



POLY-TUFF SYSTEMS
INTERNATIONAL
HIGHWAY DIVISION

E-TUFF® PASTE CFRP

CFRP Bonding Epoxy

1.01 DESCRIPTION

E-Tuff® Paste CFRP is a two component, high strength, moisture insensitive, high modulus, multi-purpose, non-sag, structural epoxy system designed to offer exceptional strength in anchoring and bonding applications. Please use the correct product grade that complies with VOC regulations as per federal, state, statutory bodies, county and city regulations/codes at the place of installation of product.

1.02 USES

- Anchoring Dowels, Bolts, Reinforcing Steel and Threaded Rods
- Setting Injection Ports and Sealing Cracks Prior to Epoxy Injection
- Vertical and Horizontal Structural Bonding and Patching

1.03 FEATURES

- Excellent Adhesion to Most Substrates
- Fast Set or Extended Pot Life Available
- High Abrasion and Shock Resistance
- Ideal for Vertical and Overhead Repairs
- Pick Proof Sealant

1.04 TECHNICAL DATA

E-Tuff® Paste CFRP meets the current ASTM C881 and AASHTO M235 Types I, II, IV & V Grade 3, Classes B & C specifications.

1.06 COLOR

Concrete Gray

1.07 PACKAGING

600 ml side-by-side cartridge

1500 ml side-by-side cartridge

1-gallon kit: 1/2 gallon (1.89 liters) of Side A and 1/2 gallon (1.89 liters) of Side B

2-gallon kits: 1 gallon (3.78 liters) of Side A and 1 gallon (3.78 liters) of Side B

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

1.08 COVERAGE GUIDE

Please see **E-Tuff® Paste CFRP** Installation section 1.11 for doweling and pasting.

CFRP Laminates: 100 sqft/gallon or 1 gallon/100 sqft (0.4 liters/sqm)

Flat Bonding: 125 sqft/gallon or 1 1/4 gallon/100 sqft (0.51 liters/sqm)

Crack Pasting: 50 sqft/gallon or 2 gallons/100 sqft (0.80 liters/sqm)

1 gallon yields: 231 cuin (0.00379 cum) of paste adhesive

1.09 PREPARATION

Surface Preparation: Surfaces to be bonded must be clean and structurally sound. Remove all oil, grease, dirt, laitance, curing compounds, and any other foreign matter by sandblasting, mechanical abrasion or hydro blasting.

Hole Preparation: Bolts, rebar or threaded rod should be free of dirt, grease, oil of other foreign material. DRILL hole to specified diameter

and depth; BLOW dust from the bottom of the hole with oil-free compressed air for at least four seconds; BRUSH clean with a nylon brush removing all dust and loose material; BLOW again from the bottom of the hole for at least four seconds. REPEAT BRUSH and BLOW procedures when necessary.

1.10 MIXING

Insert the cartridge into the dispensing gun. Remove the plastic caps and dispense a small amount of material until an even flow of black and white material is achieved. Place the mixing nozzle onto the cartridge then slide the nut over the nozzle and thread the nut onto the cartridge. To achieve maximum flow, break off the tip of the mixing nozzle to the largest diameter that will fit into the hole or screen. Dispense into a disposable container until a uniform gray is achieved with no streaks.

1.11 APPLICATION

Bonding: Apply the **E-Tuff® Paste CFRP** neat and work into the substrate. The glue line should not exceed 1/8" (0.3 cm).

Anchoring: For dry or damp hole, fill the hole 1/2 to 2/3 full from bottom up with **E-Tuff® Paste CFRP**. For water-filled hole, fill hole completely full from bottom up. Insert clean anchor turning slowly until the anchor contacts the bottom. DO NOT DISTURB anchor until **E-Tuff® Paste CFRP** has fully cured. The hole depth should be approximately 9 times the bolt diameter. The hole diameter should be approximately 1/8" (0.3 cm) larger than the threaded rod diameter. Ensure the holes are properly prepared, (drilled, brushed and blown out) prior to preparing the epoxy cartridge.

