



DESCO INDUSTRIES, INC. TECHNICAL BULLETIN TB-7001

Statguard® Conductive Acrylic Paint Application Instructions



Made in the
United States of America



Figure 1. Statguard® Conductive Acrylic paint.

Test Patch Requirement

A test patch on new applications is required to receive a full product warranty.

Prior to the shipment of your Statguard® Conductive Acrylic Paint, Desco Industries Inc. (DII) will provide samples and technical documentation for installing the test patch. The test patch will allow for a full evaluation of the floor preparation and of our Statguard® Conductive Acrylic Paint, performance features to include color, adhesion, physical properties and electrical resistance.

Test Patch application instructions are located in the Surface Preparation section. Please contact your customer service representative to organize a test patch kit.

Allow newly applied paint to dry a minimum of 48 hours before proceeding with the test. At humidity levels over 55% RH, allow 72 hours of drying time before testing. Use a razor to cut a cross or a few perpendicular lines over a 3" by 3" (75 mm by 75 mm) area on several spots of the thoroughly dried area. (See Figure 2).

Use a piece of masking tape to cover the marked area. Make sure the tape is thoroughly adhered to the test area. Pull the tape off the surface and examine the amount of paint which has peeled off during the test. If any significant portion is transferred to the tape, better surface preparation (acid etching, cleaning or sanding) should be done on the substrate to enhance the adhesion.

If your test patch is on a bare or prepped concrete we recommend using Baril WB 500 Water Base Primer / Tinted Light Grey to achieve proper performance of the Statguard® Conductive Paint properties. Please contact Baril at 260-665-8431 for additional product details.

Description

Statguard® Conductive Acrylic Paint is a one part floor coating formulated to produce controlled dissipation of static electrical charges. Statguard® Conductive Acrylic Paint is very effective as a static control floor coating for electronics manufacturing, assembly, and storage. It is available in grey (similar to PMS 432) in 1 gallon (3.8 liters) containers and in 5 gallon (19 liters) containers; and in light grey (similar to PMS 429) in 5 gallon (19 liters) containers. The color may vary between production lots.

NOTE: Statguard® Conductive Acrylic Paint should not be allowed to freeze. Store at temperatures above 45°F (7°C) as stated in the Safety Data Sheet. We recommend that these products be stored in their original containers and be sealed when not in use. We cannot guarantee performance if not properly mixed or used within 3 months from date of sale.

Surface Preparation

The two most important characteristics for successful application of Statguard® Conductive Acrylic Paint applications are:

1. The surface must be clean, dry, dull, and smooth. Heavy dirt or grease build-up should be removed with a stripper or degreaser. Cleaning methods range from: sweeping, vacuuming, wire brush, air-blasting, water jet, steam cleaning, or stripping.
2. If the surface is concrete, it must be in good condition.

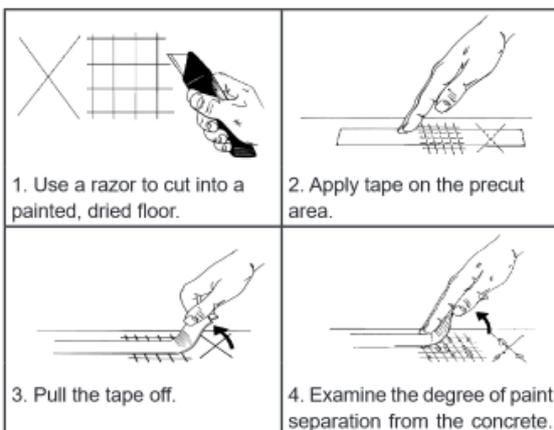


Figure 2. Adhesion test on the painted floor.



CONCRETE:

New concrete should cure for a minimum of 28 days before coating with Statguard® Conductive Acrylic Paint. Not all concrete is created equal -- concrete surfaces vary widely in physical and chemical qualities due to the way the concrete was formulated, poured, or finished.

There are several methods to prepare problem concrete. Each method depends on the condition of the concrete. Adhesion properties can be increased by profiling or roughing the surface through acid etching, rotary drum sanding, scarifying, or mechanically scratching the surface.

You must test for moisture in the concrete. If moisture is present, the floor should not be coated until the source of the moisture is determined and eliminated.

