



# EPOXY & URETHANE COATINGS

## APPLICATION GUIDE

### INTRODUCTION

The following instructions detail the general installation procedures for epoxy and urethane coatings manufactured by The Euclid Chemical Company. The contractor and engineer must consult the individual product's technical data sheet to obtain information that is specific to each product (mixing ratios, coverage rates, tack free time, etc.).

**Note:** If the contractor is not familiar with standard epoxy and urethane application techniques, a pre-job meeting is recommended to review the project details unique to the particular job. Contact your local Euclid Chemical Company representative for additional information.

### SURFACE PREPARATION

A properly prepared surface is essential to a successful coating application. The surface must be structurally sound, clean and free of grease, oil, curing compounds, soil, dust and other contaminants. See note in "Precautions/Limitations" section if coating is to be placed over old/existing epoxy or urethane coatings. New concrete and masonry must be at least 28 days old. Surface laitance must be removed. Concrete surfaces must be roughened and made absorptive, preferably by mechanical means, and then thoroughly cleaned of all dust and debris. If the surface was prepared by chemical means (acid etching), a water/baking soda or water/ammonia mixture, followed by a clean water rinse, must be used for cleaning, in order to neutralize the substrate. The Concrete Surface Profile (CSP) should be equal to CSP 2-5 in accordance with Guideline 310.2R-2013, published by the International Concrete Repair Institute (ICRI). Allow substrate to dry before coating application. Following surface preparation, the strength of the surface can be tested if quantitative results are required by project specifications. An elcometer or similar tensile pull tester may be used in accordance with ASTM D 4541, and the tensile pull-off strength should be at least 250 psi (1.7 MPa).

Do not apply epoxy or urethane coatings if there is excessive moisture in the concrete or if the moisture vapor emission rate (MVER) is high. Before application of the coating, perform the "Visqueen test" (ASTM D 4263) to check if there is moisture present. If moisture is found to be present during the "Visqueen test", perform the "calcium chloride test" (ASTM F 1869) as a follow-up to determine the MVER. Contact Euclid Chemical if results indicate a MVER greater than 3.0 lbs. per 1,000 square feet per 24 hours. After surface preparation and moisture testing, a test section application of the coating system is recommended to confirm good adhesion and compatibility of the coating with the surface, and also to confirm appearance and aesthetics.

When coating steel, all contamination should be removed and the steel surface prepared to a "near white" finish (SSPC SP10) using clean, dry blasting media.

### MIXING INSTRUCTIONS

Mix coating using a low-speed drill and a mixing paddle. Pre-mix Part A and Part B separately for approximately 1 to 3 minutes each. Combine the appropriate volumes of Part A and Part B, then mix thoroughly for 3 to 5 minutes. See specific product technical data sheets for correct mixing times and ratios. Scrape the bottom and sides of the containers at least once during mixing. Do not scrape bottom or sides of the container once mixing operations have ceased; doing so may result in unmixed resin or hardener being applied to the substrate. Unmixed resin or hardener will not cure properly. Do not aerate the material during mixing. To keep aeration to a minimum, the recommended mixing paddles are #P1 or #P2 as found in ICRI Guideline 320.5R-2014.

### APPLICATION PROCEDURES

Select one of the following methods:

**A) Neat Coatings:** Apply properly mixed coating to the prepared surface using a magic trowel, notched squeegee, short nap roller, or a combination of the above. The use of a primer under the first coat is strongly recommended for neat epoxy applications to help minimize the chances for surface defects. The use of a primer under the first coat is mandatory for urethane coatings. Follow the coverage rate provided on the product technical data sheet to produce the appropriate thickness. A second coat is recommended for most industrial applications.

The second coat can be applied after the first coat becomes tack free (verify tack free time on product technical data sheet), but no later than 24 hours after application of the first coat. Repeat the previous steps until the desired thickness is achieved. Check product technical data sheet for recommended curing time before opening to traffic. If more than 24 hours elapses between coats, sand the previous coat, wipe clean, and proceed with coating operations.

**B) Aggregate Broadcast Coatings:** The aggregate broadcast method consists of spreading silica sand into the coating, and is typically used to construct solid-colored, skid-resistant floors. This technique can also produce a wide variety of multi-colored floors using a clear coating and colored quartz aggregate. The application procedure is similar for both systems.

