

**CERAM-KOTE COATINGS, INCORPORATED**  
**CERAM-KOTE and CERAM-FLOOR PRODUCTS**  
**APPLICATION TO CONCRETE SURFACES SPECIFICATION**

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## **1.0 Scope**

This specification covers materials and procedures for applying CERAM-KOTE COATINGS, INCORPORATED's CeRam-Kote or CeRam-Floor coatings to concrete surfaces. This specification does not include material and procedures for CeRam-Floor MVT.

## **2.0 General**

Application of CeRam-Kote and CeRam-Floor coatings to well prepared concrete may be applied by spray, squeegee and/or roller. If spray applied, please consult CERAM-KOTE COATINGS, INCORPORATED. The coating can be rolled on with good results by using a high quality roller with no more than a ¼ inch (6.35 mm) nap in length. If squeegee and roller applied, pour out coatings in a ribbon fashion across area and squeegee with the proper squeegee to obtain a mil thickness close to desired requirement. Take a smooth roller and back roll the surface until desired mils have been achieved.

## **3.0 Inspection**

### **3.1 Cleanliness**

The concrete surface to be coated with CeRam-Kote or CeRam-Floor should be clean, dry and free of oil, grease, old paints, coatings and other contaminants, such as forming lubricants and curing components that could affect adhesion of CeRam-Kote or CeRam-Floor. To check for cleanliness of concrete, first wipe the concrete surface with a dark cloth. If a white powder appears on the cloth, the concrete is not suitable for application of CeRam-Kote or CeRam-Floor due to the dust (laitance). The dust will prevent the coating from properly wetting the surface.

### 3.2 Contamination

Check for contamination by sprinkling water on the concrete surface. If the water beads instead of simply spreading out in a uniform film, the surface is likely to be contaminated with grease or oil, has been “burned” to a very slick finish, or has curing compounds within the concrete. In new construction, oil may be present from form release agents or curing compounds. In maintenance work or where the concrete was used but not protected with a coating, grease or oil may be present from spills of contaminants. In both situations, oil or grease must be removed prior to coating (Refer to section 4.0 Surface Preparation).

### 3.3 Laitance and Efflorescence

Laitance and efflorescence are white, powdery materials found on concrete surfaces. Laitance is caused by cement particles rising to the surface of freshly poured concrete. Efflorescence is salt remaining on the surface of concrete after the evaporation of water. Neither is bonded to the concrete and must be removed before coating. Coating over these materials is like coating over dirt (Refer to section 4.0 Surface Preparation).

### 3.4 Moisture

The moisture content of new concrete should be less than 12%. As a “rule of thumb”, concrete less than three months old in a temperate climate is unlikely to have sufficiently dried. In hotter climates with less humidity, concrete is generally considered past the “green” stage after 28 days and is suitable for coating. A moisture test should still be conducted to assure concrete has less than 12% moisture content. Coating insufficiently dried surfaces will result in blistering and flaking of the coating material while the moisture gradually escapes. \*

Moisture content can be checked by using a concrete moisture meter or ASTM D 4263, “Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.” This method involves taping an 18” x 18” (46 mm x 46 mm) sheet of clear, four (4) mil (100 micron) thick polyethylene to the concrete surface. The sheet should remain in place for at least sixteen (16) hours. If moisture collects under the plastic sheet during this time, it is an indication that the concrete contains too much moisture for the application of most CeRam-Floor products. \* On larger surfaces, this test should be repeated on several areas due to possible lack of concrete uniformity.

### 3.5 Defects

The concrete floor or surface is likely to have numerous defects, which may include protrusions, mortar spatter, fins, bulges, holes and cracks. As a general rule, protrusions of any kind should not be higher than 1/16 inch (2 mm) and holes and spatter should not exceed 1/8 inch (3 mm) in diameter. Defects can be observed through visual inspection. It is best to check with CERAM-KOTE COATINGS, INCORPORATED regarding the tolerance of CeRam-Kote or CeRam-Floor to surface defects of any size and kind.

The alkalinity and porosity of the surface must also be considered when coating concrete. Any cracks or voids should be repaired before coating.

### 3.6 Substrate Repair

Repair of protrusions such as fins can normally be accomplished with grinders or impact tools. Spalls, cracks and holes should be filled. Proper repair of cracks requires grinding a “V” notch prior to repair.

The repair material will depend upon the size of the defects and the strength required of the substrate. CERAM-KOTE COATINGS INCORPORATED recommends CeRam-Kote Fairing Compound for all concrete repair. For suitability of other forms of repairs, consult CERAM-KOTE COATINGS, INCORPORATED. Patching is normally completed before surface preparation work is begun, such as blasting or etching.

