

Instruction Guide APPLICATION OF CIM 2000 TO CONCRETE

1.0 DESCRIPTION

This guide covers the installation of a CIM 2000 Coating System over a structurally sound concrete base such as a deck, roof, tank, and tank base. The system shall consist of a minimum of 60 wet mils (see Coating Profile for appropriate coverage charts) applied by spray, squeegee, roller, or trowel. Actual coverage rates may differ from theoretical rates depending on surface profile and application method.

2.0 MATERIALS

2.1 CIM 2000 Premix & Activator

2.2 Optional Materials

2.2a. CIM 61BG Epoxy Primer

2.2b. CIM Bonding Agent

2.2c. CIM Scrim

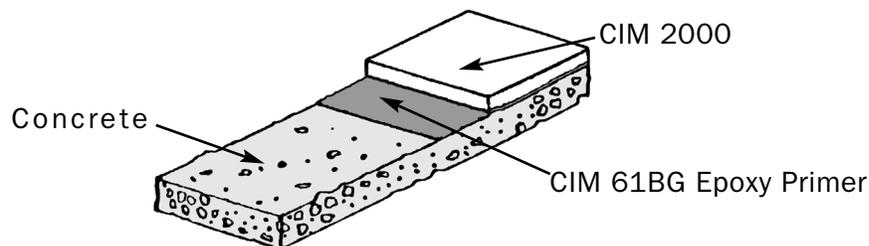
2.2d. Non-asphalt two-part polyurethane sealant

3.0 SAFE PRACTICES

Use equipment and procedures designed to minimize danger to personnel and materials. Special attention should be made to provide adequate ventilation and respirators for personnel applying CIM 2000 systems in confined spaces or operating spray equipment. See C.I.M. Industries' Instruction Guide, "Applying CIM Within Confined Spaces" (IG-9) for more detailed information.

4.0 SURFACE PREPARATION

All areas adjacent to those being coated with CIM 2000 which are not intended to be coated should be protected with suitable temporary splash covers such as polyethylene, carpenters paper, or masking tape. CIM 2000 shall be applied on clean, dry, structurally sound concrete.¹ For best results, apply CIM 61BG Epoxy Primer and CIM 2000 when concrete is declining in temperature (usually late afternoon). CIM 61BG Epoxy Primer should be used to minimize outgassing.²



Notes:

¹If surfaces are not completely clean, CIM 2000 will achieve poor adhesion to the concrete and may experience blistering and possible failure.

²CIM 61BG Epoxy Primer shall be applied at a minimum rate of 5 wet mils. Additional applications of CIM 61BG Epoxy Primer may be required to achieve a pinhole free primer coat. The recoat window for CIM 61BG Epoxy Primer shall be no longer than 48 hours. Please see CIM 61BG Epoxy Primer Coating Profile for additional information.

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CONCRETE SHOULD NOT BE COATED WHILE IN DIRECT SUNLIGHT!

Concrete should be coated only while in a temperature declining mode.

4.1 New Concrete

New concrete must have a minimum compressive strength of 3,000 psi, be dry, and be free of release agents or curing compounds prior to the application of CIM 2000 coatings. CIM 2000 may be applied directly to concrete laitance but good adhesion is unlikely. Due to the poor tensile properties of concrete laitance, it is recommended to remove the concrete laitance and expose the tops of the underlying aggregate. This condition is typically represented by an ICRI Concrete Surface Profile (CSP) of 4 to 6 to expose aggregate. In order to properly prepare the concrete, and remove any release agents or curing compounds, any one of the following can be performed:

1. Abrasive blasting (ASTM D 4259-88)
2. Water blasting (generally at 5,000 psi minimum) (ASTM D 4259-88), allow concrete to dry
3. Shot blast (ASTM D 4259-88), horizontal surfaces

