valspar FLOORING

ESD EPOXY
SYSTEM TOPCOAT

Technical Data Sheet

DESCRIPTION:
The ESD Epoxy System Topcoat is a two component, 100% solids, epoxy designed for use in conjunction with Valspar's ESD Conductive Primer or ESD Static Dissipative Primer. 17 colors are available with the use of Epoxy Color Additive.

USES:
Designed specifically as a conductive/dissipative epoxy floor coating for use over concrete surfaces. Formulated to provide excellent static control properties while enhancing chemical and abrasion resistance. Suitable for applications where static electricity must be controlled. Ideal for use in facilities with AGV lines, electronics manufacturing and assembly areas, computer facilities, and areas where highly sensitive electronic equipment is used regularly.

ADVANTAGES:
- 100% solids system - low odor
- Outstanding static control
  - Conductive applications
    2.5 x 10^4 - 1.0 x 10^6 Ohms resistance
  - Dissipative applications
    1.0 x 10^6 - 1.0 x 10^9 Ohms resistance
- Wide range of colors with Epoxy Color Additive
- Good UV light resistance - high gloss
- Easy to apply by squeegee and roller
- Excellent chemical and abrasion resistance

PACKAGING:
The ESD Epoxy System Topcoat is packaged in pre-proportioned kits for error-free jobsite mixing and application.

Each 3-gallon kit consists of one 1-gallon can of Part "H" Hardener and one short filled 5-gallon pail of Part "R" Resin.

The Part "R" container is oversized to allow room for mixing the two components.

COVERAGE:
Approximately 90-115 sq. ft. per gallon at 14-18 mils wet.

GENERAL DATA:

Colors:	A variety of colors available with use of Epoxy Color Additive
VOC:	26 g/l
Coverage with Epoxy Color Add:	289-374 sq. ft. per 3.0 gal kit @ 14-18 mils
Recommended Film Thickness at 90-115 sq. ft. per gallon:	14-18 mils/coat
Mixing Method:	At low speed with "jiffy" mixer
Application Method:	Serrated squeegee, 3/8" nap roller, and porcupine roller
Thinner:	NOT RECOMMENDED
Pot Life @ 75℉:	30minutes
Cure Rate @ 75℉:	18 hrs.- Foot traffic 24 hrs.- Light traffic 72 hrs.-Heavy traffic and/or chemical spillage
Recoat Time @ 75℉:	Refer to Page-4...Critical Recoat Time From 12 to 24 hours. After 24 hours, screen before recoating.
Shelf-Life:	2 years in unopened container

TYPICAL PHYSICAL PROPERTIES:

Test	Description	Values
Hardness: (Shore D)	ASTM D-2240	81-85
Bond Strength:	ACI COM #403 (pp. 1139-41)	400+ psi (100% concrete failure)
Impact Resistance:	ASTM D-2794	160 in-lbs.
Abrasion Resistance: Taber Abraser(CS-17 wheel, 1000 cycles, 1000 gm load)	ASTM D-1044	30-40 mg loss
Flammability:	ASTM D-635	Film is Self Extinguishing

STATIC CONTROL PROPERTIES:

Surface Resistance	EOS/ESD 7.1	Conductive: 25,000-1 million Ohms Dissipative: 1 million-1 billion Ohms
Static Charge Decay	MIL-B-81705B	Dissipates a charge to zero in less than 0.4 seconds.

ABOVE TYPICAL VALUES BASED ON CURE @ 75℉

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ASSOCIATED PRODUCTS AND EQUIPMENT:

Preparation: PC-40 DYNOMITE
PC-41 SOLV-KWIK
PC-42 ACID CONDITIONER
EPOXY COLOR ADDITIVE

Pre Priming: PR-7 FLEX PRIME

Priming: ESD CONDUCTIVE PRIMER or ESD STATIC DISSIPATIVE PRIMER

Equipment: ELECTRO-TECH WIDE RANGE RESISTANCE INDICATOR MODEL 870 or 3M'S 701 TEST KIT

LIMITATIONS:

This product is not designed for exterior use, immersion, or any use where moisture can reach the underside of the coating.

Technical Data Sheets are updated periodically. To ensure the current version is being used, please visit Valspar Flooring's website at *www.valsparflooring.com*.

Proper material application is the responsibility of the user. Site visits made by Valspar personnel are for making technical recommendations only and not for supervising or providing quality control.

Do not apply to concrete floors less than 60 days old.

Do not apply to floors previously treated with curing and parting compounds or other coatings unless they have been completely removed by chemical or mechanical means.

Do not use on vinyl, asphalt, rubber, glazed tile, paving brick, quarry tile, Mexican tile, or similar materials.

Do not apply if the floor or air temperature is below 60°F or over 90°F or if the relative humidity is above 85%. Do not apply over honeycombed or structurally unsound surfaces.

Before applying for protection against specific chemical environments, consult Chemical Resistance Guide or Valspar Technical Service.

Sealed surfaces may discolor under tires due to tire plasticizer migration.

