



## Guidelines for Applying Broadcast Quartz Epoxy Systems to Concrete Floors



### General Objective

The objective of this guide is to describe the material and workmanship necessary to produce a high quality, high performance decorative quartz concrete floor coating system for industrial and commercial services. The painting shall be done according to the manufacturer's instructions and shall be done so as to meet the satisfaction of the project engineer.

### Scope

This guide covers the application of WEARCOAT 440 high-build epoxy and WEARCOAT 100 abrasion and chemical resistant finish coat.

### Coating System

#### A. 1/8" Broadcast Quartz with Epoxy topcoat

1<sup>st</sup> Coat: WEARCOAT 440 (In color or clear depending on desired appearance)

-Broadcast quartz aggregate of desired color until refusal

2<sup>nd</sup> Coat: WEARCOAT 440 (In color or clear depending on desired appearance)

-Broadcast quartz aggregate of desired color until refusal

Finish coat: WEARCOAT 440 Clear

-For less anti-skid and reduced yellowing, apply two coats of WEARCOAT 480 Non-yellowing Clear

#### B. 1/8" Broadcast Quartz with Urethane topcoat

1<sup>st</sup> Coat: WEARCOAT 440 (In color or clear depending on desired appearance)

-Broadcast quartz aggregate of desired color until refusal

2<sup>nd</sup> Coat: WEARCOAT 440 (In color or clear depending on desired appearance)

-Broadcast quartz aggregate of desired color until refusal

Finish coat: WEARCOAT 100 Clear

-For less anti-skid, either apply two coats of WEARCOAT 100 or one coat of WEARCOAT 480 Non-yellowing Clear followed by one coat of WEARCOAT 100.

## **Preparation of Surface**

Do not apply coatings over weak, damp or contaminated surfaces. Test concrete with a hammer and chisel. If it easily breaks or crumbles, it is not sound and coatings should not be applied. Test for dryness with moisture meters or by plastic patch test. Test for contamination by water spot test.

### **A. New Concrete**

New Concrete must be well cured, free of laitance, dust, form oils, curing compounds and other foreign matter. Form oil and curing compounds can be removed by Terrazzo machine grinding, sanding with coarse open-grit paper, sandblasting, mechanical blasting or scarifying techniques. Concrete hardeners should be avoided in new concrete floors which are to be painted.

New concrete floors, free of form oils, sealers, hardeners, and insoluble curing compounds should be etched with a 15 to 20% solution of muriatic acid to produce a slightly granular surface. Approximate spreading rate for the acid solution should be 50 to 75 square feet per gallon.

Note: If acid does not foam when applied to concrete and beads up, this is an indication that curing compounds, oil, wax or other contamination is present. If this happens, scarifying will be necessary.

Acid should be worked into surface with stiff bristle broom. When foaming action stops, flush the surface with plenty of water.

In some cases more than one acid etching operation is required to obtain a satisfactory profile. Each acid etch should be followed with a thorough water flush. Follow closely the mixing and safety instructions supplied with the muriatic acid.

Upon achieving a surface profile similar to that of medium grit sandpaper, check surface with pH paper. If reading is below 6 neutralize with a 1% ammonia solution. Flush with water and check the pH again. If the pH is between 6 and 8, preferably 7, the pH is satisfactory. The floor must be thoroughly dry before coating. The floor should look dry ( light gray color ). Moisture can be checked by several moisture detectors on the market; however, if not available, a simple method is to tape a polyethylene sheet approximately 2 ft. sq. to the concrete, taping down all edges and allowing to set overnight, then examine for moisture under polyethylene. If present, allow additional drying time before coating.

Preparation by mechanical methods is preferred.

### **B. Old Concrete**

Remove all oil, grease, wax and dirt accumulation. This may be accomplished by high pressure steam cleaning using a hot caustic solution. Presoaking floor with a caustic solution prior to steam cleaning is also recommended. An alternate method to steam would be high pressure (1000 psi) hot water machine using caustic solution. After thoroughly flushing with clean water use water spot test.

If water beads up on floor, oil, wax, or grease contamination is still present and additional caustic cleaning is necessary. Chemical cleaners, strippers and solvents may be used in conjunction with the above hot caustic cleaning techniques, if necessary, to remove certain chemical contamination.

Upon completely removing all residual contamination, as indicated by water spot tests, acid etching or mechanical abrading should be done as the next step prior to coating. Follow procedures outlined above in **Section A** for new concrete.

### **C. Previously Painted Concrete**

If old paint is tightly adhered per ASTM D3359 Tape Adhesion Test or equivalent, then sand floor to remove gloss and loose paint. Vacuum all dust from floor prior to painting. If the integrity of the existing coating is at all doubtful, then remove the coating via scarifying, grinding, or blasting.

The importance of a thoroughly and properly prepared floor can not be stressed too much. It is vital to the adhesion of the paint system applied.

## **Paint Application**

### **1<sup>st</sup> Coat**

The first coat should be WEARCOAT 440 in either clear or color depending on the desired effect. This should be applied with a 1/8" nap roller at a spreading rate of approximately 160 square feet per gallon. **Important:** Do not apply to a damp surface or when humidity is above 90% or temperature is below 50 degrees. Note: It is important to check the floor surface temperature as this may be below the ambient temperature.

