

DESCRIPTION

SPI's patented DRAGONSHIELD™ BC 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.

FEATURES

- 100% solids, no solvents, and no VOCs.
- Fast-set: Handle in five minutes or less.
- Hydrophobic, therefore unaffected by humidity and extreme temperatures during application.
- Extended tack time to allow deep surface penetration
- High dry temperature stability to 200°F (93°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.

RECOMMENDED USES

- Coating for steel or other substrate exposed to corrosion.
- Liner for concrete tanks, ponds, lagoons, reservoirs, dikes, tunnels, barges, etc.
- Replace or repair failed existing sheet membrane liners.
- Steel tanks, silos, and pipes.
- Encapsulation material for EPS or other types of flotation materials.
- Encapsulation material for asbestos, lead paint, or other dry hazardous materials (Consult SPI).
- Earthen containment used with or without geotextile.

COLORS

DRAGONSHIELD™ BC is available in SPI standard colors (Black, Military Tan, Olive Drab, and Medium Grey). Custom colors available upon request.

Note: DRAGONSHIELD™ BC is an aromatic polyurea; therefore, as with all aromatics color change and superficial oxidation will occur. Aliphatic urethane and other suitable topcoats can be used where 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).

DRY PROPERTIES*

Tensile Strength ASTM D638	± 5,579 psi (38 mpa)
Elongation ASTM D638	± 344%
Hardness (Shore A) ASTM D2240-81	95 ± 5
Hardness (Shore D) ASTM D2240-81	59 ± 5
100% Modulus ASTM D412	1,650 psi (11 mpa) ± 100
200% Modulus ASTM D412	2,602 psi (18 mpa) ± 100
300 % Modulus ASTM D412	4,426 psi (31 mpa) ± 100
Tear Resistance ASTM D624	735 PLI (128.70 KN/m) ± 50
Service Temperature	-40°F - +200° (-40°C - +93°C)

*All cured film properties are approximate since processing parameter, ad-mixture types, and quantities change physical properties of the cured elastomer. All samples for above tests were force cured 48 hours 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 (17 mpa). Primaries/Hose heat 170°F (77°C) Gusmer Gap Gun with 00 chamber.



Note: This is a defense related product.

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.

WET PROPERTIES

Solids by Volume	100%
Solids by Weight	100%
Volatile Organic Compounds	0 lbs./gal (0 g/l)
Theoretical Coverage DFT	100 sq. ft. @ 16 mils/gal
Weight per gallon (approx.)	8.6 lbs. (3.9 kg)
Number of coats	1 - 2
Mix Ratio	1 "A" : 1 "B"
Viscosity	A: 1800 ± 100 cPs B: 225 ± 25 cPs
Shelf Life Unopened Containers @ 60 - 90°F (15 - 32°C)	Six Months

Minimum material/container temperature for application is 70°F (21°C).

CURING SCHEDULE

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

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

TEST INFORMATION

Mandrel Bend Test ASTM D522-93a	Passed	Mandrel Size 1" Test Temp -60°F (-51°C)
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MIXING & THINNING

Thoroughly agitate the "B" components of this product prior to application. Use an 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. The polyol "B" component must be thoroughly power mixed each day, prior to use. Contact an SPI technician regarding proper mixing equipment.

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 substrate. Consult technical service personnel for specific primer recommendations and substrate preparation procedures.

DRAGONSHIELD™ BC can be sprayed over a broad range of ambient and substrate temperatures. Contact technical service personnel 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.

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

RECOMMENDED EQUIPMENT SETTINGS

- Standard 1: 1 ratio, heated, plural-component equipment developing a minimum of 2500 psi (17 mpa) dynamic pressure with heating capabilities to 175°F (79°C) will adequately spray this product. These include SPI-Gusmer 25/25 HP, and Gusmer 20/35. Gun models include GUSMER GX7-400, and GUSMER GX8.
- Pre-heated 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) 20.7 mpa), utilizing an impingement mix gun such as a Gusmer GX7 gun, Gusmer GX7-400 or Gusmer GX8 gun.

LIMITATIONS

- This product is for professional use only.
- This product must be stored at temperatures between 60° - 90°F (15° - 32°C).
- Apply product when surface and air temperatures are above 40°F (5°C) and the surface temperature is at least 5°F (3°C) above dew point and rising.
- Liquid temperature in drums during application 70° - 100°F (21° - 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.

GENERAL SAFETY, TOXICITY, & HEALTH

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

WARNING: Contact with skin or inhalation of vapors may cause an allergic reaction. Avoid eye contact with liquid or spray mist. Hypersensitive persons should wear protective clothes, gloves and use protective cream on face, hands and other 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 eye wear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield.

SKIN PROTECTION: Personal protective equipment for the body should be selected based on the task being performed; the risks involved, and should be approved by an industrial hygiene specialist before handling this product. Chemical resistant gloves are recommended. Cover as much of the exposed skin area as possible with appropriate clothing.

RESPIRATORY PROTECTION: Harmful if inhaled and may cause allergy or asthma symptoms. 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 when 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.

WARRANTY & DISCLAIMER

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

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