PRIMING:

Statguard® Conductive Acrylic Paint bonds well to clean, dry concrete. However if the sub floor is bare or prepped concrete we recommend using the Baril WB 500 Water Base Primer / Tinted Light Grey to achieve proper performance of the Statguard® Conductive Paint properties. Please contact Baril at 260-665-8431 for additional product details.

Installing Statguard® Conductive Paint on improperly prepared surfaces will void product warranty and cause product failure.

PREVIOUSLY PAINTED SURFACES:

The surface should be clean and free of dust, grease, wax, and soap residue. Wash with ordinary detergent and water. Rinse thoroughly with clean water and let dry. Glossy surfaces can be dulled by lightly sanding and then vacuuming and cleaning. Cracks and holes should be repaired before applying the Statguard® Conductive Acrylic Paint. Adhesion can be improved by using a standard industrial type primer.

UNPAINTED SURFACES:

Adhesion can be improved by using a standard industrial type primer. Metal should be primed with red oxide primer. Concrete, wood, plastics, and most other surfaces should be properly cleaned. Let dry and then apply Statguard® Conductive Acrylic Paint.

COVERAGE:

Statguard® Conductive Acrylic Paint will cover 300 to 400 square feet (27.87 to 37.16 square meters) at a 1 to 1.5 mil (0.0254 to 0.0381 mm) thick dry film per gallon (3.87 liters) on a smooth surface. Coverage is less on coarse or textured surfaces. Two coats are recommended to achieve maximum performance from the paint.

Application

Always use in a well ventilated area or wear a suitable respirator. Wear appropriate eye protection such as splash goggles and impervious type protection gloves to protect hands.

MIXING

1. Mix paint thoroughly before use (See Figure 3) using a 500-1500 RPM variable speed drill and paint mixing attachment or a paint mixer.
2. If the paint, after properly mixing, is not freely transferring from the roller to the floor, the Statguard® ESD paint can be thinned with water up to 10% max by volume.
 - a. Start by slowly mixing 5% water into the master container and apply again.
 - b. Do not add more than 10% of water to the mix.

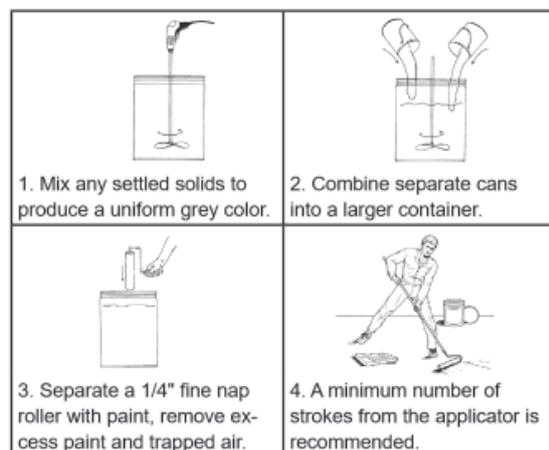


Figure 3. Paint application with roller.

APPLICATION BY ROLLER

1. Stir paint thoroughly to mix any settled solids to produce uniform grey color.
2. Combine separate cans of paint into one container to ensure uniform color distribution. It is recommended that a test area be coated to ensure that the adhesion and electrical performance of the paint is acceptable. (See Adhesion Testing, Figure 2.) If the test areas show inadequate adhesion, use an industrial floor primer/sealer.
3. Saturate a 1/4" (6.35 mm) fine nap roller or an industrial brush with paint. Remove excess paint and trapped air from the applicator by moving applicator several times in the paint tray.
4. A minimum number of strokes from the applicator on the substrate is recommended to minimize air bubbles.



APPLICATION BY SPRAY

Conventional Spray Gun: "E" fluid tip and needle and #704, 765 or 78 air gap.

Airless Spray: Spray gun and spray cap or suitable orifice diameter 0.020-0.025" (0.508-0.635 mm).

Mix paint thoroughly before using and stir occasionally when applying. No thinning necessary for spray applications. Room temperature must be above 50°F (10°C).

A minimum of two coats of Statguard® Conductive Acrylic Paint is recommended for appropriate static protection.