4.2 Old Concrete

Old concrete must be clean and dry, and free of oil, grease and loose powder or debris. It is highly recommended to remove the existing concrete laitance on the surface and expose the tops of the underlying aggregate. This condition is typically represented by an ICRI Concrete Surface Profile of 4 to 6. In order to properly prepare the concrete, and remove contaminants, any one of the following can be performed:

1. Abrasive blasting (ASTM D 4259-88)
2. Water blasting (generally at 5,000 psi minimum) (ASTM D 4259-88), allow concrete to dry
3. Shot blast (ASTM D 4259-88), horizontal surfaces

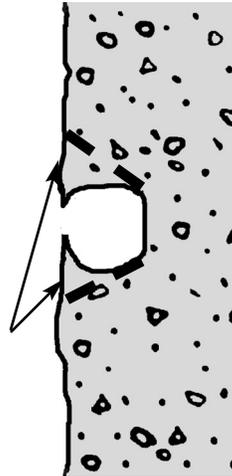
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4.3 Bugholes

Bugholes appear as small holes in concrete. These holes often lead to larger holes under the surface of the concrete (see Figure 2). It is important to blast all concrete surfaces where bugholes are present to expose the full view of the hole (no “blind” side surfaces). Bugholes not fully exposed must be filled with appropriate repair materials followed by an abrasive blast to remove any loose powder or debris.

Figure 2

Expose bughole to full view by removing blind side surfaces.



4.4 Testing for Moisture

Although concrete may appear to be dry on the surface, there is often an abundance of moisture below the surface. An abundance of moisture in the concrete during application will result in poor adhesion and eventually blisters in the coating. Consistent with industry standards, C.I.M. Industries recommends performing two or more of the following tests to confirm appropriate moisture levels for properly prepared substrates:

1. Plastic Sheet method (ASTM D4263) Pass/Fail
2. Relative Humidity test <75% RH @ 70°F
3. Calcium Chloride test <5 lb/1,000 sq ft/24 hr
4. Radio Frequency test < 5 % moisture

(as outlined in “Drying Concrete” by Lew Harriman in the March 1995 issue of *The Construction Specifier Magazine*)

5.0 APPLICATION

5.1 Cracks in Concrete (all applications)

All cracks less than 1/8” wide shall be filled with CIM 2000 and allowed to cure a minimum of 4 hours (at 70°F) prior to the application of the CIM 2000 coating. Vertical and sloped walls require the use of a non-asphalt two-part polyurethane sealant to fill cracks. If cracks are more

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than $\frac{1}{8}$ " wide, refer to manufacturer for patch/fill details. Proper joint design shall be used. CIM Scrim may be used to reinforce cracks and joints. See section 5.4 for further details.

5.2 Penetrations

Apply a cant bead of non-asphalt two-part polyurethane sealant at all horizontal to vertical transitions. Once the cant bead has become tack free (see manufacturer's instructions for specific tack free times), apply a detail coat of CIM 2000, 2" onto and 2" beyond the penetration. Penetration areas should not be allowed to cure more than 48 hours at 70°F before coating over with CIM 2000.

CIM 2000 coatings will adhere to most clean construction materials. When coating substrates other than concrete, please see the C.I.M. Industries' specific substrate Instruction Guide for detailed information of application procedures.

5.3 Sharp Edges

A non-asphalt two-part polyurethane sealant may be used on sharp edges to prevent thin spots from occurring. Once the sealant has become tack free (see manufacturer's instructions for specific tack free times), the entire area should be coated with the specified thickness of CIM 2000 coating. If work stoppage is unavoidable see sections 5.9 and 5.10.

5.4 Using CIM Scrim

CIM Scrim may also be used on sharp edges to prevent thin spots from occurring. After the substrate is properly prepared apply a thin tack coat, 10–20 mils, of CIM 2000 product. Push scrim evenly into tack coat and allow to cure for 2 - 4 hours. Apply 55 mils of self leveling CIM 2000 directly over scrim. CIM Scrim acts as a coverage gauge to insure thickness.

