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HJ3 Pipe Repair System

Description

The HJ3 Pipe Repair System is a high tensile strength Carbon Fiber reinforcing material specifically designed to repair pressure pipe. The system is sold with easy-to-use epoxy kits for the various stages of installation.

The system consists of the following:

- PC-200-PL – Two part primer coat epoxy
- TC-310-PL – Two part tack coat epoxy
- SR-400-PL – Two part saturant epoxy
- CF-528-PL – Bidirectional Carbon Fabric
 or, CF-516-PL – Unidirectional Carbon Fabric

TYPICAL DATA FOR HJ3 Carbon Fiber Composite	
STORAGE CONDITIONS	Store dry at 40°F-95°F
COLOR	Black

Suggested Uses

- Restore pipe back to its original hoop strengths
- Strengthening steel pipe for long service
- Repairing DOT regulated gas transmission pipe lines
- Strengthening steel pipe in petrochemical applications with extreme chemical and temperature exposure

Advantages

- Corrosion resistant
- No Hot Work
- No Shutdown for Installation
- Cost Effective Alternative over Pipe Replacement
- Wrap various pipe configurations including: Tees, Elbows, Welds and Straights
- Alternative to mechanical clamps and traditional steel repairs
- Reduces installation time since heavy equipment and welding is eliminated
- Flexible wrap conforms to any shape
- Minimal change to structure's shape, weight and appearance
- Used for increasing strength, stiffness, fatigue resistance of pipe up to, and at times beyond its initial design value

CF-516-PL - PHYSICAL STRENGTHS	TYPICAL VALUES	DESIGN VALUES	ASTM TEST METHOD
TENSILE STRENGTH (KSI)	145.8	108.6	D3039
MODULUS OF ELASTICITY (KSI)	12,523.0	9,361.0	D3039
EFFECTIVE PLY THICKNESS (IN.)	0.047		
CF-528-PL - PHYSICAL STRENGTHS	TYPICAL VALUES	DESIGN VALUES	ASTM TEST METHOD
TENSILE STRENGTH (KSI)	51.3	41.4	D3039
MODULUS OF ELASTICITY (KSI)	4,431	2,841	D3039
EFFECTIVE PLY THICKNESS (IN.)	0.051		



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Chemical Resistance

The HJ3 Pipe Repair System can be enhanced to include epoxies that offer superior chemical resistance. The table below shows a partial list of chemicals and the resistance offered by the HJ3 epoxies:

CHEMICALS	RESISTANCE
Acetic Acid - 10 - 50%	Good up to 100F, Occasional splash or spill
Benzene	Good up to 100F, Immersion, frequent spill, or condensing vapor
Chromic Acid - 10%	Good up to 140F, Fumes only, not condensating
Citric Acid	Good up to 100F, Immersion, frequent spill, or condensing vapor
Formic Acid - 50%	Good up to 100F, Occasional splash or spill
Hydrochloric Acid - 20%	Good up to 140F, Fumes only, not condensating
Jet Fuel JP-4	Good up to 100F, Immersion, frequent spill, or condensing vapor
Kerosene	Good up to 100F, Immersion, frequent spill, or condensing vapor
Nitric Acid - 10%	Good up to 120F, Occasional splash or spill
Phosphoric Acid - 85%	Good up to 140F, Fumes only, not condensating
Sulfuric Acid - 93 - 98%	Good up to 100F, Immersion, frequent spill, or condensing vapor

Abrasion Resistance

The HJ3 Pipe Repair System can also be enhanced to include an additive to the epoxies which greatly increases their abrasion resistance. The added product can create a base coat that will resist the abrasive contents of the pipe and protect the composite in the event of a through wall defect. The system can also be used as a top coat where the abrasive exposure is external. Below is a table that shows the abrasion resistance offered by the HJ3 epoxies:

ABRASION RESISTANCE
CS-17 Wheels, 1000 gm, 1000 cycles

Shipping

*Shipped FOB Tucson, AZ or through authorized distributors.



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Surface Preparation

The performance of HJ3'S High Strength Composite Systems is based upon establishing sufficient adhesion strength to a clean, smooth, structurally sound substrate. If Systems are installed over substandard or compromised surfaces, long-term performance and integrity will be jeopardized. HJ3 recommends an SSPC SP-10 Near White Metal prep for all steel pipe applications. Please reference HJ3 Surface Preparation Guides for more information.



Primer (PC-200-PL)

- Combine all of Part A & B together and mix for 3 minutes
- Use a roller or brush to apply
- Apply in 1 pass @ 5 -10 mils WFT
- Let this material go beyond a tacky state before applying TC-310-PL tack coat; usually about 30-45 minutes at 77F



Tack Coat (TC-310-PL)

- Combine all of Part A & B together and mix for 3 minutes
- Use a spatula, or hands, to apply this over the primed pipe
- Apply in 1 pass @ 60-80 mils where composite is to be installed
- Use this material to fill pits & voids and to build smooth transitions

Carbon Fabric (CF-528-PL or CF-516-PL) & Saturant Epoxy (SR-400-PL)

- Combine all of Part A & B together and mix for 3 minutes
- Saturate the carbon fabric strips (CF-528-PL) then apply them on to the TC-310-PL. *(The TC-310-PL can still be wet when applying the CF-528-PL)*
- Repeat steps for additional required layers