WEARCOAT 440 is supplied in a premeasured kit form. Mix the two components together while under mechanical agitation and stir for at least 3 minutes. The combined components have a pot-life of 45 minutes once mixed. Pour the mixed material onto the floor in an even puddle of about 10". Use a flat squeegee to spread the material evenly over the area and follow-up with spiked shoes and a 1/8" nap roller to back roll out any thickness variations.

Cutting in of edges may be done by brush or detail roller. It is best to terminate and cut in at expansion joints. Metal surfaces should be primed with URETHABOND 104 metal primer.

Following application of the 1<sup>st</sup> coat of WEARCOAT 440 and while still wet, broadcast the colored quartz aggregate into the wet epoxy until refusal (only dry aggregate is visible on the surface).

WEARCOAT 440 can be recoated as soon as 6 hours after application. The recoat time should be no longer than 24 hours from the time of application to prevent a possible intercoat adhesion problem.

### **2<sup>nd</sup> Coat**

After the first coat has cured, remove the excess aggregate by brushing and vacuuming.

A second coat of WEARCOAT 440 should then be applied in the same manner as the first coat at a spreading rate of approximately 100-120 square feet per gallon. Broadcast the quartz aggregate again until refusal.

Allow this second coat to cure at least six hours before proceeding with the finish coat when following System A: 1/8" Broadcast Quartz with Epoxy topcoat

The WEARCOAT 440 should be allowed to cure overnight before application of the WEARCOAT 100 finish coat if following System B: 1/8" Broadcast Quartz with Urethane topcoat.

## **Finish Coats**

### **System A: 1/8" Broadcast Quartz with Epoxy topcoat**

Prior to applying the finish coat, thoroughly remove the excess aggregate by brushing and vacuuming.

The finish consists of one or two coats of WEARCOAT 440 or WEARCOAT 480 Non-yellowing Clear depending on the desired level of surface texture for anti-slip properties. Each coat shall be rolled at the spreading rate of 100 to 160 sq. ft. per gallon. The first coat of finish should be allowed to dry approximately five hours to overnight prior to the application of the final coat. The temperature of the slab will affect the drying time of the finish coats, and work should be scheduled accordingly. Do not apply these finishes when the temperature is less than 50 degrees.

### **System B: 1/8" Broadcast Quartz with Urethane topcoat**

Prior to applying the finish coat, thoroughly remove the excess aggregate by brushing and vacuuming.

A urethane topcoat is used to achieve the maximum resistance to abrasion and chemicals. Depending on the desired performance, appearance, and level of anti-slip, the finish coat may consist of one coat WEARCOAT 100 Clear urethane, 2 coats WEARCOAT 100 Clear urethane, or one coat WEARCOAT 480 Non-yellowing Clear epoxy followed by one coat WEARCOAT 100 clear urethane.

WEARCOAT 100 two-component finishes are supplied in premeasured kits. After adding part B to part A stir until uniform under low speed agitation. No induction period is necessary and these coatings are ready for application upon mixing. They are also supplied at application viscosity, so thinning is generally not required. Apply using a 1/8" nap, high quality, lint-free roller. The spreading rate of the urethane should be 160-200 sq. ft. per gallon. The coating may either be poured and rolled or rolled from a pan or bucket.

Allow the urethane to dry for 4 hrs. to overnight before applying a second coat. Also, be sure to wait at least 8 hours before topcoating the WEARCOAT 440 or WEARCOAT 480 with WEARCOAT 100 to prevent solvent attack of the epoxy.

The temperature of the slab will affect the drying time of the finish coats, and work should be scheduled accordingly. Do not apply these finishes when the temperature is less than 50 degrees.

## **Cleaning and Maintenance**

Urethane floor coatings represent the state-of-the-art system for industrial/commercial floors. They have far greater chemical, abrasion and impact resistance than conventional floor coatings-even other two component types. Their long-term beauty and effectiveness can be enhanced with a minimum amount of care and maintenance.

Allow these coatings to cure 48 hours before subjecting them to harsh chemical spills and heavy traffic conditions. Although they will tolerate light traffic within 12 hours of application, they do need a proper cure cycle of several days to achieve maximum properties. Also, once cured, it is still wise not to allow harsh chemicals to lay on the surface for prolonged periods and to repair deep cuts that would allow chemicals to penetrate beneath the coating to concrete. The use of a urethane coating on a concrete floor will reduce routine cleaning to the use of mild detergents, usually a mild TSP solution, unless unusually stubborn spills occur. These can generally be cleaned with whatever solvent or chemical is necessary to cut them, as urethanes have excellent resistance to solvents and chemicals.

Use brushes with soft nylon or polyethylene bristles and always wet mop in preference to dry mopping of gritty materials.

Finally, urethane floor systems can be dressed with conventional floor waxes and polishes. These must, however, be completely removed from any areas that may be recoated at a later date.

Similar care can be used for the systems with epoxy finish coats. Extra caution with chemical spills and heavy abrasion should be exercised as the epoxy coatings are not as durable in these areas as the urethane counterparts.

**LIMITED WARRANTY:** All statements, technical information and recommendations contained herein are based on tests the manufacturer believes to be reliable, but the accuracy

Seller's and manufacturer's only obligation shall be to replace or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, express or implied: such quantity of the product proved to be defective at the time the sealed container is first opened, and in no event beyond the shelf life date printed on the label. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, use shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith.

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