5.5 Cant Strips

Cant strips should be made with a non-asphalt two-part polyurethane sealant wherever horizontal surfaces meet vertical walls. This is crucial in applications such as tanks which experience wall movement when filled and where concrete shifts due to expansion and contraction. Cant strips are generally $\frac{1}{2}$ " or more wide by $\frac{1}{2}$ " or more tall. Refer to the manufacturer's instructions for specific cure times.

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5.6 Horizontal Surfaces

CIM 2000 coatings should be applied to concrete at a film thickness of 60 wet mils, depending on application type. This can be achieved in a single coat on horizontal surfaces.

5.7 Vertical and Sloped Surfaces

CIM 2000 coatings can be applied to a vertical or sloped surface with a roller, brush or spray equipment. Small walls are often coated with rollers or brushes. Large walls should be sprayed using an air assisted airless spray system or plural component spray systems. See C.I.M. Industries' Instruction Guide, "Spray Application of CIM" (IG-12) or contact C.I.M. Industries for suggested equipment configuration. When working with CIM 2000 products, vertical or sloped surfaces may require a minimum of three (3) applications of approximately 15-20 mils each to obtain the required thickness. If a coating thickness of more than approximately 60 mils is specified on a vertical or sloped surface, additional passes may be required to achieve desired thickness.

5.8 Multiple Coats

Second/multiple coats can be applied as soon as the previous coat can be touched lightly without coming off on your finger. For CIM 2000 products at 70°F, the tack free time is typically two (2) hours but no longer than forty-eight (48) hours after the previous coat has been applied. Higher temperatures speed up the curing time, and tack free time, therefore significantly shortening the 2-48 hour recoat window. Colder temperatures have the opposite effect. As soon as the coating becomes tack free, the second coat should be applied. For immersion or traffic service, apply all coats within the recoat window.

If it is necessary to walk on the first coat of CIM 2000 in order to apply multiple coats, such as when coating a parking or pedestrian deck, polyethylene boots may be worn to prevent sticking to the coating.

5.9 Recoating After the Recoat Window

If second/multiple coats cannot be applied within the recoat window (2-48) hours under standard conditions), the previous coat must be dulled. Acceptable results may be obtained by scrubbing with lacquer thinner. Better results will be obtained by abrading. Abrading shall be

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performed by surface grinder or other mechanical means. The CIM 2000 must be solvent wiped (lacquer thinner, MEK or xylene) to clean up any loose debris. After the solvent flashes off, apply a light mist of CIM Bonding Agent. Allow the Bonding Agent to flash off and recoat within one (1) hour. See CIM Bonding Agent Coating Profile for additional guidelines. For immersion or traffic service, minimize areas to be recoated outside the recoat window, severely abrade the areas to be recoated and test recoated areas for acceptable adhesion. Acceptable adhesion may only be achieved through aggressive abrading.

5.10 Overlap at Joints

Should rain or other conditions require work stoppage, prepare for joint lines. Joint lines shall be clean and straight. The overlap shall be a minimum of 6" to insure an impervious joint. All areas to be coated where more than a forty-eight (48) hour cure has taken place shall be treated per section 5.9, "Recoating After the Recoat Window."

6.0 TOPPINGS

The CIM 2000 system may include toppings of aggregate, decorative coatings, protective coatings, or combinations of the above. See C.I.M. Industries' Instruction Guide, "Applying Topcoats over CIM 2000" (IG-17) for more detailed information.

7.0 GENERAL LIMITATIONS

Applying CIM 2000 under any of the following conditions is likely to result in poor or unsatisfactory performance:

- Use of improper mixing equipment. See C.I.M. Industries' Instruction Guide "Mixing CIM Premix and Activator" (IG-8).
- Material temperature at the time of application is below 60°F.
- Use of standard application procedures when substrate temperature is below 50°F.
- Substrate moisture is present or rain is imminent.
- Substrate temperature is less than 5°F above the dew point.
- Substrate is in a temperature-rising mode or exposed to direct sunlight.
- Other conditions which are obviously unsuitable.