abrasive and dry air at the nozzle.

a) Proper blasting hoods and gloves are recommended.

Remove dirt, dust and abrasives by vacuuming, air blowing or careful brushing.

All metal surfaces must be primed with Ceilcote 680 before contamination or rust deterioration can occur. Primer may be sprayed or rolled to yield 2.0 - 5.0 wet mils. Average coverage of CEILCOTE 680 Primer is 275-325 sq. ft. per gal.

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2. Concrete

New

New concrete must be thoroughly cured. All form oils, curing solutions and laitance must be completely removed by Blastrac or grit blasting. Concrete should be abrasive blasted to a texture similar to 40-60 grit sandpaper. Prepared surfaces must be clean, dry and firm.

Use ASTM D 4263 to determine if the concrete is dry enough to apply the primer. Test several areas. Tape an 18" x 18" square of polyethylene or other clear film to the floor. Leave in place for 16 hours. If condensation appears on the underside of the film or if the concrete becomes visibly damp, it is not dry enough to place the primer. Retest until no moisture appears.

CAUTION: Concrete "gassing" or breathing may occur when the surface temperature is rising due to sunlight or increasing ambient temperature. This can cause bubbles or holes in the applied floor, lining or coating. When this problem occurs it is necessary to shade the surface from sunlight and/or apply the material in the cooler evening hours or at night. (This usually creates a tendency for the polymer to be drawn into the concrete) so that the initial cure can take place without air escaping from the concrete.

Existing

Previously coated or heavily contaminated surfaces should be abrasive blasted to provide a clean, dense surface. New or uncontaminated surfaces must be prepared by grit or abrasive blasting, blastrac or scarification. All concrete surfaces can be primed with CEILCOTE 680 Primer. When spark testing is required, use 680 Primer with C-1 Powder.

All oils, grease, dirt, old coatings, or chemical contaminants must be removed by surface preparation. Contaminated concrete may require multiple detergent and/or solvent cleaning, abrasive blasting, or in some instances may be unsuitable for coating. If this is determined, consult CEILCOTE.

Concrete Repair

All surface irregularities (i.e., bug holes, voids), should be filled. An epoxy mortar can be used by mixing 1 gal. of catalyzed CEILCOTE 680 PRIMER and adding 18-22 pounds of Type S-1 concrete or 2 1/2 gals (approximately 9-10 lbs.) of CEILCOTE S-11 Powder to make a thick paste. Adjust working thickness by adding more or less powder. For a pre-mixed filler, use CEILCOTE 610 Ceilpatch. Fill voids and allow to cure hard (4-8 hrs). Refill shrinkage cracks if necessary. Allow to cure 8 hours before coating.

MIXING PROPORTIONS

To ensure safe working, the safety precautions listed on the labels as well as the information provided in the MSDS Sheets must be observed. The individual components must be mixed completely and thoroughly.

• Primer

Mix 680 Primer resin and #9 Hardener thoroughly and apply the Primer to the substrate by spray or roller.

Mixing Ratio	By Volume
<u>CEILCOTE 680 Primer</u> 680 Primer Resin #9 Hardener	3 1
<u>CEILCOTE 505/510 Coroline</u> 505 Coroline Resin #4A Hardener	8 1
<u>CEILCOTE 505BR Coroline</u> 505 Coroline Resin #9 Hardener	3 1

HANDLING PROPERTIES

All times are approximate

Working Time	680 Primer	505 Coroline	505BR Coroline
50°F (10°C)	90 min	2 hrs	2 hrs
70°F (21°C)	40 min	50 min	50 min
90°F (32°C)	20 min	25 min	25 min

Recoat Time	680 Primer	505 Coroline	505BR Coroline
50°F (10° C)	9 hrs	9 hrs	9 hrs
70°F (21° C)	5 hrs	5 hrs	5 hrs
90°F (32° C)	3 hrs	3 hrs	3 hrs

Time to Place in Service	
50°F (10°C)	48 hrs
70°F (21°C)	24 hrs
90°F (32°C)	12 hrs

