

HJ3 Composite Technologies, LLC

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Store dry at 40°F-95°F

Black

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.

COLOR

STORAGE CONDITIONS

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

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

| TYPICAL VALUES | DESIGN VALUES | ASTM TEST METHOD |
|-------------------|---|---|
| 145.8 | 108.6 | D3039 |
| 12,523.0 | 9,361.0 | D3039 |
| 0.047 | | |
| TYPICAL VALUES | DESIGN VALUES | ASTM TEST METHOD |
| 51.3 | 41.4 | D3039 |
| 4,431 | 2,841 | D3039 |
| | | |
| | VALUES 145.8 12,523.0 0. TYPICAL VALUES 51.3 | VALUES VALUES 145.8 108.6 12,523.0 9,361.0 0.047 TYPICAL VALUES 51.3 41.4 |

TYPICAL DATA FOR HJ3 Carbon Fiber Composite

- 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



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. Bleow is a table that shows the abrasive resistance offered by the HJ3 epoxies:

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

Shipping

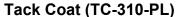
*Shipped FOB Tucson, AZ or through authorized distributors.

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



- Combine <u>all</u> 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 mills 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 <u>all</u> 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







