

GreenTuff AR

Polyurea Protective Coating



Overview

GreenTuff AR is a fast setting, rapid curing, 100% solids, flexible, aromatic, two component, spray polyurea that can be applied to suitably prepared concrete and metal surfaces. It has extremely fast gel time making it suitable for applications down to -20°F (-28.89°C). It may be applied in single or multiple applications without appreciable sagging and is relatively insensitive to moisture and temperature allowing application in most temperatures. GreenTuff AR offers a tack free time of less than sixty seconds and exhibits 400% ± 50% elongation upon curing with 50 Shore D hardness.

Features

- Coats Carbon or Mild Steel Metals Without Primer
- Elastomeric
- Excellent Thermal Stability
- Good Chemical Resistance
- Installed With or Without Reinforcement in Transitional Areas
- Low Temperature Flexibility
- Meets USDA Criteria
- Odorless
- Seamless
- Zero VOC (100% Solids)

Typical Uses

- Cold-Storage Facilities
- Fertilizer Plants
- Food-Processing Plants
- Industrial and Manufacturing Facilities
- Landfill Containment
- Manholes
- Marine Environments
- Mining Operations
- Paper and Pulp Mills
- Parking Garage Decks
- Pen Stocks
- Power Plants
- Refineries
- Secondary Containment
- Structural Steel
- Walkways and Balconies
- Warehouse Floors

Packaging

10-gallon kit 5 gallons (18.9 liters) Side-A and 5 gallons (18.9 liters) Side-B

100-gallon kit 50 gallons (189 liters) Side-A and 50 gallons

(189 liters) Side-B

Mix Ratio by Volume	1A : 1B
Pot Life @150-160°F (65.5-71°C), 50% R.H.	4-8 seconds
Tack Free Time (thickness & substrate temperature dependent)	45-60 seconds
Recoat Time	0-6 hours
Viscosity at 150-160°F (65.5-71°C) Side-A Side-B	100 ± 20 cps 50 ± 20 cps
Density (Side-A & Side-B Combined)	8.81 lbs/gal
Flash Point	> 200°F (93.3°C)
Hardness, ASTM D2240	50 ± 5 Shore D
Tensile Strength, ASTM D412*	3000 ± 200 psi 20.68 ± 1.37 MPa
Elongation, ASTM D412*	400 ± 50%
Tear Strength, ASTM D624*	450 ± 50 pli 78.8 ± 8.8 kNm
Service Temperature - Dry	-40°F to 250°F -40°C to 121°C
Service Temperature - Wet	40°F to 120°F 4.44°C to 48.89°C
Water Vapor Permeance (Procedure B) ASTM E96	0.88 perm-inch
Volatile Organic Compounds, (Side-A & B combined) ASTM D2369-81	0 lbs/gal 0 lbs/gal
Minimum Applied Thickness	1 mm
Return to Service: Foot Traffic	1 - 4 hours
Return to Service: Full Service	> 24 hours
Taber Abrasion Resistance, ASTM D4060 (CS17 wheel, 1000 cycles, 1 kg load) (maximum)	6 mg loss
Hydrostatic Pressure Test, ASTM D5385-93106,	Pass Hold 100 psi
Crack Bridging, ASTM C1305 (10 cycles @-15°F [-25.5°C], Rate 0.125 inch/hr, Ext. -0.125 inch)	Pass
Volume Resistivity, ASTM D257	6.0 x10 ¹² ohm.cm
Water Absorption, ASTM D471 (maximum 74°F or 23°C, 24 hours)	< 2%
Impact Resistance @ 77°F or 25°C (ASTM G14)	> 150 in. lbs
Pull-Off Strength (minimum), ASTM D4541, Inter-Coat Adhesion (within recoat time)	Excellent
Concrete (Shot Blasted and Primed), substrate failure occurred	>500 psi (3.4MPa)
Steel (90 µm blast profile)	>900 psi (6.2 MPa)
Lineal Shrinkage	1 - 2%
Flexibility (1/8" 3mm Mendrel Bend Test),	
Resistance to Weathering, ASTM G-23 (Type QUV Weatherometer-3000 hrs exposure)	No cracking or blistering. Color change, gloss reduction & chalking are noted.
Fire Test, ASTM E108 (Non Combustible Surface)	Pass Class A

*These physical properties from sample sprayed with Graco EXP2 @ 2000 psi minimum, with Fusion Gun AR4242 @ 150-160°F (65°C to 71°C). Different machine and parameter will change these properties. User should perform their own independent testing as properties are approximate.



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Colors

Clear/Neutral. Custom colors are available upon request. Color Packs, when used, must be added to Side-B. Due to its aromatic composition, GreenTuff AR will tend to yellow or darken in color and will become flat after exposure to UV light. A topcoat can be applied to GreenTuff AR within six hours of application with an aliphatic polyurethane/polyurea coating for a colorfast finish.

Coverage

GreenTuff AR may be applied at any rate to achieve desired thickness. Theoretical coverage for 1 mil (0.254 microns) thickness is one gallon per 1600 sqft (3.78 liters per 149 sqm). Estimating Formula: (1600 sqft per gal /Dry Mil Thickness) x Solids Content = Application Rate per gallon.

