

# GreenTuff FR



## Overview

GreenTuff FR is a fast-setting, spray-applied, two-component, 100% solids polyurea base coating. When used in conjunction with an acrylic, silicone or polyurethane top coat, this durable base coating system provides protection for spray polyurethane foam (SPF) roofing systems against heavy abuse or hail events.

## Features and Benefits

- Durable protectant
- Easy to apply Fire Resistant
- VOC-free, meets even the most stringent VOC regulations.
- Cure rate optimized for excellent leveling.
- Excellent adhesion to most surfaces

## Installation

1. All surfaces to be coated must be clean, dry, and paintable. It may be necessary to power wash and/or prime to enhance adhesion.
2. Thinning or reducing is not recommended. Product may separate after shipping and storage, though it may still look mixed. Mix well before using. It is recommended to use a 3/4 horsepower or larger air-operated mixer with a blade capable of uniformly mixing the entire container.
3. This product must be sprayed with a plural component spray gun designed for coating applications, through plural component proportioning equipment rated for at least 3,000 psi and capable of producing a minimum of 2,500 psi at the spray gun head. Preheater and hose temperatures should be set to 150°F (65°C).
4. This product may be applied directly to any clean, dry surface. SPF should be coated within 24 hours of application.
5. Subsequent coats should be applied within 12 to 24 hours of prior applications to ensure full and uniform adhesion. Coating may be applied in 2 or 3 applications, each applied at right angles to the previous coat. Coating must be evenly applied and pinhole-free. Before applying a subsequent coat of this product, the previous coat must be completely dry and cured.
6. Cleanup of spray equipment containing uncured material may be accomplished by flushing with xylene.

## Precautions

- It is recommended that any subsequent coats over GreenTuff FR be completed within 12 to 24 hours to ensure good adhesion. Priming may be required if GreenTuff FR is exposed for more than 24 hours.

- GreenTuff FR is not recommended directly over modified bitumen, asphalt, or coal tar built-up roofing systems without a bleed blocking primer.
- See Safety Data Sheet (SDS) for complete safety information.

## Shipping Information

Container Size	DOT Classification	Class
55 Gal.	Roof Coating, Not Regulated. NFMF #170080	55

## Colors

GreenTuff FR standard color is gray

Note: GreenTuff in continuous full-light exposure, white or very light colors will change over a period of time. Aliphatic urethane, Silicone and other suitable topcoats can be used where long-term aesthetics are of critical importance.

## Typical Physical Properties

Property	Test Method	GreenTuff
Tensile Strength	ASTM D638	± 2,800 psi (26 MPa)
Elongation (break)	ASTM D638	± 450%
Tear Resistance	ASTM D624	370 PLI (52.53 KN/m) ± 50
Permeability	ASTM E96	Procedure B 5.9
Temperature Stability		Range -80 °F to 350°F (-37°C to 177°C)
Low Temperature Flexibility (pass-fail)	ASTM D522 Method B	Pass – Tested 180° around mandrel @ -15°F (-26.1°C)
Tack Free Time	Temp. & Humidity Dependent	30-60 sec.
VOC	EPA Method 24	0 grams/L
Durometer Hardness	ASTM D2240	Shore D 50 points
Solids Content by Weight	ASTM D1644	100%
Solids Content by Volume	ASTM D2697	100%
Fire Resistance	ASTM E84	25 FSI/200 SDI
Flash Point	ASTM D93	> 105°F (40°C)
Cure Time		10 min – 2 hours
Shelf Life		(UNOPENED CONTAINERS): 6 months when stored between 35°F and 75°F (1.6°C and 24°C)

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.



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## General Application Instructions

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

Contact GSP 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.

**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 Concrete Prep Guide.

**NOTE:** It is recommended that existing surfaces be power washed with 2500—3500 psi water pressure to enhance adhesion of GreenTuff FR. If there is a possibility of surface contamination, scrub with a solution of 1/4 tsp Dawn detergent and 1 tbsp of vinegar, per 1 gallon of warm water. Follow with a thorough water rinse. If there is oxidation on the surface of the existing substrate; it must be removed prior to application of GreenTuff FR. Removal of oxidation can be done via mechanical methods to insure the GreenTuff has a sound substrate to adhere to.

On all above listed substrates and others, please contact GSP 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.

## Mixing & 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.

- Standard 1:1 ratio, heated, plural-component equipment developing a minimum of 1700 psi (11.72 MPa) dynamic pressure at the gun with heating capabilities to 170°F (77°C) will adequately spray GreenTuff FR.
- Machines capable of producing a higher dynamic psi may be required depending on the service environment the GreenTuff FR will be exposed to. Consult GSP technical service personnel for additional information.
- Proportioning machine primary heater temperature for application is 70°F (21°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 GSP technical service personnel for additional information.
- If you own a machine that is not listed above please contact your GSP representative for information and instructions.

## Limitations

- GreenTuff FR is for professional use only.
- GreenTuff FR must be stored at temperatures between 60—90°F (15—30°C).
- Liquid temperature in containers/drums during application 70—100°F (21—38°C).
- Apply GreenTuff FR 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.
- Avoid moisture contamination in containers. Containers should not be released if contamination is suspected. CO<sub>2</sub> 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 a two component system (component “A”/component “B”, which is used to formulate this product. 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.greenshieldproducts.com](http://www.greenshieldproducts.com).



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## 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. GSP 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 GSP technical service personnel for additional information.

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

### EMERGENCY NUMBER 1-800-424-9300 INT'L 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 other exposed areas.

**CLEAN UP:** Use DPM, NMP, and Polyclean.

**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. 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 issue.



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