Apply properly mixed coating to the prepared surface using a magic trowel, notched squeegee, short nap roller, or a combination of the above. Follow the coverage rate provided on the product technical data sheet to produce the appropriate thickness.

While the material is still wet, broadcast clean, dry aggregate into the resin to “refusal” (until the aggregate is no longer being saturated by the coating). If any area of aggregate looks “wet” during the broadcast, immediately broadcast additional aggregate over those areas. Typically, 20/40 mesh silica sand is used for solid-colored floors and Euclid Chemical’s colored quartz aggregate is used for multi-colored floors. Aggregate application rates are typically between 0.5 and 2.0 lbs./ft.<sup>2</sup> (2.4 and 9.8 kg/m<sup>2</sup>) depending on the coating used. Verify the appropriate application rate on the product technical data sheet.

Allow the coating to cure. Sweep and/or vacuum up the excess aggregate. Repeat the previous steps until the desired thickness is achieved. Lastly, apply a seal coat over the final aggregate broadcast. In areas exposed to sunlight or high-intensity artificial light, color stability is improved if the seal coat is an aliphatic urethane such as EUCO TAMMOSHIELD or EUCOTHANE. Check product technical data sheet for recommended curing time before opening to traffic.

**C) Vinyl Chip Broadcast Coatings:** The vinyl chip broadcast method consists of spreading vinyl chips into the coating, and is typically used to produce multi-colored floors that look similar to terrazzo or granite.

Apply properly mixed coating to the prepared surface using a magic trowel, notched squeegee, short nap roller, or a combination of the above. Follow the coverage rate provided on the product technical data sheet to produce the appropriate thickness. Typically, a solid-colored coating is used under vinyl chips in case it is visible through gaps in the chips. While the material is still wet, broadcast clean, dry, colored vinyl chips to the desired concentration. Chips can be sprinkled in very lightly, broadcast to “refusal”, or anything in between. Mock-ups of various application rates are recommended prior to installation.

Allow the coating to cure. Use a floor scraper to shave off any chips that may be protruding out of the coating. Sweep and/or vacuum up the excess vinyl chips. Lastly, apply a clear topcoat over the area. Check product technical data sheet for recommended curing time before opening to traffic.

**D) Slurry Coatings:** Apply properly mixed prime coat to the prepared surface using a magic trowel, notched squeegee, short nap roller, or a combination of the above. Follow the coverage rate provided on the product technical data sheet to produce the appropriate thickness.

Shortly after prime coat application, begin mixing subsequent slurry coat. The slurry is prepared by slowly adding clean, dry 60/70 mesh silica aggregate to the coating while properly mixing it with a drill and paddle. The slurry proportions are 12 to 15 lbs. (5.4 to 6.8 kg) of aggregate for each mixed gallon of coating. Mix thoroughly for 3 to 5 minutes, while keeping aeration of the mix to a minimum. Between these first two steps, the prime coat should not be allowed to become tack free.

Pour the slurry onto the primed surface and spread using a notched squeegee or gauge rake. Spiked shoes/cleats are recommended during this step to allow the user to move around freely in the coating. Slurries consisting of 1 gal. (3.8 L) of mixed epoxy and 15 lbs. (6.8 kg) of aggregate will typically cover approximately 20 ft.<sup>2</sup> (1.8 m<sup>2</sup>) at 1/8” (3.2 mm) thickness. Back roll with a short nap roller to ensure a consistent surface. Broadcast clean, dry, 40 to 60 mesh silica sand into the wet slurry coat to “refusal”.

Allow the coating to cure. Sweep and/or vacuum up the excess aggregate. Repeat the previous steps until the desired thickness is achieved. Lastly, apply a seal coat over the final aggregate broadcast. In areas exposed to sunlight or high-intensity artificial light, color stability is improved if the seal coat is an aliphatic urethane such as EUCO TAMMOSHIELD or EUCOTHANE. Check product technical data sheet for recommended curing time before opening to traffic.

**E) Trowel Down Coatings:** The trowel down method can be used to create solid-colored floors using pigmented coatings and silica aggregate, or a variety of multi-colored floors using clear coatings and colored quartz aggregate. The application methods are similar for both systems.