Grounding

Conventional grounding practices like connecting coated surfaces to equipment or earth ground is recommended for meeting ANSI/ESD S20.20, EN 61340-5-1 and ISO 9000 recommendations for verifying grounds. However the following is also true of conductive Acrylic Paint flooring "Floor finishes ... function by two separate mechanisms. First, they reduce the surface's tendency to generate a static charge.

Second, they provide a path for the dissipation of charge. The charge may dissipate over the surface of the finish or it may dissipate to ground if the floor finish is grounded." [Per ESD Handbook ESD TR20.20 section 5.3.4.2]

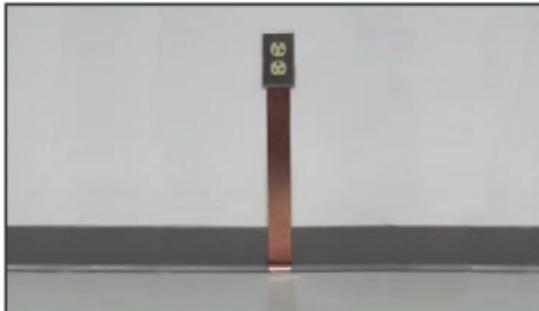


Figure 5. ESD Floor Ground Strip.

Four examples on how to achieve connection to the Conductive Acrylic Paint surface are:

1. Install a Statguard® ESD Floor Ground Strip per 1,000 square feet throughout the installation.
2. Bring Conductive Acrylic Paint coating in contact with a building ground rod.
3. Install a grounded lag bolt to the floor so the bolt comes in contact with the Conductive Acrylic Paint when screwed in place.

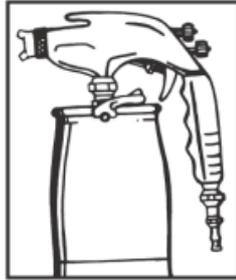


Figure 4. Spray paint application.

4. Bolt a grounded metal plate to the Conductive Acrylic Paint surface.

Statguard® Conductive Acrylic Paint applied in excess of 50 square feet (4.6 square meters) enable the surface to dissipate 5000 volts to zero in less than 0.01 seconds per FTMS 101C, Method 4046 without conventional grounding grids or wires. The conductive coating becomes a capacitive reservoir that effectively drains static charges. ESD footwear must be used in conjunction with Statguard® Conductive Acrylic Paint to ground personnel.

If footwear/flooring is being used as a primary ground to meet the personnel grounding requirements of ANSI/ESD S20.20 then we would advise to ground the Conductive Acrylic Paint for testing and verification of a ground point. If the footwear/flooring are being used as a secondary or back up grounding for personnel then grounding practices like electrically connecting Statguard® Dissipative Floor Finish to ground is only required for applications of Conductive Acrylic Paint that are less than 50 square feet. For applications that are greater than 50 square feet, the capacitance of Conductive Acrylic Paint is several hundred times greater than the capacitance of the human body model at 100pF. The difference in capacitance is so great that the Statguard® treated floor acts as a second capacitor in series with the person and a human body charge even as great as 5,000 volts will have a resulting voltage well below the 100V limit peak of ANSI/ESD S20.20. The surface resistance of the Statguard® treated floor will decay a 5000v charge to zero in .05 sec. per FTMS 101B, Method 4046. Statguard® has substantially less than the maximum static decay time of 0.1 seconds.

Clean Up

Wash applicators with water immediately after painting. Remove paint spills promptly with a wet cloth. Close container after each use. Keep container from freezing.

Finish/Sealer

Statguard® Conductive Acrylic Paint can be overcoated or sealed with Statguard® Floor Finish static dissipative coating to increase durability, enhance shine, improve ease of maintenance, and seal out dirt and debris. **Because of the matte finish of Statguard® Conductive Light Grey Acrylic Paint it is recommended that Statguard® Floor Finish be applied for gloss and ease of maintenance.** Statguard® Dissipative Floor Finish is a polymer base floor finish/sealer that can be used as a top coat on the Conductive Acrylic Paint. Surface Resistance will then be in the 1×10^5 to $< 1 \times 10^9$ ohm range. Two coats are recommended. Three coats will improve electrical properties, durability and reduce frequency of maintenance. Apply Statguard® Floor Finish after 48-72 hours after last coat of paint. Paint becomes dry to the touch, but is not fully cured to accept a finish coat until this time. If you notice the paint color coming off when finishing, it is too soon to apply. Please wait for the paint



to cure fully. Ask for Technical Bulletin [TB-7042](#) for more information on Statguard® Floor Finish.

