



8603 CrownPro™ StaticShield™ Polyurethane TECHNICAL DATA SHEET

Product Number: 8603 ESD and 8603 Conductive

Static Dissipative or Conductive Pigmented Polyurethane System

DESCRIPTION

8603 CrownPro™ StaticShield™ Polyurethane is a three component, high performance polyurethane floor coating system that meets ANSI/EST 2020 and ANSI/ESD STM7.1 Standards. It is electrically active within resistance range requirements for static dissipative or conductive flooring systems, which relies upon the epoxy prime coat. It is UV Stable and is VOC compliant in all States and Provinces in North America.

TYPICAL USES

It is designed to impart static control properties, which prevent electrostatic damage to electronic products, components and equipment. Military/ Aerospace/ Aircraft hangars, Electronics Manufacturing and Assembly, Hazardous Industries (dust or explosion hazards), Clean Rooms, Packaging lines, Pharmaceutical and Healthcare facilities. In addition, it limits the ability of personnel to build up a charge on their person and quickly remove a charge on a person, product, component or equipment.

LIMITATIONS

- Do not apply 8603 CrownPro™ StaticShield™ Polyurethane directly to concrete, cementitious overlays or other substrates, without a Crown Polymers insulative epoxy primer.
- Do not use on exterior substrates.
- Do not thin this product. Addition of thinners shall void the manufacturer's warranty.
- 320 CrownShield® Clear isolation primer is required for 8603 CrownPro™ StaticShield™ as a static dissipative floor coating
- 320 CrownShield® Clear isolation primer and 8601 CrownPro™ StaticShield™ Conductive Epoxy Primer is required for 8603 CrownPro™ StaticShield™ Polyurethane to be used as a conductive floor coating.

COLORS

8603 CrownPro™ StaticShield™ Polyurethane Is available in Light Gray, Medium Gray, Dark Gray, and Tan.

COVERAGE RATE

8603 CrownPro™ StaticShield™ Polyurethane is formulated to meet ESD Association ANSI/ESD STM7.1 standard:

1. Static dissipative resistance range of 1 million to 1 billion ohms (1E6-1E9) resistance as tested per ESD

Association ANSI/ESD STM7.1, when it is applied over an isolation/primer, 320 CrownShield® Clear.

- a. Passes: ANSI/ESD STM 97.1 Floor Materials and Footwear--Resistance in Combination with a Person. The recommended maximum system resistance is 3.5×10^7 .
 - b. Passes: ANSI/ESD STM 97.2: Floor Materials and Footwear Voltage Measurement in Combination with a Person. The recommended maximum voltage allowed is 100 volts.
2. Conductive resistance range of 25 thousand to 1 million ohms (2.5×10^4 to 1×10^6) resistance as tested per ESD Association ANSI/ESD STM7.1 when it is applied over 8601 CrownPro™ StaticShield™ Conductive Epoxy Primer. 8601 CrownPro™ StaticShield™ Conductive Epoxy Primer is only available in flat black.
 - a. Passes: ANSI/ESD STM 97.1 Floor Materials and Footwear--Resistance in Combination with a Person. The recommended maximum system resistance is 3.5×10^7 .
 - b. Passes: ANSI/ESD STM 97.2: Floor Materials and Footwear Voltage Measurement in Combination with a Person. The recommended maximum voltage allowed is 100 volts.

Workers interacting with one of these floors and equipment resting or rolling across the floor must be connected to the floor by the use of conductive footwear, ESD shoe straps, conductive wheels or grounding strips, which is a requirement for all floors of these types.

A qualified engineer should determine the correct floor and other items, such as, ground straps and grounding tape, etc. that may be required.

CONCRETE

Concrete must be structurally sound and free of curing agents, coatings, sealers, densifiers and other bond breakers.

New Concrete:

- Place concrete per ACI 302.2R Guide for Concrete Slabs that Receive Moisture-Sensitive Floor Materials.
- Water Cement Ratio 0.4 to 0.5, and an approximate 4,000 psi (28 MPa) strength level.
- Requiring a positive side moisture barrier in direct contact with the concrete meeting ASTM E1745 Standard Specification for Plastic Water Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- The moisture barrier needs to be placed per ASTM E1643 Standard Practice for Selection, Design, Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs, Class A 15 mils (0.38mm)

Existing Concrete:

If field tests or laboratory analysis reveals interior concrete flooring slabs containing contaminants from previously applied unreacted silicate materials that will interfere with the bond, use 8201 CrownPrime™ WBC.

See Crown Polymers Technical Bulletin: 20 Selecting a Primer.

- Contaminants include, but are not limited to: organic hydrocarbon materials, calcium chlorides and aluminum stearates.
- Concrete flooring slab can lose their structural strength over time, caused by conditions beyond the control of the flooring manufacturer or the installation contractor.
- If the concrete substrate deteriorates sufficiently, it will no longer support the bond of the remediation floor system.