### 3.7 Stopping Water

There may be a source of water that continuously wets the concrete. Before coating, this water must be eliminated by such means as excavation and installation of drainage or pumping system. Other methods can be used, such as drilling holes through the concrete for the injection of chemical grouts into the soil as a means of at least temporarily stopping the water. Pressure grouting can seal internal cracks. \*

*\*CeRam-Floor MVT is specially designed to allow the concrete with moisture problems to “breathe”. If this situation is present, please contact CERAM-KOTE COATINGS, INCORPORATED for more information.*

## 4.0 Surface Preparation

Preparation of concrete floors is achieved by wet or dry abrasive blasting (recommended), centrifugal blasting, steam washing, chemical cleaning, scarifying or acid etching. Final choice should be based on the condition of the existing area, as well as access for preparation and application equipment. The final process for all methods of preparation is thorough vacuum cleaning or air blow-down.

### 4.1 Surface Cleaning

First remove surface contaminants that have not penetrated the concrete and are loose. Such contaminants include dust and loose foreign material. Wire brushing, broom cleaning, mopping and vacuuming can remove loose or dislodged foreign material.

Surface contamination by grease or oil requires chemical cleaning (laundry detergent and water works well). The surface can be vigorously scrubbed with detergents, caustic soda solutions or trisodium phosphate. If chemicals are used, the surface must be carefully flushed to remove both the chemical and the loosened contaminant. Do not allow the chemical cleaners to enter drains in the facility unless they are biodegradable. If chemical cleaners do not remove penetrated concrete contaminants, the concrete may need to be steam cleaned or chipped away until the contaminant is removed. The chipped out area must be patched using CeRam-Grout GC or an approved patching material.

Check the pH of the surface after chemical cleaning. It should be neutral (pH = 7) or slightly alkaline (pH = 8-9). Checking the pH is described in ASTM D 4262, "Standard Test Methods for determining pH of Chemically Cleaned or Etched Concrete Surfaces." The test consists of placing a piece of pH paper on the damp or wet concrete and comparing the color of the paper with the color chart for that paper. After the surface is washed and neutralized, it must be completely dry before applying CeRam-Floor.

### 4.2 Grinding

Grinding with the appropriate power tools, such as scarifiers, is useful in small areas. Scabblers are available for both large and small-scale work. Scabblers are machines that cut or chip away the surface and are intended to remove rather than abrade concrete.

### 4.3 Abrasive Blasting

Abrasive blasting can be accomplished with conventional air abrasive units using sand or other media. Where dust cannot be tolerated, use wet abrasive blasting. For floors, centrifugal blast units can recycle the abrasive and minimize dust.

The purpose of abrasive blasting is to remove laitance, efflorescence and other non-oil contaminants, to open up any bug holes below the surface, and to roughen the surface for coating adhesion. A properly blast cleaned concrete surface has the appearance of medium grit sandpaper. If the aggregate (stone) in concrete is visible, the surface has been blasted too much. The desired result can normally be achieved with 40 - 80 mesh abrasive. Blast pressure at the nozzle should not exceed 80 psi (552 kPa). Blast cleaning method for concrete is usually called "sweep blasting." The blast stream must be swept across the surface at a fairly rapid rate. Concentrating the blast stream on an area will result in too rough a surface. Abrasive blasting of concrete requires a faster sweeping motion than blasting steel. All the above blasting can also be accomplished using steel shot / grit mixtures via blastrac type equipment.

Once blast cleaning is completed, all dust debris must be removed by sweeping, vacuuming, or air blow-down. Check the surface for voids and cracks exposed by the blasting. Voids, cracks and bug holes should be patched with CeRam-Grout GC or an approved filling material.

#### 4.4 Acid Etching

Acid etch the concrete to remove contaminants that cannot be removed by the cleaning methods above. Acid etching can also remove laitance and contaminants, but its primary purpose is to provide a tooth profile for good coating adhesion.

Pre-clean the concrete surfaces before acid etching to remove any build up of dirt or other debris that might interfere with the acid solution contacting the surface. Oil and grease can insulate the concrete from the acid etch solution and prevent it from working.

The acid etch can be accomplished with a solution of phosphoric, muratic, sulfuric or citric acid. Hydrochloric acid is sometimes used and works quickly, but leaves a residue of chloride salts that are hard to remove and can cause coating failure.