Into Concrete: Dispense the material from the bottom of the hole. Fill approximately 5/8 of the hole depth while slowly withdrawing the nozzle. Insert the bolt, or dowel by turning it slowly during insertion. After insertion, the hole should be completely filled with **E-Tuff® Paste CFRP** and devoid of all air pockets or voids. Do not disturb or bolt up until cured.

Into Hollow Block: The cartridge is prepared as for concrete. The mixing nozzle is inserted into the bottom of the screen. Completely fill the screen while withdrawing the nozzle. Insert the epoxy filled screen into the hole. Insert the threaded rod to the bottom of the screen while turning slightly clockwise. Do not disturb or bolt up until **E-Tuff® Paste CFRP** and devoid of all air pockets or voids. Do not disturb or bolt up until cured.

1.12 CLEAN UP

Uncured **E-Tuff® Paste CFRP** can be removed from tools and equipment with PSI's **EnviroClean™** or Isopropyl alcohol, xylene, or mineral spirits. Dispose of in accordance with local, state, and federal disposal

regulations. Mechanical removal is necessary for cured material.

1.13 SHELF LIFE AND STORAGE

The shelf life of properly stored **E-Tuff® Paste** is two years from date of manufacture in original unopened container. Store **E-Tuff® Paste CFRP** in its original containers and keep tightly closed. Do not allow the accumulation of water, dirt or other contaminants. Store at 40–90°F (4–35°C).

1.14 LIMITATIONS

- Always test a small amount of **E-Tuff® Paste CFRP** to verify that the product has been thoroughly mixed and will harden properly before proceeding.
- Do not thin with any solvent.
- Minimum substrate temperature is 40°F (5°C).
- Precondition **E-Tuff® Paste CFRP** to 65–95°F (18–35°C) for easy-dispersing.

1.15 CAUTION

Avoid breathing of vapors. Forced local exhaust is recommended to effectively minimize the exposure. NIOSH approved, organic vapor respirators and forced exhaust are recommended in confined areas, or when conditions (such as heated polymer, sanding, etc.) may cause high vapor concentrations. Do not weld on, burn or torch the **E-Tuff® Paste CFRP** or any epoxy material. Hazardous vapor is released when an epoxy is burned. Avoid skin or eye contact. Wash skin with soap and water if contact occurs. If eye contact occurs flush with water for 15 minutes and obtain medical attention. Read and understand all caution on can labels and safety data sheets (SDS) before using this material.

DO NOT EXPOSE TO OR APPLY NEAR FIRE OR FLAMES. FOR WELL VENTILATED OR EXTERIOR USE ONLY!

READ SDS PRIOR TO USING PRODUCT. FOR PROFESSIONAL USE ONLY.KEEP OUT OF REACH OF CHILDREN.MADE IN THE USA.

PROPERTIES	
Viscosity	Gel/Paste
Gel Time (ASTM 881)	12 Minutes
CURED PROPERTIES	
Initial Cure Time (73°F or 23°C)	2 to 3 hours
Final Cure	3 Days
Compressive Strength (ASTM D-695)	12,250 psi (84 MPa)
Compressive Modulus (ASTM D-695)	300,000 psi (2068 MPa)
Bond Strength at 1 Day (ASTM 882)	1,925 psi (13 MPa)
Bond Strength at 7 Days (ASTM 882)	2,850 psi (19 Mpa)
Elongation (ASTM D-638)	1.58%
Water Absorption (ASTM D-570)	0.1%
Heat Deflection (ASTM D-648)	140°F (60°C)
Viscosity	1/4" (0.65 cm) no-sag gel
Gel Time (60 g mass)	10 minutes
Tensile Strength	7,559 psi (51.7 MPa)
Tensile Elongation:	1.59%
Shear Strength (ASTM D732)	2,800 psi (19.3 MPa)
Shrinkage on Cure (ASTM D2566)	0.001
Thermal Compatibility (ASTM C884)	Pass
Heat Deflection Temperature (ASTM D648)	140°F (60°C)

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.

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.