



DRAGONSHIELD-BC™

ULTRA HIGH STRENGTH POLYUREA ELASTOMER

Revised 11.05.13

DESCRIPTION

DRAGONSHIELD-BC™ polyurea represents a breakthrough in plural-component spray applied polymer technology. This ultra high-strength polymer was developed specifically for **blast mitigation** and **fragment/spall containment**. *Tests conducted on DRAGONSHIELD-BC™ protected surfaces compared to unprotected surfaces document that DRAGONSHIELD-BC™ will significantly reduce damage caused by blast effects.

Properties include:

- Ultra high tensile strength
- Moderate elongation
- Superior tensile modulus
- Excellent tear strength
- Moderate hardness

* Test reports are available upon request from SPI to qualified entities.

FEATURES

- 100% solids. No solvents. No VOCs.
- Fast-set: Handle in five minutes or less
- High Build: can be sprayed to virtually any thickness in one application
- Hydrophobic: therefore unaffected by humidity and extreme temperatures during application
- Extended tack time: allows deep surface penetration *
- High temperature stability to 200° F (121°C) with intermittent temperatures to 300° F (148 °C)
- Excellent abrasion resistance

* SPI AE-4 ad-mix may be incorporated into DRAGONSHIELD-BC™ to enhance adhesion to certain surfaces in lieu of primer

COLORS

It should be noted that DRAGONSHIELD-BC™ is an **aromatic** polyureas, therefore, as with all aromatics, color change and superficial oxidation will occur.

Aliphatic urethane, polyurea, and other suitable topcoats can be used when long-term color stability and increased longevity in full sun exposure are of critical importance.

Specialty Products, Inc. Polymeric (Aliphatic) Top Coat (PTC™) is available in Military Tan, Olive Drab, and other colors. PTC™ has a high gloss finish. (Available in matte finish upon request).

WET PROPERTIES @ 77°F (25°C)

Solids by Volume	100%
Solids by Weight	100%
Volatile Organic Compounds	0 lbs/gal (0g/l)
Theoretical Coverage DFT	100 sq. ft. @ 16 mils/gal.
Weight per gallon (approx.)	8.6 lbs. (3.9 kg) approx
Number of Coats	1-2
Mix Ratio	1 "A": 1 "B"
Viscosity (cps) @ 77° F (25 °C)	A: 800 approx. B: 600 approx.
Shelf Life Unopened Containers @ 75°F-85°F (23°C-29°C)	Six months

DRY PROPERTIES* @ 70 mils (1.77 mm)*

Tensile Strength ASTM D 412	5579 psi (35.77 mpa)
Elongation @ 77°F (25°C)	344%
100% Modulus	1650 psi (11.47 mpa) ± 100
200% Modulus	2602 psi (18.08 mpa) ± 100
300% Modulus	4426 psi (30.76 mpa) ± 100
Hardness (Shore A) ASTM D 2240	95 (0s)
Hardness (Shore D) ASTM D 2240	59 (0s)
Tear Resistance ASTM D 624	735 PLI (128.70 KN/m) Avg
Service Temperature	-40°F - +200°F -40°C - +93°C
Mandrel Bend Test ASTM D522-93a	Passed Mandrel Size – 1" Test Temp -60°F (-51°C)

**All dry film properties are approximate since processing parameters, ad-mixture types, and quantities will change physical properties of the cured elastomer. All samples for above tests were force cured or aged for more than three weeks. It is recommended that the user perform their own independent testing. The samples for tests were sprayed with SPI Long Shot @ 2500 psi dynamic (172 bar). Primaries/Hose Heat 170°F (77°C) Gusmer Gap Gun with 00 chamber.*

CURING SCHEDULE

Gel	15 sec.
Tack Free	55 sec.
Post Cure**	48 hours
Recoat	15 min. - 12 hours

***Complete polymerization to achieve final strength can take up to several days, depending on a variety of conditions.*



Note: This is a defense related product. Contact SPI Government Relations Dept. for further information.

Note: Due to the many variables involved with blast and ballistic events, all SPI polymer solutions must be tested and validated prior to installation for the purpose of hardening structures, barriers, vehicles, etc.

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GENERAL APPLICATION INSTRUCTIONS

Apply DRAGONSHIELD-BC™ only to clean, dry, sound surfaces free of loose particles or other foreign matter. A primer may be required, subject to type and/or condition of the substrate. Consult a SPI technician for specific primer recommendations and substrate preparation procedures.

DRAGONSHIELD-BC™ can be sprayed over a broad range of ambient and substrate temperatures. Contact a SPI technician for specific recommendations, pricing, and availability of spray and auxiliary equipment.

It is recommended that DRAGONSHIELD-BC™ be sprayed in multi-directional (north-south/east-west) passes to ensure uniform thickness.

The polyol "B" component must be thoroughly power mixed each day, prior to use. Contact a SPI technician regarding proper mixing equipment.

Follow the instructions attached to "A" and "B" containers.

