



# TuffDeck™ FC

## HFST Epoxy Binder

### 1.01 DESCRIPTION

TuffDeck™ FC is a 1:1 ratio, 100% solids, low modulus, adjustable to temperature viscosity, moisture tolerant, rapid setting, epoxy binder and multi-purpose adhesive. Formulated as a Single or Multi-layer High Friction Surface Treatment System to produce friction on demand to treated asphalt and concrete substrates. Please use the correct product grade that complies with VOC regulations as per federal, state, county and city regulations/codes at the place of installation of product.

### 1.02 USES

Use neat as the epoxy binder adhesive to bond calcined bauxite or other approved aggregates to cured asphalt and concrete pavements. All aggregates must comply with Federal and State HFST specifications.

### 1.03 FEATURES

- Friction on demand to reduce roadway departures and save lives
- Creates a below aggregate protection layer to reduce salt and water intrusion
- Mend cracks on HFST applications – apply neat
- Use as the binder resin for epoxy mortar for concrete repair
- Excellent adhesion
- High Strength Development
- Reduced Closure Time
- No Primer
- 1:1 by volume mix ratio

### 1.04 TECHNICAL DATA

ASTM C881, Type III, Grade 2, Classes B & C. AASHTO M235 specification.

### 1.05 COLOR

Clear to light amber.

### 1.06 PACKAGING

10-gallon kit: 5-gallon (18.9 liters) pail of Side-A and 5-gallon (18.9 liters) pail of Side-B

110-gallon kit: 55-gallon (104 L) drum of Side-A and 55-gallon (105 L) pail of Side-B

500-gallon kit: 250-gallon (946 liters) tote of Side-A and 250-gallon (946 liters) tote of Side B

### 1.07 COVERAGE

Automated Application Vehicle: Apply the binder resin at a rate of 3-4 gallons/100 sq.ft. (1.21-1.63 liters/sqm) or 25-33 sq. ft./gallon giving a uniform thickness of 50-65 mils (1270-1574 microns). Apply the calcined bauxite within 3 ±1 seconds of the base resin binder application onto the pavement. Application rate for automated application: 1500 – 2000 sq. yd. / hour.

### Multi-Layer Bridge Deck Preservation Specification:

#### Layer 1:

2 1/2 gallons/100 sq. ft (1 gallon /40 sq. ft or 1 liter/sqm)  
Aggregate – 10 lbs./sq. yd (0.5 kg/sqm)

#### Layer 2:

5 gallons per 100 sq. ft (1 gallon /20 sqft or 2.01 liters/sqm)  
Aggregate – 14 lbs./sq. yd (0.75 kgs/sqm)

### 1.08 PREPARATION

The concrete and asphalt must be a minimum of 30 days old, sound and free of all foreign material, including oil, grease, dust, laitance or other surface contaminants. Mechanically abrade all concrete surface by grinding, abrasive blasting, or shot blasting to a CSP 3-5 per ICRI. No standing water. Concrete moisture levels are recommended to be less than 5 %. Condition material to 65°F - 85°F for best practice and results.

### 1.09 MIXING

Condition material to 65–85°F (18–29°C) for ease of mixing and optimum flow prior to using.

Quality Control Pre-Test Application: Premix each side or thirty seconds, then place 1 part by volume of Side A and 1 part by volume of Side B into a clean pail and mix for three minutes at a low speed using either the PSI's **Rapid Pail Mixer** "or" a 1/2+ hp heavy-duty drill with the PSI's **"Jiffy" Paddle** utilizing the PSI's **1 Man Stand**. Mix only what can be used within the pot life.

### 1.10 APPLICATION

Surface and ambient temperature must be a minimum of 50°F (10°C). Utilize one of the following methods for the application of **TuffDeck™ FC** and aggregate wearing course.

1. **AUTOMATED CONTINUOUS APPLICATION:** Automated continuous application must be installed by an automated continuous placement vehicle with a minimum of 1000 gallons of the polymer resin binder. The installation equipment must continuously mix, heat, meter, monitor and apply the polymer resin binder in a continuous pass as one lift or layer.
2. **MECHANICAL MIXING AND APPLICATION:** **TuffDeck™ FC** can be applied by a truck mounted application machine onto the pavement section to be treated in varying widths at a uniform

application thickness. Operations shall proceed in such a manner that will not allow the **TuffDeck™ FC** to separate in the mixing lines, cure, dry, or otherwise impair retention bonding of the high friction surfacing aggregate. The mixed components shall be applied mechanically onto the prepared pavement surface at a minimum a rate of 3-4 gallons/100 sq. ft (1.21-1.63 liters/sqm) or 25-33 sq. ft/gallon for a one coat system. Immediately, spread the high friction surfacing aggregate onto the installed **TuffDeck™ FC** epoxy base binder, at a minimum rate of 1-1.5 lb./sq. ft (0.454-0.68 kg/sqm).

3. **HAND MIXING AND APPLICATION:** The **TuffDeck™ FC** components, Side A and Side B, shall be premixed and proportioned to the correct ratio, 1:1. Mix material using a low speed, high torque drill fitted with the PSI's "Jiffy" Paddle or a helical stirrer. This method shall be used where truck mounted application machines are not applicable to the specified locations because of logistics and restrictions. The mixed components shall be hand applied onto a prepared pavement surface at an application coverage rate of 2 ½ gallons per 100 sq. ft (1 liter/sqm) or 40 sq. ft/gallon. Hand applied base binder shall be uniformly spread onto the substrate surface by means of a (1/4) notched squeegee. Immediately, spread the high friction surfacing aggregate onto the epoxy at a minimum rate of 10 lbs./sq. yd. After the initial cure of the first course, remove all excess aggregate and apply course #2, spreading the neat **TuffDeck™ FC** at a coverage rate of 5 gallon/100 sq. ft (2.01 liter/sqm) or 20 sq. ft/gallon once again broadcasting the select aggregate to the point of rejection. After allowing the system to cure – 2.5 hrs. for course #1 and 4 hrs. for course #2 @ 70°F (22°C) and after all the aggregate, open to traffic.