Note: *Some immersion conditions may require longer cure times*

Coverage

CEILCOTE 680 Primer	
Concrete	150-200 ft ² /gallon
Steel	250-325 ft ² /gallon
With the addition of Ceilcote C#1	140-160 ft ² /gallon
CEILCOTE 505/510 Coroline	16-18 ft ² /gallon
CEILCOTE 505 Coroline TC only	40-45 ft ² /gallon
CEILCOTE 505BR Coroline (BC & Saturant)	22-26 ft ² /gallon
Type B-4 Powder	60-62 ft ² /bag
Type S-1 Powder	50 ft ² /bag
Type S-9AR Powder	85-100 ft ² /bag (Topcoat only)
Type S-10AR Powder	85-100 ft ² /bag (Topcoat only)
H Cloth / 1 ½ oz Mat	1.1 sq ft/ sq ft
T-420 Smoothing Liquid	200 ft ² /gallon

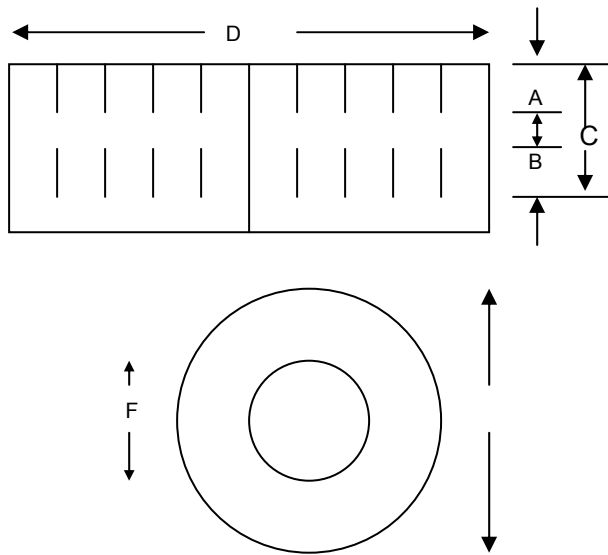
Storage

Store material in a cool, dry and covered location [50° - 90° F (10° - 32° C)], away from fire hazards and direct sunlight. Minimum shelf life at 70°F (21° C) for each component is indicated below:

CEILCOTE 680 Primer	18 months
CEILCOTE 505/510 Coroline	18 months
S-1, S-9AR, S-10AR, B-4	Indefinite, if kept dry
H Cloth / 1 ½ oz Mat	Indefinite
T-420 Smoothing Liquid	2 years

Higher temperature will shorten the shelf life of these products. All liquid products are to be stored in a frost-free place.

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The outlets should be covered first before any glass cloth/mat is put on the interior of the tank. After the glass cloth/mat has been put on the outlet, the interior of the tank is covered to the outlet. Then after the glass cloth/mat on the interior of the tank has set up, a 2" strip of cloth/mat is cut to apply around the circumference of the outlet, 1" extending along the tank wall, 1" extending into the outlet.

To produce a smooth flange face apply the topcoat slightly mounded around center circumference of the flange, Wax thoroughly a piece of plywood and clamp it on with c-clamps to the fresh topcoat, making certain it is flat on the face of the flange. From inside the tank, reach into outlet and remove excess material squeezed from under the form.

Rivets - The line of rivets must be smoothed with basecoat mix for easier covering with glass cloth/mat.

Pitted Steel - Pits must be filled as a separate operation after priming. Use CEILCOTE 680 PRIMER mixed to a paste with S-11 Powder. For a pre-mixed filler, use CEILCOTE 610 Ceilpatch. Trowel in several directions using the trowel as a squeegee.

Tank Bottoms - For small tanks it is a good idea to turn the tank over on its side to do the bottom. For large tanks, the bottom is done last. The tank floor should be protected to keep it clean while lining the walls.

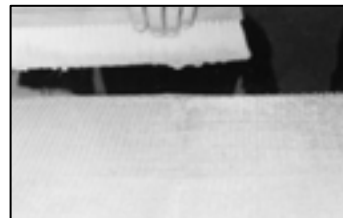
Cloth/mat

Cutting and Placement - Measure the area to be base coated. This area will vary with application rate. (Typically, 4" wide by 5' long) With the cloth, remove a strand from the inside of glass section to be cut to form a line for cutting.

