



TankWrap™ HT1 Repair System

TankWrap™ HT1 is a high strength bi-axial carbon composite system used for strengthening damaged or corroded tanks. TankWrap™ HT1 is designed to withstand elevated temperatures and harsh chemicals. TankWrap™ HT1 conforms to ASME PCC-2, ISO 24817, API 653 Annex J, DOT and ASME B31 for non-metallic repairs. TankWrap™ HT1 contains Zero VOC's.

Common Applications

- Petroleum Storage Tanks
- Wastewater Tanks
- Acid Tanks
- Caustic Tanks
- Shell Thinning
- Internal / External Corrosion
- Weld Defects

Benefits

- Unmatched Strength per ply = less layers, reduced cost, and faster installations
- No post-cure required
- Conforms to tees, elbows, and straights
- All Diameters
- Wide range of temperature and chemical resistance
- Can be machine saturated for large projects
- Custom packaging to handle any scope of work.

Typical Data & Physical Properties

Shelf Life & Storage Conditions			2 years in original factory sealed container. Store dry. Do not over stack boxes.	
Primer (TKW-200-HT1) Filler (TKW-350-HT1) Saturant (TKW-400-HT1) Fabric (TKW-528-CF)				
Color			Black	
Heat Distortion Temperature HDT (ASTM D648)			446°	230°C
Tensile Strength in Circumferential and Axial Directions (ASTM D3039)			77,000 psi	530 MPa
Young's Modulus in Circumferential and Axial Directions (ASTM D3039)			5,662 ksi	39,038 MPa
Poisson's Ratio (ASTM D3039)			0.091	
Elongation @ Break (ASTM D3039)			2.70%	
Single Ply Thickness			0.051 inches	1.30 mm
Lap Shear (ASTM D3165)			3,417 psi	23.6 MPa
Shear Modulus (ASTM D5379)			508,000	3,503 MPa
Flexural Strength (ASTM D790)			17,200 psi	118,590 kPa
Flexural Modulus (ASTM D790)			3,611,000 psi	24,897 MPa
Service Temperature Per ASME PCC-2 & ISO/TS- 24817			Type A Non- Leaking 348°F	Type B Leaking 330°F
Shore D Hardness (ASTM D2240)			78	
Thermal Expansion (ASTM E831)			3.65 x 10 in/in-deg F	6.57 x 10 in/in-deg C



Installation Procedures for TankWrap™

Design Specifications	
Certified Installer Company Name	
Certified Technician(s)	
HJ3 Design Case #	
Project Name	
Diameter (inches)	
Length of Repair (inches)	
Total Layers	

Material Handling & Storage						
<input type="checkbox"/>	Product was stored between 65°F (18°C) and 80°F (27°C)					
<input type="checkbox"/>	Packing Slip has been verified against order and design calculations					
Record:	Primer	Filler	ShapeShift™	Saturant	Fabric	Topcoat
Item Code						
QTY						
Lot #'s						
EXP Date						



**Building
Stronger
Bonds™**

info@hj3.com // 877-303-0453 // hj3.com

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Environmental Conditions		
<input type="checkbox"/>	Skin Temperature of Tank	Use an infrared thermometer to obtain value and record below: _____ (°F) _____ (°C)
<input type="checkbox"/>	Ambient Temperature	Use a digital temp gauge to obtain value and record below: _____ (°F) _____ (°C)
<input type="checkbox"/>	Dew Point	Use a dew point meter to obtain value and record below: _____ (°F) _____ (°C)
<input type="checkbox"/>	Skin Temp vs. Dew Point Calculation: Skin Temp _____ - Dew Point _____ = _____ Skin Temperature of Tank shall be greater than (5°F or 2.7°C) above Dew Point	