Such conditions are detailed in ACI 201.2R “Guide to Durable Concrete” published by the American Concrete Institute. **See Crown Polymers Technical Bulletin: 1 Concrete Surface Preparation.**

SURFACE PREPARATION

Concrete must be cured 28 days and be clean, dry, and structurally sound. Surface must be shot blasted, diamond ground or acid etched to achieve an International Concrete Repair Institute Guideline No. 310.2R Selecting and Specifying Concrete Surface Preparation for Sealers Coatings and Polymer Overlays, ICRI profile of CSP 2 to 3. If the surface is diamond ground, use 16-24 grit diamonds and vacuum the floor twice to remove concrete dust or shot blast using small shot (280 grit) to avoid concrete micro fracturing. Excessive dust in the pores of the concrete can compromise adhesion.

Previously coated surfaces must be mechanically cleaned and abraded with 80-100 mesh sandpaper and acetone tack wiped prior to application. Adhere strictly to guidelines listed in the **CrownTech Technical Bulletin: 1 Concrete Surface Preparation**

MIXING INSTRUCTIONS

Primers

- A. Insulative primer 320 CrownShield® Clear regular cure material, pot life for one quart (0.95 liters) is 35 minutes at 77°F (25°C). Pot life of fast cure material for one quart (0.95 liters) is 18 minutes at 77°F (25°C). See 320 CrownShield® Technical Data Sheet.
 1. Working time is shortened by higher temperatures.
 2. Combining ratio is 2 parts A to 1 part B by volume. Proportion the amounts carefully and mix for 2 full minutes using a low speed drill, scraping the bottom and sides of the mixing vessel using a Jiffy Type Impeller Mixing Paddle.
- B. 8601 CrownPro™ StaticShield™ Conductive Primer pot life is 2 to 3 hours at 77°F (25°C) in a quart mass.
 1. The pre-measured material is supplied in a 1.35 gal kit (5.11 liters). Mix the entire content of Component A and Component B together.
 2. Combine the pre-measured A Component and B Component in the A Component bucket. Use a stir stick to get all of the materials out of the container.
 3. Mix for 2 full minutes using a low speed drill, scraping the bottom and sides of the mixing vessel using a Jiffy Type Impeller Mixing Paddle. Do not attempt to hand mix.
 4. **Add water** to 8601 CrownPro™ StaticShield™ Conductive Primer and mixed A Component and B Component, with water for 2 full minutes using a low speed drill, scraping the bottom and sides of the mixing vessel using a Jiffy Type Impeller Mixing Paddle. Do not attempt to hand mix. See 8601 CrownPro™ StaticShield™ Conductive Primer Technical Data Sheet.
 - a. 1.35 gallon (5.11 liters) kit add 1 quart (0.95 liters) of potable water.
- C. 8603 CrownPro™ StaticShield™ Polyurethane has a pot life of 25 minutes at 77°F (25°C) in a quart mass.
 1. The pre-measured material is supplied in a 1.56 gal kit (5.9 liters) kit, including pigment packs.
 2. Combine the pre-measured A Component and B Component in a separate bucket. Use a stir stick to get all of the materials out of the container.

3. Mix for 2 full minutes using a low speed drill, scraping the bottom and sides of the mixing vessel using a Jiffy Type Impeller Mixing Paddle. Do not attempt to hand mix.
4. Add the C Component (Pigment) after A Component and B Component are fully mixed.
5. Remix for 2 full minutes using a low speed drill, scraping the bottom and sides of the mixing vessel using a Jiffy Type Impeller Mixing Paddle. Do not attempt to hand mix.

APPLICATION RECOMMENDATIONS

- A. 320 CrownShield[®] Clear isolation primer must be applied directly to the concrete slab or other substrates and allowed to cure up to 24 hours before the application of 8601 CrownPro[™] StaticShield[™] Conductive Primer or 8603 CrownPro[™] StaticShield[™] Polyurethane can be applied.
 1. 320 CrownShield[®] Clear may be applied by roller, trowel or squeegee.
 2. Keep application rate above 160 square feet (14.9 square meters) per gallon (3.79 liters).
 3. Pouring material on floor immediately after mixing will extend work time.
 4. Allow 12 hours minimum and 24 hours maximum cure at 77°F (25°C) and a maximum of 24 hours before applying 8601 CrownPro[™] StaticShield[™] Conductive Primer or 8603 CrownPro[™] StaticShield[™] Polyurethane.
- B. For conductive systems apply 8601 CrownPro[™] StaticShield[™] Conductive Primer at 270 sq. ft. per kit
 1. Mix, pour out in ribbons on the floor, squeegee and back roll.
 2. Make sure the entire floor is covered.
- C. 1st top coat 8603 CrownPro[™] StaticShield[™] Polyurethane is applied at 390 sq. ft. per kit
 1. Apply by roller, notched squeegee and backroll.
 2. Top coat with 8603 CrownPro[™] StaticShield[™] Polyurethane within 24 hours after placement of 320 CrownShield[®] Clear or 8601 CrownPro[™] StaticShield[™] Conductive Primer.
- D. 2nd top coat 8603 CrownPro[™] StaticShield[™] Polyurethane is applied at 250 sq. ft. (23.2. sq. meters) per gallon (3.79 liters).