The glass is best cut with scissors. For cloth, follow the line along the missing strand of glass. After cutting, one or two edge strands are pulled off to prevent unraveling. Roll the section(s) tightly for easier handling.

When the cloth/mat is applied, a minimum lap of 1" is required over adjacent cloth/mat.

It is necessary to press the glass cloth/mat firmly into the basecoat so that no hollow areas remain. This may be done with the hands, a dry trowel, a dry wall paper brush or a paint roller. It is necessary to be especially careful to press the glass cloth/mat firmly into corners.



Saturating

The saturating coat is mixed as described in the Mixing Section of this procedure. Saturating should be done before the troweled basecoat has hardened. Only in cases where the glass cloth/mat is being applied over head is it permissible to press the cloth/mat into the basecoat and allowed to harden before saturating.



Roll or brush the dry cloth/mat until the basecoat starts to come through. The saturating liquid is best applied with a roller or large brush. At overlap, the top lap of cloth/mat should be lifted so that saturating liquid can be applied to the bottom layer. The top layer is then pressed on the bottom layer and saturated. Saturation is complete when all the areas of the glass cloth/mat have lost their whiteness and have become slightly translucent.

When chopped strand mat is used in lieu of cloth reinforcement, the fiberglass must be rib rolled immediately after saturation to remove entrapped air.

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Topcoat

The topcoat should be mixed in proportions as described in the Mixing Section of this procedure.

Prior to application of the topcoat, the saturated cloth/mat must be examined for air pockets which must be cut out and patched and all protrusions, laps, etc., ground down with a sander or grinder.



The topcoat is best applied by trowel to large areas and by brushing to more intricate areas such as flanges and outlets. The topcoat should be applied approximately 1/16" thick (60-80 mils), troweled as evenly as possible, and then smoothed lightly with a brush or short nap roller dampened with Styrene Smoothing Liquid.

Curing

Ceilcote 505/510 Caroline systems should be allowed to cure for 24-48 hours at 70°F (21°C) before being placed in service for maximum physical and chemical properties.

Important Note

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to law) any loss or damage arising out of the use of the product. WE HEREBY DISCLAIM ANY WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local International Paint representative that this data sheet is current prior to using the product.

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Inspection and Testing

After initial hardening of topcoat (approximately 16 hours at 70°F (21°C)), test with a 15,000 volt spark tester on metal surfaces for immersion service. Pinholes must be ground down to glass cloth/mat and then filled with top coat mixture. When used on concrete, Ceilcote 505 Caroline systems may be visually inspected for voids or spark testing may be performed. To increase the visibility of the spark a conductive primer (CEILCOTE 680 PRIMER and C-1 Powder) may be used.

CLEAN UP

Equipment and tools may be cleaned with T-410, MEK, or lacquer thinner.

SAFETY

CEILCOTE 505/510 Caroline contains epoxy resin and polyamine adduct catalyst. The product's components have been formulated to optimize physical characteristics such as strength and chemical resistance while minimizing hazardous physical and health factors encountered during application. A concerted effort is made to be aware of the latest chemical toxicological information and to apply this knowledge in a responsible manner to ensure product safety.

During application of CEILCOTE 505 Caroline materials, always wear gloves and appropriate work clothing to minimize contact. Ventilation is required with special consideration for enclosed or confined areas. Air movement must be designed to insure turnover at all locations in work area and adjacent areas to avoid buildup of heavy vapors. Use caution when handling flammable liquid, eliminate sources of ignition from work area and containers with residues. Observe safe storage practices by separating resins from hardeners, by keeping solvents in a cool area, free of sources of ignition.

Product Material Safety Data Sheets are available and should be consulted when handling products. These products are for industrial and professional use only; application directions must be followed.

MAINTENANCE

Periodically inspect the applied material and repair localized areas as needed. Consult your CEILCOTE representative for additional information.