

DESCRIPTION

SPI's patented DRAGONSHIELD™ BC represents a breakthrough in plural-component spray applied polymer technology. This ultra high-strength 100% pure 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 (149°C).
- Excellent abrasion resistance.

*SPIAE-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.



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.

TYPICAL PHYSICAL PROPERTIES*

Tensile Strength ASTM D412	± 5,579 psi (38 MPa)
Elongation ASTM D412	± 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
Exposure Temperature**	-40°F - +200° (-40°C - +93°C)

CURING SCHEDULE

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

* All cured film properties are approximate since processing parameter, ad-mixture types, and quantities change physical properties of the cured elastomer. Elevated temperatures will accelerate the curing process and shorten the re-coat window.

** Test performed in a dry, static environment.

*** Complete polymerization to achieve final strength can take up to several days or weeks, depending on a variety of conditions or product type. 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 (17 MPa) dynamic pressure at the gun. Proportioning machine primary heater and hose heat 170°F (77°C) Gusmer Gap gun with 00 chamber.

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 ± 25 mPa.s B: 225 ± 25 mPa.s
Shelf Life Unopened Containers @ 60 - 90°F (15 - 32°C)	6 Months

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

TEST INFORMATION

Mandrel Bend Test ASTM D522-93a	Passed	Mandrel Size 1" Test Temp -60°F (-51°C)
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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, with all aromatics, color change and superficial oxidation will occur. SPI aliphatic polyurea, urethane, polyaspartic, and other suitable topcoats can be used where long-term color stability and increased longevity in full sun exposure are of critical importance. SPI 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).

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 air specific 2" bung hole provided on all "B" drums. Care must be taken not to cross contaminate the individual components with the mixing equipment; for best mixing results, supply the SPI mixer with 25 cfm of air at 100 psi. Thinning is not required. Using any thinner may adversely affect product performance.

PACKAGING

This product is sold in standard 110 gallon drum sets and 550 gallon tote sets. Available in other container sizes. Contact SPI sales representative for further information. Non-standard containers may require a longer lead time.

GENERAL APPLICATION INSTRUCTIONS

Apply DRAGONSHIELD™ BC only to clean, dry, sound surfaces free of loose particles or other foreign matter. DRAGONSHIELD™ BC can be sprayed over a broad range of ambient and substrate temperatures. It is recommended that DRAGONSHIELD™ BC be sprayed in multi-directional (north/south - east/west) passes to ensure uniform thickness.

Contact SPI technical service personnel for specific surface preparation for your application.

COMMON SUBSTRATES:

STEEL: 4-5 mil anchor profile is best for maximum adhesion and varies per application and conditions; adhere to proper SSPC standards.

NON-FERROUS METALS: Prepare surface in accordance to SSPC-SP16 (Brush-off Blast Cleaning of Non-Ferrous Metals), It is imperative that the user perform their own adhesion tests. Contact SPI technical service personnel for more information.

WOOD: Apply polyurea onto a clean, dry, and sanded surface; free from burrs, splinters and loose debris. (It is recommended to prime wood and other porous surfaces before application of heated, fast-set polyureas to reduce pin holing).

CONCRETE: Prepare concrete in accordance with SSPC/NACE Standards and SPI Concrete Prep Guide.

PREVIOUSLY APPLIED COATINGS: SPI recommends UB™ (ULTRA BOND™) products over existing coatings that are past the recoat window and/or application over other coatings. Contact SPI for additional information and to learn more about UB™ products.

On all above listed substrates and others, please contact SPI Sales or Technical Support for more information specific to your application, including industry standards such as SSPC and NACE. **Adhesion tests are always recommended prior to application.**

RECOMMENDED EQUIPMENT SETTINGS

MACHINES:

GRACO (Gusmer, Glass-craft)	<ul style="list-style-type: none"> E-XP2 H-XP2 H-XP3 	
PMC	<ul style="list-style-type: none"> PHX-40 	

GUNS:

GRACO (Gusmer, Glass-craft)	<ul style="list-style-type: none"> Fusion MP GX7-DI GX7-400 	
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- Standard 1:1 ratio, heated, plural-component equipment developing a minimum of 2500 psi (13.9 MPa) dynamic pressure with heating capabilities to 165°F (74°C) will adequately spray DRAGONSHIELD™ BC.
- Machines capable of producing a higher dynamic psi may be required depending on the service environment the DRAGONSHIELD™ BC will be exposed to. Consult SPI technical service personnel for additional information.

- Primary heater temperature 160-170°F (71-77°C)
- Hose temperature 160-170°F (71-77°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); utilizing an impingement mix gun such as MP Fusion or GX7-DI gun.
- Do not use mixing chambers with output greater than 1.5 gallons per minute. Consult SPI technical service personnel for additional information.

If you own a machine that is not listed above please contact your SPI representative for information and instructions.

LIMITATIONS

- DRAGONSHIELD™ BC is for professional use only. User must be proficient in the application of DRAGONSHIELD™ BC and the use of the high pressure heated plural component equipment used to apply it.
- DRAGONSHIELD™ BC must be stored at temperatures between 60° - 90°F (15° - 32°C).
- Apply DRAGONSHIELD™ BC 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 containers/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.

For the most up to date technical data sheet and/or safety data sheet visit our website at www.specialty-products.com

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, CO₂ 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 complying with applicable health and safety standards shall be worn when handling this product. Cover as much of the exposed skin area as possible with appropriate clothing. Refer to safety data sheet (SDS).

RESPIRATORY PROTECTION: Harmful if inhaled and may cause allergy or asthma symptoms. Ensure adequate ventilation. If the respirator is the sole means of protection, use a full-face supplied respirator. Use respirators and components tested and approved under appropriate government standards such as OSHA 29CFR 1910.134, NIOSH (US), or CEN (EU). Consider the application and environmental concentrations when deciding if additional protective measures are necessary



SEAMLESS SOLUTIONS FOR OVER 40 YEARS



WARRANTY & DISCLAIMER

VF Specialty Products 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. VF Specialty Products 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. VF SPECIALTY PRODUCTS, INC. MAKES NO WARRANTY OF MERCHANTABILITY OF THE PRODUCT OR OF FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE. VF Specialty Products makes no warranty as to the quality of any product modified, supplemented, tinted, or altered in any way after it leaves the manufacturing plant. VF Specialty Products 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 VF Specialty Products 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 VF Specialty Products replace any nonconforming product at no cost to buyer, is conditioned upon buyer notifying VF Specialty Products or its distributor in writing of such defect within thirty days of the discovery of such defect. VF Specialty Products 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. The information herein is believed to be reliable, but unknown risks may be present. VF Specialty Products makes no warranties, expressed or implied, including patent warranties or warranties of merchantability or fitness of use, with respect to products or information set forth herein. Nothing contained herein shall constitute permission or recommendation to practice any invention covered by a patent without a license from the owner of the patent. Accordingly, the buyer assumes all risks whatsoever as to the use of these materials and buyer's exclusive remedy as to any breach of warranty, negligence, or other claim shall be limited to the purchase price of the materials. Failure to adhere to any recommended procedures shall relieve VF Specialty Products of all liability with respect to the materials and the use thereof.

SPI The Single Source Solution Since 1974
Serving the Plural-Component Industry

Product & Equipment Technical Assistance
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SPI Media



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