Apply properly mixed prime coat to the prepared surface using a magic trowel, notched squeegee, short nap roller, or a combination of the above. Follow the coverage rate provided on the product technical data sheet to produce the appropriate thickness. Broadcast 20/40 mesh silica sand into the wet prime coat at a rate of 0.25 to 0.50 lbs./ft.<sup>2</sup> (1.22 to 2.44 kg/m<sup>2</sup>). Allow the prime coat to become tack free.

Prepare a mortar consisting of mixed coating and a trowel grade aggregate blend or colored quartz aggregate. Typical proportions are 3 to 4.5 parts of aggregate by volume to 1 part mixed coating by volume. Refer to product technical data sheet for specific proportions recommended for each coating. Large quantities of epoxy mortars are typically mixed in a horizontal shaft mortar mixer. Smaller quantities can be mixed in a pail using a low-speed drill and mixing paddle. Gradually add the aggregate to the mixed resin. Mixing times are typically 3 to 5 minutes after all the aggregate has been added.

Ensure that the aggregate has been thoroughly mixed into the resin.

Place the mortar onto the tack free prime coat no later than 24 hours after priming. A mortar consisting of 1 gal. (3.8 L) of mixed epoxy and 4.5 gal. (17.0 L) of aggregate will typically cover approximately 45 ft.<sup>2</sup> (4.2 m<sup>2</sup>) at 1/8" (3.2 mm) thickness. Screed the mortar to the desired thickness and trowel finish.

Allow the coating to cure. Repeat the previous steps until the desired thickness is achieved. Lastly, apply a seal coat over the area. In areas exposed to sunlight or high-intensity artificial light, color stability is improved if the seal coat is an aliphatic urethane such as EUCO TAMMOSHIELD or EUCOTHANE. Check product technical data sheet for recommended curing time before opening to traffic.

## APPLICATION DETAILS

**Cove base:** To provide a seamless integral floor system at the floor to wall transition, a cove base of 2 to 6 inches (51 to 152 mm) in height may be required. The coating can be mixed with aggregate to use as a cove base.

**Static cracks and control joints:** Before application of the coating, static cracks and other non-moving joints should be routed, cleaned, and filled with a detail coat of the intended epoxy coating.

**Note:** Depending on the specific project, correct implementation of other application details, such as floor terminations, floor/drain detail, etc. may be required. For further information, contact Euclid Chemical Technical Support at (800) 321-7628.

## CLEAN-UP

Clean tools and application equipment immediately with acetone, xylene, or MEK. Clean spills or drips with the same solvents while still wet. Hardened epoxy and urethane coatings will require mechanical abrasion for removal.

## PRECAUTIONS/LIMITATIONS

- Store coatings indoors, protected from moisture, at temperatures recommended on individual product data sheets
- Surface and ambient temperature requirements for coating applications are product-specific, and are listed on individual product data sheets
- Material temperature requirements are product-specific, and are listed on individual product data sheets
- Do not apply coatings if surface temperature is within 5°F (3°C) of the dew point in the work area
- Coating working time and cure time will decrease as the temperature increases, and will increase as the temperature decreases
- Do not thin Euclid Chemical epoxy or urethane coatings
- Do not apply coatings to slabs on grade unless an uninterrupted vapor barrier has been installed under the slab
- Do not apply coatings if the substrate is subject to excessive moisture vapor drive or hydrostatic pressure
- Although epoxy coatings are chemically resistant, surface staining of the coating may occur after contact with some chemicals. Consider the use of a urethane topcoat such as EUCOTHANE for improved stain resistance
- Epoxy coatings will discolor upon prolonged exposure to ultraviolet light and high-intensity artificial lighting. An aliphatic urethane topcoat such as EUCOTHANE can minimize these effects.
- Depending on the condition of the substrate, minor surface defects can appear in the coating when applied. Proper surface prep, patching of substrate imperfections, and priming will ensure a better overall finish.
- If coating over old/existing epoxy or urethane coatings, or if more than 24 hours elapses between coats: sand the previous coat, wipe clean, and proceed with coating operations. If old/existing coatings are peeling, flaking, etc., all unsound material must be removed prior to new coating applications.
- Application of a test area is recommended to confirm final appearance and texture of the system with the end user
- Consult the individual product's technical data sheet for product-specific precautions and limitations
- In all cases, consult the individual product's Safety Data Sheet before use

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**WARRANTY:** The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for one (1) year from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.