1. Apply by roller, notched squeegee and backroll.
2. Top coat with 8603 CrownPro[™] StaticShield[™] Polyurethane within 24 hours after placement of 320 CrownShield[®] Clear or 8601 CrownPro[™] StaticShield[™] Conductive Primer.

SKID-RESISTANCE

Skid-Resistance – Field (in situ) Wet Dynamic Coefficient of Friction (DCOF), ANSI A326.3. See Crown Polymers Technical Bulletin: 4 Dynamic Coefficient of Friction.

SHIPPING and STORAGE

Ship and store material between 40°F to 90°F (4°C to 32°C). Store in a dry environment and out of direct sunlight.

SHELF LIFE

Shelf-life is 90 days from the date of manufacture, provided the containers are unopened.

HANDLING PRECAUTIONS

8603 CrownPro[™] StaticShield[™] Polyurethane is flammable. Extinguish all flames, pilot lights and electric motors until all vapors are gone and coating is hard. The vapor is harmful. Use only with adequate ventilation or wear appropriate cartridge-type respirator. Avoid contact with skin; wear protective gloves. Read Safety Data Sheet before using.

CLEAN UP

Installation tools and equipment can be cleaned with acetone.

DISPOSAL

Product containers will contain product residue and must be disposed of properly. Label warnings must be observed at all times. All containers must be disposed of in accordance with federal, state, province and local regulations.

Physical Properties at 77°F (25°C)		
Mix Ratio, by Volume	Premeasured	
Viscosity, Pigmented	600 cps	
VOC (Volatile Organic Compounds) VOC Calculated Per ASTM D3960	<100 gr./lt.	
Pot Life, Regular Cure, 1 quart (0.95 liters) Mass Pot Life is Reduced by Increases in Mass and/or Temperature	25 Minutes	
Available in 1.56 gal kits. Pre-measured three component system.		
Cure Time 16 MILS	Time 77°F (25°C)	Time 50°F (10°C)
Dry to Touch	6 Hours	18 Hours
Recoat/Top Coat	18 Hours	24 Hours
Light Traffic	24 Hours	36 Hours
Full Cure	7 Days	14 Days
1. High temperatures and lower humidity will accelerate cure times. 2. Low temperatures and high humidity will lengthen cure times. 3. Relative humidity in excess of 70% will dramatically effect cure times. Enhanced air movement is recommended to help flash off the moisture when humidity is high.		
Electrical Transmission Properties @ 77°F (25°C)		
Point-to-Point or Point-to-Ground Resistance	ANSI/ESD STM7.1	
Static Range, 1 million to 1 billion ohms	1E6 – 1E9	Meets
Conductive Range, 25,000 to 1,000,000 ohms	2.5E4 – 1.0E6	Meets
Typical Physical Properties @ 77°F (25°C)		
Hardness, Pencil	ASTM D3363	2H
Impact Resistance, Direct/Reverse	ASTM D2794	160/160 Inch/lbs.
Moisture Vapor Transmission (maximum) *	ASTM F1869	3 lbs./24hr./1,000 sq. ft.
Concrete Relative Humidity Moisture % (maximum) *	ASTM F2170	80% RH
Wet Dynamic Coefficient of Friction, ASNI 326.3. Depends on texture of system selected, ranging from smooth or aggressive. Measured with BOT 3000E equipment. This test must be run in the field after placement of the Finish Coat by a BOT 3000E Third Party Testing Firm to Validate.	>0.45 (inclines) >0.42 (level)	
* When ASTM F1869 or ASTM F2170 limits are surpassed consult 8303 CrownShield® MVB.		

Note: Although testing is critical, it is not a guarantee against future problems. This is especially true if there is not a positive side vapor barrier or it is not functioning properly and/or concrete has contamination from oils, chemical spills, densifiers, excessive salts or other bond breakers.



TECHNICAL SUPPORT

For questions, contact a Crown Polymers Representative. Additional Support Documents are available from Crown Polymers, including brochures, application guidelines, videos and more. Visit Crownpolymers.com or contact Crown for additional resources.

DISCLAIMER

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LIMITED WARRANTY

Crown Polymers warrants its products to be free of manufacturing defects and meets all Crown Polymers current published physical properties. Crown Polymers' sole responsibility shall be to replace the portion of any product proved to be defective. There are no other warranties by Crown Polymers of any nature whatsoever expressed or implied, including any warranty of merchant- ability or fitness for a particular purpose in connection with this product. Crown Polymers shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. Crown Polymers shall not be responsible for the use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee pertaining to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator will be issued. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects are also excluded from the limited warranty. Crown Polymers reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.

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