

CEILCOTE® 68 Lining

Crack bridging epoxy lining

IMPORTANT: READ THIS FIRST

Master Builders does not warrant the performance of this product unless the instructions of this document and other related Master Builders documents are adhered to in all respects.

DESCRIPTION:

The CEILCOTE® 68 lining system is a fiberglass reinforced, epoxy lining system that is designed for the protection of concrete and steel surfaces that are subjected to immersion and corrosive chemical environments. The system is particularly well suited for thickeners, clarifiers, and areas that require chemical containment over cracked concrete.

EQUIPMENT:

The following list of equipment is essential for a typical tank lining or floor topping installation using CEILCOTE 68 lining series materials.

Surface Preparation:

- Safety glasses.
- Abrasive blasting, blastrac, scarify or high pressure water blasting equipment.

For Mixing:

- Volume measure for liquid (1 qt. or 1 gal.).
- Volume measure for hardener (cubic centimeters or ounces).
- Mixing vessel.
- 5 gallon pail if mixing with a drill.
- 5 gallon pail for mixing saturating liquid.
- 1/2" drill motor.
- Plaster whip for mixing.

For Applying:

- Scissors or shears for cutting glass cloth.
- Cement finishing or plastering trowel.
- Smoothing brush - Good grade horsehair or nylon (6") for topcoat.
- 5 qt. pail for cleaning solvent.
- Medium nap paint rollers for saturating glass.
- Brushes, rollers or spray equipment for applying topcoat.
- Ribbed roller for air removal after saturation.

SURFACE PREPARATION:

Steel:

- Welds must be continuous and rounded to remove sharp edges, laps, undercuts and other surface irregularities. Weld spatter must be removed. Sharp edges should be rounded to a 1/8" (3 mm) radius.
- Steel must be blasted to "White Metal" as defined by **SSPC-SP5** or **NACE #1** with a 3 to 4 mil profile. Prime with CEILCOTE 680 Primer at 1 to 4 mils WFT.
- Refer to **Specification CPT-2** for full details of constructing steel tanks to receive CEILCOTE 68 Lining Series.

Concrete Walls:

- The surface of most formed concrete contains holes from air entrapment. The best preparation is to abrasive blast to open holes covered with cement and to roughen the surface. If lining work must be done in direct sunlight, breathing concrete can create a problem. It can cause lining systems to blister or bubble if material is applied when air temperature is higher than the surface temperature. After priming, the holes should be filled using the lining Primer mixed with filler (S-11 Powder or S-1 for larger voids). The trowel should be used as a squeegee, stroking in several directions to completely fill the holes and leave only a thin film (10 mils) on the surface.
- If the wall is not in sunlight, the CEILCOTE 68 Lining base coat will sufficiently fill the holes; filling prior to lining may not be necessary if the temperature swing between air and substrate does not cause blisters or bubbles. Another option for lining application on breathing concrete is to trowel base coat late in the day when air temperature is decreasing. This usually creates a tendency for the polymer to be drawn into the concrete.
- For existing concrete, remove dust, contamination and old coatings. This may best be accomplished by abrasive blasting. Prime all concrete surfaces. old concrete walls may require filling as with new concrete.

Concrete Floors:

- New concrete floors should be thoroughly cured for at least 28 days, then mechanically abraded by abrasive blasting or scarification to remove laitance and surface contaminants.
- Plastic sheet test method should be utilized to ensure substrate is moisture free. If moisture is detected, retest until dry.
- Master Builders, Inc.'s recommended construction practice for floors is found in **Specification CP-17**. Master Builders, Inc.'s recommendations for surface preparation are found in **Specification CP-14**.

PRODUCT PREPARATION:

Storage:

- All items must be kept in closed containers and stored at temperatures between 60 to 80 degrees F (16 to 27 degrees C). Keep materials away from all fire hazards and out of direct sunlight.
- Shelf life for material is one year minimum, if kept tightly sealed.

Batch Sizes:

The size of the batch will depend somewhat upon the ambient temperature. The batch size of base coat should be sufficient to do one or two strips of glass mat. Generally one gallon at a time is recommended.

Average Factors:

CEILCOTE 680 Primer (Steel):

275 to 325 ft²/gal (6.7 to 7.9 m²/litre)

CEILCOTE 680 Primer (Concrete):

150 to 200 ft²/gal (3.7 to 4.9 m²/litre)
(thinned with up to 30 fl. oz./gal. T-471)

Base coat & Saturant Liquid:

15 to 17 ft²/gal (.37 to .41 m²/litre)

S-1 Powder:

100 to 120 ft²/50# bag

1.5 oz. Mat Reinforcement:

1.1 sq.ft./sq.ft.

Topcoat:

100 to 130 ft²/gal (2.4 - 3.2 m²/litre) @ 8 to 10 mils
(CEILCOTE 600 FLAKELINE®)

APPLICATION:

Environmental Conditions

For all application steps, the surface temperature, air temperature and material temperature should be between 50 and 110 degrees F (10 and 43 degrees C).

Do not apply if the relative humidity is more than 90% or the surface temperature is less than 5% above the dew point of the air in the working area.

Primer:

Concrete:

Mix 1 gallon of CEILCOTE 680 Primer Liquid with #9 Hardener. This is a 3:1 ratio by volume. Stir thoroughly. Roll, brush or spray Primer into concrete at approximately 5 mils. Airless or air spray may be used. CEILCOTE 680 Primer should not cure longer than 2 or 3 weeks before covering with lining; a shorter time in hot weather. If time period is extended, consult Master Builders, Inc.