### 1.11 CURING

Minimum Curing Times: weather average temperature of deck, epoxy, and aggregate components:

80°F + (26.67 °C+)	2.5 Hours
75°F (24 °C)	3 Hours
70°F (21.1 °C)	4 Hours
65°F (18.3 °C)	5 Hours
60°F (15.56 °C)	6 Hours

Cold Temperature Formula Available Upon Request.

*>It is highly recommended that all components be conditioned in advance of use to 75°F (24°C). This may take 48 hrs. It is to the contractors benefit to maintain the components at elevated temperatures Lower temperatures affect resin viscosity and increase curing time. Do not place the High Friction Surface Treatment if applied epoxy and aggregate cannot be cured within 3 hours of placement.*

### 1.12 CLEAN UP

Clean tools before the epoxy sets up using Acetone or PSI's EnviroClean™

### 1.13 STORAGE & SHELF LIFE

The material should be stored between 40-95°F (5-35°C) in a cool, dry area away from direct sunlight. Shelf life of properly stored, unopened containers is 24 months. Excessive temperature differential and/ or high humidity can shorten the shelf life expectancy.

### 1.14 LIMITATIONS

Minimum substrate temperature is 50°F (10°C). Do not thin. Solvents will prevent proper cure. Use oven-dried aggregate. Material is a vapor barrier after cure. Do not place **TuffDeck™ FC** on magnesium phosphate cement concrete.

Maximum substrate and ambient temperature is 95°F (35°C) for hand mix or mechanical mixing installations.

### 1.15 SAFETY

Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water.

Inhalation: Remove person to fresh air.

Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist. Obtain, read, and understand the Safety Data Sheet (SDS) before use of this or any other **Poly-Tuff Systems International** product.

### 1.16 CAUTION

Side A – Irritant Side B – Corrosive

Product is a strong sensitizer. Use with adequate ventilation. Wear protective clothing, gloves and eye protection (goggles, safety glasses and/or face shield). Keep out of the reach of children. Do not take internally. In case of ingestion, seek medical help immediately. May cause skin irritation upon contact, especially prolonged or repeated. If skin contact occurs, wash immediately with soap and water and seek medical help as needed.

If eye contact occurs, flush immediately with clean water and seek medical help as needed. Dispose of waste material in accordance with federal, state and local requirements.

**READ SAFETY DATA SHEET PRIOR TO USING PRODUCT.**

**KEEP OUT OF THE REACH OF CHILDREN.**



1.17 PHYSICALS	
Viscosity	2000 cps @ 77°F (25°C)
Gel Time (60 g mass)	25 minutes
Tack Free Time (73°F or 23°C)	3 to 5 hours
Tensile Properties (ASTM D638)	7 day cure
Tensile Strength	2800 psi (19.3 MPa)
Tensile Elongation	40%
Bond Strength (ASTM C882)	
2 day cure	2000 psi (13.8 MPa)
14 day cure	2800 psi (19.3 MPa)
Compressive Properties (ASTM D695)	7 day cure
Compressive Strength	5000 psi (34.5 MPa)
Compressive Modulus	110000 psi (760 MPa)
Compressive Strength (ASTM C579)	
3 hour cure	1500 psi (10.3 MPa)
24 hour cure	5000 psi (34.5 MPa)
Bond Strength (ASTM C1583/ACI 503R)	300 psi (2.0 MPa)
Flexural Strength (ASTM D790)	3000 psi (20.9 MPa)
Shrinkage on Cure (ASTM D2566)	0.20%
Thermal Compatibility (ASTM C884)	Pass
Heat Deflection Temperature (ASTM D648)	120°F (49°C)
Water Absorption (ASTM D570)	0.2% (24 hr)
Chloride Ion Permeability (AASHTO T277)	0.0 coulomb

Please read all information in the General & Safety Guidelines, Technical Data Sheets, Guide Specifications and Safety Data Sheets (SDS) before applying material. PSI Products are for "Professional Use Only" and preferably applied by professionals who have prior experience with the PSI Products or have undergone training in application of PSI Products. Published technical data and instructions are subject to change without notice. Contact your local PSI representative or visit our website for current technical data, instructions, and project specific recommendations. Not responsible for typographical errors.

**LIMITED WARRANTY**

PSI warrants its products to be free of manufacturing defects and that they will meet PSI current published physical and chemical properties. Seller's sole responsibility shall be to replace that portion of the product which proves to be defective. There are no other warranties by PSI of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. PSI shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. PSI shall not be responsible for use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee is being issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects are also excluded from the limited warranty. PSI reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.

**DISCLAIMER**

All guidelines, recommendations, statements, and technical data contained herein are based on information and tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. It is the user's responsibility to satisfy himself, by his own information and test, to determine suitability of the product for his own intended use, application and job situation and user assumes all risk and liability resulting from his use of the product. We do not suggest or guarantee that any hazard listed herein are the only ones which may exist. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements, whether in writing or oral, other than those contained herein shall not be binding upon the manufacturer, unless in writing and signed by a corporate officer of the manufacturer. Technical and application information is provided for the purpose of establishing a general profile of the material and proper application procedures. Test performance results were obtained in a controlled environment and PSI makes no claim that these tests or any other tests, accurately represent all environments.