Surface Preparation

In general, coating performance and adhesion are directly proportional to surface preparation. Most failures in the performance of surface coatings can be attributed to poor surface preparation. Polyurea coatings rely on the structural strength of the substrate to which they are applied. All surfaces must be free of dust, dirt, oil, grease, rust, corrosion and other contaminants. When coating previously used substrates, it is important to consider the possibility of substrate absorption, which may affect the adhesion of the coating system, regardless of the surface preparation. Green Shield Products recognizes the potential for unique substrates from one project to another and the following information is for general reference. For project specific questions, contact your Green Shield Products representative.

NEW AND OLD CONCRETE

Refer to SSPC-SP13/NACE 6, or ICRI 03732: CSP 3-5. New concrete must be cured for 28 days prior to product application. Surface must be clean, dry, sound and offer sufficient profile for product adhesion. Remove all dust, dirt, oil, form release agents, curing compounds, salts, efflorescence, laitance and other foreign matter by shotblasting and/or suitable chemical means, in accordance with local chemical regulations. Rinse thoroughly to achieve a pH between 8.0 and 11.0. Allow to dry completely. If old concrete has a surface that has deteriorated to an unacceptably rough surface, When coating polystyrene, do not use a solvent based primer. d should be used as a repair agent for cracks, spalls, bug holes and voids. Upon full cure of the repair agent, prime the entire surface intended for coating.

CONCRETE SURFACE PREPARATION REFERENCE

ASTM D4258 - Standard practice for cleaning concrete.
ASTM D4259 - Standard practice for abrading concrete.
ASTM D4260 - Standard practice for etching concrete.
ASTM F1869 - Standard test method for measuring moisture vapor emission rate of concrete.
ICRI 03732 - Concrete surface preparation.

WOOD

All wood should be clean, dry and free of any knots, splinters, oil, grease or other contaminants. Splintered or rough areas should be sanded. Knots should be repaired using GreenSlope. Upon full cure of the repair agent, prime the entire surface intended for coating.

STEEL (ATMOSPHERIC AND IMMERSION EXPOSURE)

Remove all oil, grease, weld spatters and round off any sharp edges from surface. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Optimum surface profile is 2-3 mils. Prime and shoot **GreenTuff AR** onto any bare metal the same day as it is cleaned to minimize any potential flash rusting.

ALUMINUM

Aluminum should be blasted with aluminum oxide or sand, and not with steel or metal grit. Excessive blasting may result in a warped or deformed surface. After blasting, wash aluminum with a commercially available aluminum cleaner. Allow to dry, then prime.

BRASS AND COPPER

Brass and copper should be blasted with sand, and not with steel or metal grit. Remove all dust and grease prior to applying primer.

GALVANIZED SURFACES

Clean and degrease any contaminated surfaces before priming. Do not blast galvanized surfaces with an abrasive grit. An adhesion test is recommended prior to starting the project.

FIBERGLASS REINFORCED PLASTIC

The gel coat should be lightly blasted or sanded with 80 grit sandpaper and cleaned.

PLASTIC FOAMS

Enhanced adhesion is obtained when the foam is mechanically abraded. When coating polystyrene, do not use a solvent based primer.

TEXTILES, CANVAS, FABRICS

Adhesion to most fabrics, geothermal membranes and textiles does not require a primer.

STAINLESS STEEL

Stainless steel may be grit blasted and degreased before priming. Some stainless steel alloys are so inert that it is not possible to achieve a satisfactory bond. An adhesion test is recommended prior to starting the project.



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NEW AND OLD CAST IRON

Blast with a steel grit and degrease before priming. Old cast iron is difficult to prepare for a satisfactory bond. It can absorb oil and water soluble contaminants that will keep returning to the surface after the coating system has been applied and affect the coating system adhesion. An adhesion test is recommended prior to starting the project.

ALL OTHER SURFACES

An adhesion test is recommended prior to starting the project.

Mixing

GreenTuff AR may NOT be diluted under any circumstances. Thoroughly mix GreenTuff AR Side-B with air driven power equipment until a homogeneous mixture and color is attained.

Application

Both Side-A and Side-B materials should be preconditioned to 75-80°F (24-27°C) before application.

Recommended surface temperature must be at least 5°F (3°C) above the dew point.

GreenTuff AR should be applied using a plural component, heated, high pressure 1:1 spray mixing equipment. Both Side-A and Side-B materials should be sprayed at a minimum of 2000 psi and at temperatures above 150°F (66°C).

Adequate pressure and temperature should be maintained at all times. GreenTuff AR should be sprayed in smooth, multidirectional passes to improve uniform thickness and appearance.

Storage

GreenTuff AR has a shelf life of one (1) year from date of manufacture in original, factory-sealed containers when stored indoors at a temperature between 60-95°F (15-35°C). Side-A and Side-B drums are recommended to be stored above 60°F (15°C). Avoid freezing temperatures. Store drums on wooden pallets to avoid direct contact with the ground. If stored for a long period of time, rotate Side-A and Side-B drums regularly.

Limitations

Do not open until ready to use. Both Side-A and Side-B containers must be fitted with a desiccant device during use.

Warning

This product contains Isocyanates and Curative Material.



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