Steel:

Mix 1 gallon of CEILCOTE 680 Primer Liquid with #9 Hardener. Stir thoroughly. Roll, brush or spray onto surface at approximately 1 to 4 mils wet. Airless or air spray may be used. CEILCOTE 680 Primer should not cure longer than 2 or 3 weeks before covering with lining; a shorter time in hot weather. If time periods are longer, consult Master Builders, Inc.

Base coat:

Mixing:

- CEILCOTE 68 Lining (1 gal. unit CEILCOTE 680 Primer/ Saturant to #9 Hardener add S#1 powder approx. 18-22#/gal. of saturant. By volume - 3:1
- The base coat is best applied to large surfaces with a trowel. For outlets, flanges, angles and other more intricate parts of tanks, vessels or sumps, it may be found best to use a stiff brush. It should be applied at approximately 1/16" thick or 60 mils.
- In hot weather, it is best to apply base coat in small areas due to limited working time. When possible shade areas or utilize natural conditions such as areas not in direct sunlight.

Rivets:

Rivets should be smoothed with base coat mix to make a rounded solid section for easier covering with glass mat.

Pitted Steel:

Pits must be filled as a separate operation after priming and prior to lining. Use CEILCOTE 680 Primer mixed to a paste with S-11 Powder. Trowel in several directions using the trowel as a squeegee. (9 to 10 lbs per gal of CEILCOTE 680 COROCRETE® Primer.)

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. Keep the prepared floor protected while lining the walls, or reblast the floor prior to lining.

Irregular Areas: (Angle Braces, Welds, etc.)

Cover angle braces first with base coat and mat lapping out at least 1" on adjacent areas. The change in elevation where a brace has been welded onto a flat surface must be filled with the base coat so the mat will not bridge over an empty space.

Corners:

When the base coat is applied, the corner should be rounded slightly by filling in with a base coat and finishing off with a small pointing trowel. This will assist in eliminating bridging at this point. Do not start or terminate the glass mat in the corner.

Outlet, flanges:

- The outlets should be covered first before any glass mat is applied to the interior of the tank. After the glass mat has been applied to the outlet, the interior of the tank is covered up to the outlet. After the glass mat on the interior of the tank has set up, a 2" strip of mat is cut to apply around the circumference of the outlet, 1" extending along the tank wall, 1" extending into the outlet.
- For outlets over 4" in diameter, the mat may be cut as listed below:
 - A. Slit to flange width
 - B. 1" lap on inside tank
 - C. Length outlet plus flange plus lap
 - D. Circumference of outlet plus lap
- To produce a smooth flange face, apply the topcoat slightly mounded around center circumference of the flange. Thoroughly wax a piece of plywood and evenly clamp it on. Be 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.

Mat Cutting:

- Measure the length desired (equal to the area to be base coated). This area will vary with application rate.
- The glass is best cut with scissors or shears. Roll up the cut piece of mat tightly for easier handling.
- It is necessary to press the glass mat firmly into the base coat so no hollow areas remain. This may be done with the hands, a dry towel or brush, or best of all, with a paint roller. It is necessary to be especially careful to press the glass mat firmly into corners.

Saturating:

This should be done before the troweled base coat has hardened. Only in cases where the glass mat is being applied overhead is it permissible to press the mat into the base coat and allowed to harden before saturating. The saturating liquid is best applied with a roller or large brush. At overlaps the top layer of mat should be lifted so saturating liquid can be applied to the bottom layer. The top layer is then pressed onto the bottom layer and saturated. Saturation is complete when all areas of the glass mat have lost their whiteness and become slightly translucent. A ribbed roller should then be utilized to force out any entrapped air. Finally allow to dry.

Topcoat:

Mix catalyst and CEILCOTE 600 FLAKELINE topcoat .
Apply one or more coats to achieve 8 to 10 mils. Based upon field experience, CEILCOTE 600 FLAKELINE averages 130 ft²/gal (3.2 m²/litre) @ 8 mils total film thickness. Mix ratio is CEILCOTE 600 FLAKELINE 1.3:1 by volume.

(Refer to Installation procedure #2.61I for spray information).

Curing:

@ 25°F (4°C) 48 to 72 hrs.
@ 50°F (10°C) 18 to 24 hrs.
@ 75°F (24°C) 6 to 12 hrs.
@ 90°F (32°C) 4 hrs.

Patch and repair:

For smaller areas, less than one sq.ft., grind affected area and reapply as per original instructions. Overlap 1" to 2" onto the existing material and square off with masking tape. Make sure areas for overlap are sanded or prepared. For larger areas abrasive blast and reinstall per original instructions, again overlap 1" to 2" onto adjacent area.

SAFETY:

The CEILCOTE 68 Lining System contains epoxy resins and a polyamine catalyst. The product's components have been formulated to optimize physical characteristics such as filling capacity, abrasion, moisture 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 insure product safety.

During application of CEILCOTE 68 Lining 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 liquids, 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 ignitions.

Product Material Safety Data Sheets (MSDS) 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 needed. Consult your Master Builders representative for additional information.

FOR MORE INFORMATION:

Contact your local Master Builders Representative for additional information.

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