If the product is to be applied in or near areas containing foodstuffs, they should be removed prior to application until the coating has fully cured and all vapors have dissipated.

Do not thin this product. Addition of thinners will slow down the cure and reduce the ultimate properties of this product. Critical recoat times will also be affected.

As with all high performance coatings, the cured product may become slippery when wet or if exposed to oily conditions.

If there is any question as to whether or not the product will adhere to an existing coating, a test patch should be applied and evaluated for compatibility and adhesion. This product is not intended to be sprayed.

This product has a limited pot life. Product should not be applied by dipping roller into kit container, but by pouring a bead of product in the form of a ribbon on the surface to be coated.

PRELIMINARY FLOOR INSPECTIONS:

In general, the area to be surfaced must be clean, sound, dry and above 60℉ to insure a successful installation. Concrete must be at least 60 days old.

If there is uncertainty as to whether or not a curing compound or any coating is present on the floor, the following two tests may be performed in order to find out:

1. Pour a cup of water on three or four areas of the floor. If the water puddles out, then there probably is no curing compound or coating on the floor, and the preparation process may begin. However, it the water beads up, this may indicate the presence of a curing compound or coating which must be removed by chemical or mechanical means.
2. Place a drop of PC-42 ACID CONDITIONER on the floor. If the acid bubbles, curing compound or any coating is not present.

Always be aware of any possible airborne or surface contaminants that may contribute to problems such as fisheyes, crawling, cratering, etc.

The concrete floor should be examined for the presence of moisture. This can be accomplished by the following means:

1. Calcium Chloride Test
2. Delmhorst Moisture Meter
3. Polyethylene Sheet Method

Calcium Chloride Test: This test method works by a change in weight of moisture absorbing anhydrous calcium chloride and indicates the amount of moisture transmitting out of a large concrete surface area. Pounds is the equivalent weight of the water that is emitted from a 1,000 square foot concrete slab surface area in a 24-hour period of time (standard test duration is 60 hours). Concrete must not show moisture content greater than three pounds per 1,000 square feet in 24-hour time frame. Follow instructions as outlined by the supplier of the test kits. Make sure the concrete surface to be tested is completely clean of any residue and any debris. All seals, including curing compounds must be removed prior to performing tests. Sources: Roofing Equipment Inc., Denver, CO 303-371-7667; Sealflex Industries Inc., Costa Mesa, CA 714-708-0850; Vinyl Plastics Inc., Sheboygan, WI 920-458-4664; and Floor Seal Technology, San Jose, CA 408-436-8181

SURFACE PREPARATION:
All oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners and other surface contaminants must first be removed. PC-43 WASH OFF REMOVER or PC-46 DRY EZE should be used for removal of sealers, finishes and paints. Inspect the concrete and remove loose or soft concrete by scarifying, sand blasting or high pressure water blasting.

STANDARD TESTS:
Refer to the standard test methods below for further information.

ASTM D 4258-83	Standard Practice for Surface Cleaning Concrete for Coating
ASTM D 4259-83	Standard Practice for Abrading Concrete
ASTM D 4260-83	Standard Practice for Acid Etching Concrete
ASTM D 4262-83	Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces

CHEMICAL PREPARATION:
PC-40 DYNOMITE should be used as directed to remove all traces of grease, oil, and dirt followed by a thorough rinsing to remove all cleaning residues. Remove excess water with a good wet vacuum. To remove laitance and to give a slight texture to area to be surfaced, acid-etch using PC-42 ACID CONDITIONER. Using a 1:1 dilution ratio with water, apply evenly as possible to the surface and vigorously scrub into the surface with a stiff bristle brush or automatic scrubber. Thoroughly rinse with copious quantities of water and use wet vacuum to remove any residues. Repeat this process until concrete surface is the texture of medium grit sandpaper.

MECHANICAL PREPARATION:
Mechanically abrade the concrete, by grinding, scarification or “shot-blasting” the surface to the texture of medium grade sandpaper. Next, sweep and vacuum any remaining dirt and dust with a wet/dry vacuum. Removing residual dust will help ensure a tenacious bond from the primer.

Whenever “shot-blasting” is utilized, be careful to leave concrete with a uniform texture. Over “blasting” will result in reduced coverage rates of the primer and/or subsequent top coats. It is also possible that the texture of the “shot-blast” pattern may show through the last coat. This is known as “tracking”.

NOTE: Although, chemical preparation may be required on some surfaces, mechanical preparation is highly recommended and in most cases more efficient. It is not uncommon that a combination of the two is required.

For detailed application and installation instructions, please refer to the ESD Installation Guide.

PRE PRIMING:
PR-7 FLEX PRIME should be applied at 275-300 sq. ft. per gallon. Rough concrete surfaces will result in reduced coverage. Refer to PR-7 FLEX PRIME data sheet for mixing and application details.

ESD CONDUCTIVE / ESD STATIC DISSIPATIVE PRIMER APPLICATION:
Refer to the ESD Conductive Primer or ESD Static Dissipative Primer data sheet for mixing and application details.