When using an acid etch solution; avoid contact of the liquid with skin and exposure to fumes. A respirator and protective clothing must be worn. Do not allow the acid solution to enter drains in the facility unless it is biodegradable, i.e., citric acid.

Once the acid etch solution has been spread over the surface, a few minutes will be needed to allow reaction with the concrete. It is not practical to acid etch vertical surfaces for this reason. Foaming or bubbling will be present if the etching process is taking place. If there is no foaming or bubbling, a contaminant may be preventing the solution from working and the surface will need to be abrasive blasted.

Etching will create the texture of medium grit sandpaper. If the initial etching process does not achieve this texture, which may occur on hard, dense concrete, then a second application may be required.

Complete removal of the acid solution after etching is very important. Residues of acid or its reaction products can cause coating failure. The acid and residue must be removed by scrubbing and multiple rinsing steps until the pH of the surface is neutral, i.e. no more than 1 pH unit less than the rinse water.

## 5.0 Mixing

Please refer to appropriate CeRam-Floor or CeRam-Kote Product Data Sheet for Mixing instructions.

## 6.0 Coating Application

The surface must be clean, dry, and free from dust before application of CeRam-Kote or CeRam-Floor. All coating materials shall be furnished in unopened containers and shall be labeled to identify them as the specified materials. Coating shall not take place in the vicinity of abrasive blasting operations.

Unless in a controlled environment, coating will only be permitted during daylight hours when air and substrate temperature is above 40°F (4.4°C). **No coating will be permitted when substrate is wet from rain or dew, when surfaces are less than 5°F (3°C) above the dew point, or when the relative humidity is greater than 85%.** Moisture will inhibit the curing agent reaction in the coating system and the coating will not cure or perform properly.

CONTRACTOR shall record relative humidity, temperature (wet and dry), dew points and wind speed whenever coating on a project occurs. Records shall be made available to OWNER. The finished coating job shall not contain sags, runs, wrinkles, spots, blisters or other application flaws which could cause premature coating failure. Coating shall be brushed on all areas that cannot be properly sprayed or rolled. Damaged coating is to be repaired according paragraph 9.0 prior to applying any succeeding coat.

Please refer to appropriate CeRam-Floor or CeRam-Kote Product Data Sheet for specific application instructions.

## 7.0 Safety

Wear a charcoal-filtered mask, safety glasses, and gloves when applying CeRam-Kote or CeRam-Floor. Read the Material Safety Data Sheet (MSDS) to ensure that all safety procedures are followed.

## **8.0 Clean Up**

Purge and clean spray equipment within thirty (30) minutes of the final spray. Flush equipment with Acetone, Methyl Ethyl Ketone (MEK), or Isopropanol Alcohol (99% pure) until solvent sprays clear. Disassemble and clean equipment to manufacturer's recommendations. Material left in all application equipment could solidify and damage equipment.

## **9.0 Repairs**

Repairs and re-working of CeRam-Kote or CeRam-Floor are possible. If the coating is less than seventy-two (72) hours old and has not been exposed to contamination, repair by wiping with Acetone, Methyl Ethyl Ketone (MEK), or Isopropanol Alcohol (99% pure), then reapply CeRam-Kote / CeRam-Floor.

If coated areas have been exposed to contamination and/or coated for longer than seventy-two (72) hours, repair by sanding with an appropriate grit sand paper and wipe with Acetone, Methyl Ethyl Ketone (MEK) or Isopropanol Alcohol (99% pure), then reapply CeRam-Kote / CeRam-Floor.

## **10.0 Coverage**

Please see specific CeRam-Kote or CeRam-Floor Product Data Sheets for coverage information.

## **11.0 Pot Life and Shelf Life**

Please see specific CeRam-Kote or CeRam-Floor Product Data Sheets for Pot Life information. All CERAM-KOTE COATINGS' products have an indefinite shelf life, but are recommended to be used within two (2) years of date of shipment.

## **12.0 Warranty**

The information, data and suggestions contained herein are believed to be reliable, based upon our knowledge and experience; however it is expressly declared that Seller does not guarantee the result to be obtained in Buyer's process. SELLER HEREBY EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY FOR FITNESS FOR A PARTICULAR PURPOSE AND/OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED as to any and all products and or suggestions described herein, whether such products are used alone or in combination with other materials. Buyer must make its own determination of the suitability of any product of its use, and the completeness of any information contained herein. Licensed applicators are independent contractors and are not agents or employees of CERAM-KOTE COATINGS, INCORPORATED.