Maintenance

Use sweeper, vacuum, or broom to remove dirt. Allow two weeks drying time before using a damp mop to clean the coated area. Do not use abrasive cleaners, floor rinse, or scrubbing machine to clean the floor.

Drying Time

It is recommended that Statguard® Conductive Acrylic Paint be allowed to dry at a temperature in excess of 45°F (7°C) until dry. A minimum of 1 to 2 hours drying time should be allowed before applying the second coat. The 2nd coat should be allowed to cure for 24 hours before taking electrical readings. After 24 hours readings taken will be reflective of the long term electrical characteristics of the material.

Physical Properties

Type	Water base acrylic coating	
Color	Grey, Light Grey	
Vehicle Type	Pure acrylic resin waterborne	
Pigment Type	Lead free, iron oxide, titanium dioxide and extenders	
Viscosity	Light Grey	26" #3 Zayn cup
	Grey	23" #3 Zayn cup
Solids	Light Grey	24% by volume
	Grey	20% by volume
Coating Density	Light Grey	9.54 lbs per gallon
	Grey	10.27 lbs per gallon (1.0 kilograms per liter)
Gloss	Light Grey	2 @ 60°F
	Grey	22 @ 60°F (30 @ 60°C)
Temperature Range	Wet	33°F - 110°F (1°C - 43°C)
	Dry	33°F - 300°F (1°C - 149°C) (300°F [149°C] not continuous)

Electrical Properties

Static Charge Decay	< 0.01 sec. per FTMS B, Method 4046
Charge Generation	Zero per AATCC Step Test, Method 134-1979
Rtt	1 x 10 ⁴ to < 1 x 10 ⁷ ohms per ANSI/ESD STM 7.1
Rtg	1 x 10 ⁴ to < 1 x 10 ⁷ ohms per ANSI/ESD STM 7.1

Testing

Test patch areas should be tested for adhesion and electrical performance of the paint before applying paint to the entire floor. To best ensure consistent results, the test should be done at various locations.

ELECTRICAL PROPERTIES:

Test the surface, point-to-point resistance, (Rtt) and resistance-to-ground (Rtg) properties of coated area per ANSI/ESD STM7.1 test method and/or ESD TR53. For quick and easy verification of the paint's electrical properties, we recommend the use of our a Surface Resistance Test Kit (Figure 6). For more information contact any of the Desco Industries Inc. companies.

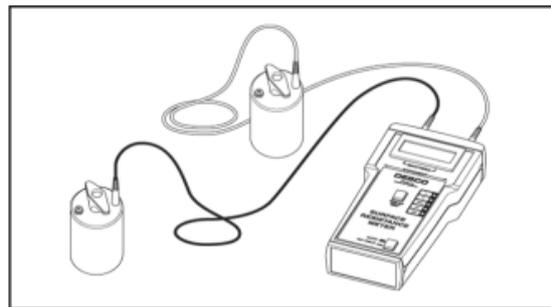


Figure 6. Electrical testing on the painted floor using a Surface Resistance Test Kit.



RoHS, REACH, and Conflict Minerals Statement

See the Desco Industries RoHS, REACH, and Conflict Minerals Statement:

<http://www.descoindustries.com/ROHS.aspx>

Desco Industries Limited Warranty

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Statguard® Conductive Acrylic Paint is available from these Desco Industries brands:

STATGUARD FLOORING

for service and support in North America

5 Gallons	Dark Grey	46041
	Light Grey	46051

CHARLESWATER

for service and support in United Kingdom

3.8 Litres	Dark Grey	71016
19 Litres	Dark Grey	71017
	Light Grey	71013

Vermason

for service and support in United Kingdom

3.8 Litres	Dark Grey	210220
19 Litres	Dark Grey	210221
	Light Grey	210222

DESCO ASIA

for service and support in Asia

3.8 Litres	Dark Grey	10408
19 Litres	Dark Grey	10409
	Light Grey	10410

DESCO JAPAN

for service and support in Japan

3.8 Litres	Dark Grey	10408
19 Litres	Dark Grey	10409
	Light Grey	10410

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