Always test the primer for point-to-point conductance with the ELECTRO-TECH WIDE RANGE RESISTANCE INDICATOR MODEL 870 or 3M'S 701 TEST KIT. Ensure the primer is physically ground to earth before proceeding with the application of the ESD System Topcoat.

MIXING:
It is important to remember that this coating has a limited pot life. Therefore it is wise to check and make sure everything is in order before starting the mixing sequence. The conductive fibers are factory added to the resin portion of the product. Because some soft settling may occur, the resin portion **must** be premixed prior to the addition of the Epoxy Color Additive and Hardener.

1. The ESD Epoxy System Topcoat must be used with Epoxy Color Additive.
2. Add one quart of Epoxy Color Additive to the ESD Epoxy System Topcoat Part "R" Resin. Mix the Epoxy Color Additive and Part "R" with a very low speed "Jiffy" mixer being careful not to introduce air bubbles while mixing. Mix a minimum of 2 to 3 minutes or until completely blended.
3. Carefully empty the contents of the ESD Epoxy System Topcoat Part "H" Hardener entirely into the pail of ESD Epoxy System Topcoat Part "R" Resin. The Part "R" pail is oversized to allow for easy mixing. Do not mix less than full batch quantities.
4. Mix with a low speed "Jiffy" mixer until completely blended. This will take about 2 to 3 minutes. Be careful not to introduce any air bubbles while mixing.
5. Due to the difference in viscosity between the Part "H" Hardener and Part "R" Resin, care must be taken to ensure that both components are thoroughly mixed in order to avoid weak or partially cured spots in the coating.
6. Since this product does not need any induction time, it should be used immediately after mixing.

ESD-EPOXY TOPCOAT APPLICATION:

1. Pour the mixed ESD Epoxy Topcoat contents onto the floor in the form of a bead. Then, using a serrated squeegee spread the poured material at a rate of 90-115 sq. ft./gal at 14-18 mils. Apply as evenly as possible, working from left to right and then back. NOTE: Do not apply this product more than 18 mils or less than 14 mils.
2. Follow the application by backrolling the coating using a medium nap (3/8") high quality roller. Backroll the product uniformly over the surface.
3. Utilizing a porcupine roller, slowly roll the coated surface. The porcupine roller helps distribute the conductive fibers in an even manner.
4. This product is to be used as is, therefore thinning or reducing with solvents is not recommended.
5. Maintain liquid temperature a minimum of 70 deg. F

POT LIFE:

The pot life on this product is approximately 30 minutes at 75℉ and 50% R.H. High temperature and high humidity will accelerate curing and reduce pot life. Since this is not a solvent based system the pot life is relatively short. Do not mix more kits of material than can be used within this period of time.

CURE TIMES:

The floor area should be maintained at a temperature range of 60℉ or less than 90℉ during application and curing. At 75℉, the coated area should be ready for foot traffic in 18 hours and light traffic in 24 hours. For heavy wheeled traffic and/or chemical spillages, allow a minimum of 72 hours cure.

Test the final surface for point-to-point conductance with the ELECTRO-TECH WIDE RANGE RESISTANCE INDICATOR MODEL 870 or 3M'S 701 TEST KIT to ensure the coating meets the specification before placing the area into service.

CLEAN-UP:

Equipment should be cleaned immediately after use with soap and water or isopropyl alcohol.

CRITICAL RECOAT TIME:

It should be noted, that in the event that additional coats are necessary, the complete system must be used. This means that the ESD Conductive or Static Dissipative Primer and the ESD System Topcoat must be reapplied again to maintain proper electrical properties. If more than 24 hrs. have passed, the system must be first screened or sanded to allow for proper bonding.

TROUBLE SHOOTING:

PROBLEM OBSERVED	POSSIBLE CAUSES
Fisheyes	Oil Contamination; Improper substrate cleaning; Mold Release Agents; Improper Mixing. Primer not cured.
Peeling From Substrate	Insufficient preparation process; Oil impregnation; Moisture in concrete.
Peeling Between Coats	Past critical recoat time; Contamination between coats.
Coating Soft, Dulling	Improper mixing; Use of thinner in product; Extreme weather conditions.
Slow Cure	Low floor and ambient temperatures; Use of thinner in product; Improper mixing; Product applied too thin.
Fast Cure	High floor and ambient temperatures.
Bubbling	High temperatures; No primer used; Working product past pot life; Improper mixing overworked the product. Cold liquids.

REFER TO MATERIAL SAFETY DATA SHEET FOR FURTHER SAFETY AND HANDLING INFORMATION.
See individual labels for more caution statements.
KEEP OUT OF THE REACH OF CHILDREN.

DISPOSAL:

Dispose in accordance with federal, state, and local regulations. Use licensed hazardous waste company. Empty containers may contain product residue, including flammable or explosive vapors. Do not cut, puncture or weld on or near container. All label warnings must be observed until the container has been commercially cleaned or reconditioned.

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