RECOMMENDED EQUIPMENT AND SETTINGS

- Standard 1:1 ratio, heated, plural-component equipment developing a minimum of 2500 psi (10.4 mpa) dynamic pressure with heating capabilities to 175° F (79 °C) will adequately spray Dragonshield-BC™. These include Graco HXP2, HXP3, Gusmer 20/35, Graco/Gusmer 20/35 Pro, EXP1 and EXP2. Gun models include Graco Fusion MP, Gap Pro, GX7-DI, and Gusmer GX7-400.
- Pre-heater temperature should be at 160-170°F (71-76 °C).
- Hose temperature should be at 160 -170° F (71-76°C). A hose thermometer inserted under the insulation near the gun should read a minimum of 145-155°F (63-68°C).
- Physical properties will be enhanced when sprayed at higher pressure (3000 psi or more) (20.8mpa), utilizing an impingement mix gun such as the Graco MP Fusion and GX7-DI.

MIXING AND THINNING

Thoroughly agitate the "B" components of this product prior to application. Use a SPI folding blade mixer, or equivalent equipment approved by SPI. Install mixer through the extra 2" bung hole provided on all "B" drums. Care must be taken not to cross contaminate the individual components with the mixing equipment. Thinning is not required. Using any thinner may adversely affect product performance.

GENERAL SAFETY, TOXICITY & HEALTH DATA

Material Safety Data Sheets are available for this coating material. Any individual who may come in contact with these products should read and understand the M.S.D.S. **CHEMTREC EMERGENCY NUMBER 1-800-424-9300 or for INTERNATIONAL CALLS 1-703- 527-3887.**

WARNING: Contact with skin or inhalation of vapors may cause an allergic reaction. Avoid eye contact with the liquid or spray mist. Hypersensitive persons should wear protective clothes, gloves and use protective cream on face, hands and exposed areas.

CONTAMINATION: Avoid moisture contamination in containers. Containers should not be resealed if contamination is suspected, carbon dioxide created pressure can develop. Do not attempt to use contaminated material.

EYE PROTECTION: Safety glasses, goggles, or a face shield are recommended.

SKIN PROTECTION: Chemical resistant gloves are recommended.

Cover as much of the exposed skin area as possible with appropriate clothing.

RESPIRATORY PROTECTION: Use a respirator approved for isocyanates and organic vapors. If you are not sure or not able to monitor levels, or if you are spraying in an enclosed/indoor area, use MSHA/NIOSH approved supplied air respirator. Consider the application and environmental concentrations in deciding if additional protective measures are necessary.

INGESTION: Do not take internally. It is believed that ingestion of polymeric isocyanates would not be fatal to humans, but may cause inflammation of mouth and stomach tissue.

LIMITATIONS

- This product is for professional use only.
- Apply DRAGONSHIELD-BC™ when surface and air temperatures are above 40°F (5°C) and rising, and 7°F (3°C) above dew point.
- Liquid temperature in drums during application 70° F – 100°F (21 °C – 38°C).
- Avoid moisture contamination in containers. Containers should not be resealed if contamination is suspected, CO₂ created pressure can develop. Do not attempt to use contaminated material
- Undried air exposed to liquid components will reduce physical properties of the cured coating.

Note: The material supplied is two components (Component "A"/Component "B") used to formulate DRAGONSHIELD-BC™. The quality and characteristics of the finished polymer is determined by the mixture and application of the two components.

WARRANTY & DISCLAIMERS

Specialty Products, Inc. has no role in the manufacture of the finished polymer other than to supply its two components. It is vital that the person applying this product understands the product, and is fully trained and certified in the use of plural-component equipment.

Specialty Products, Inc., an Alaska corporation, warrants only that the two components of this product shall conform to the technical specifications published in the product literature.

The quality and fitness of the product are dependent upon the proper mixture and application of the components by the applicator. There are no warranties that extend beyond the description on the face of this instrument.

Failure to apply the product within the parameters stated on this document shall void the warranty.

SPECIALTY PRODUCTS, INC. MAKES NO WARRANTY OF MERCHANTABILITY OF THE PRODUCT OR OF FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE.

Specialty Products, Inc. makes no warranty as to the quality of any product modified, supplemented, tinted, or altered in any way after it leaves the manufacturing plant.

Specialty Products, Inc. does not warrant that this product is suitable for use as a liner for potable water containers. Use of this product in a potable water container could be hazardous to health if it is improperly processed or applied.

The liability of Specialty Products, Inc. for any nonconformity of the product to its technical specifications shall be limited to replacement of the product.

The sole exclusive remedy of buyer, which is to have Specialty Products, Inc. replace any nonconforming product at no cost to buyer, is conditioned upon buyer notifying Specialty Products, Inc. or its distributor in writing of such defect within thirty days of the discovery of such defect.

Specialty Products, Inc. shall not be liable for any direct, incidental, or consequential damages resulting from any breach of warranty.

The data presented herein is intended for professional applicators or those persons who purchase or utilize this product in the normal course of their business.

The potential user must perform any pertinent tests in order to determine the product's performance and suitability in the intended application, since final determination of fitness of the product for any particular use is the responsibility of the buyer.

The aforementioned data on this product is to be used as a guide and is subject to change without notice.

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1974 Serving the Plural-Component Industry



Product & Equipment Technical Assistance
24 hours – 7 days a week (800) 627-0773



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