Surface Preparation		
<input type="checkbox"/>	Surface Prep Guidelines were followed	Solvent clean prior to surface profiling to remove contaminants. Prepare the substrate according to SSPC SP-10 (NACE NO.2) or SP-11 to achieve a 2 to 3-mil profile. Confirm surface profile with micrometer.
<input type="checkbox"/>	Minimum 2 to 3 mil profile was achieved & verified Take five readings @ randomly spaced areas EVERY 100 SF (9.3 m²) approx 10-ft x 10-ft (3m x 3m) of tank	(Place TESTEX Strip Here)
		(Place TESTEX Strip Here)
		(Place TESTEX Strip Here)
		(Place TESTEX Strip Here)
<input type="checkbox"/>	Tank is Leak-Free, Clean and Dry	Solvent wipe to remove dust and other bond inhibitors. Ensure repair area is completely dry prior to priming. For Type B Leaking Repairs: Prior to cleaning, perform a bubble test and confirm that all “stop-gaps” are leak free for a minimum of 30 minutes.
NOTE: Upper Skin Temperature Application Limit = 200°F (93°C). For higher temps consult HJ3.		



Installation	
<input type="checkbox"/>	Prime the tank with 5-10 mils TankWrap™ HT1 Primer for galvanic protection Start by pouring the entire contents of Primer Polymer Part B into the container marked Part A. Mix for 3 minutes using a low-speed drill at 400-600 RPM. Using a brush or roller nap apply the primer to 100% of repair area. No dry spots shall be visible in the prepared area.
<input type="checkbox"/>	Fill Pits & Smooth Transitions TankWrap™ HT1 Filler Start by pre-mixing the Part A for 3 mins until completely smooth and consistent. Then pour the entire contents of Filler Part B into the container marked Part A. Mix for 3 minutes using a low-speed drill at 400- 600 RPM. Apply high modulus paste to fill pits and or transition existing “stop gaps” like clamps, plugs or patches. All pits shall be filled and high spots but must be smoothed using a 3:1 transition.
<input type="checkbox"/>	Saturate the carbon fabric TankWrap™ HT1 Saturant Start by pouring the entire contents of Saturant Polymer Part B into the container marked Part A. Mix for 3 minutes using a low-speed drill at 400-600 RPM. Unwrap the carbon fabric from its packaging. Unroll the carbon and prepare for wet-out and keep foreign matter off of the dry fabric. Use a brush, roller nap, or spatula to fully wet out the carbon fiber on both sides. Roll the wet carbon fiber onto a clean core.
<input type="checkbox"/>	Apply saturated TankWrap™ HT1 to primed & prepared surface After saturating, press the saturated fabric on to the substrate and using a roller apply pressure to the surface of the fabric to ensure good bonding. Roll out any trapped air before the polymer sets. Smooth bidirectional fabric from center to the edge with roller in all directions to remove air pockets. For multi-layer applications, the second and subsequent layers of saturated fabric are applied in the same direction as the first layer. Layers shall be applied per design calculations using correct overlaps. All bubbles, voids, and fiber disruptions shall be removed while fiber is still wet.
<input type="checkbox"/>	*Apply TankWrap™ Compression Film Once fiber is applied, apply 4 layers of compression film in the same direction as the “wet” fabric. Compression film shall be applied to “wet” fabric and can be removed in 12-24 hrs. depending on ambient temperature. <i>*optional when geometry prohibits a full wrap</i>
<input type="checkbox"/>	Apply ChemSeal™ (or approved) Topcoats After all layers of fabric have been installed, apply ChemSeal™ topcoat or other pre-approved coating. If Saturated TankWrap™ fiber has cured for more than 5 days, for all ChemSeal™ Topcoats, sand lightly to remove gloss, then clean with solvent and damp rag, waiting 20 minutes for solvent to flash. Topcoat shall cover 100% of surface area at min 7-10 mils.



Post-Installation Inspection & Repair

<input type="checkbox"/>	Visual Inspection	A visual inspection shall be performed to detect defects such as but not limited to: dry fiber, voids, bubbles, insufficient overlaps
<input type="checkbox"/>	Acoustic Tap-Test	An acoustic tap test shall be performed to detect voids and delamination between the composite repair and host tank
<input type="checkbox"/>	QC Repair	All anomalies requiring repairs shall be performed prior to return to service

Cure

<input type="checkbox"/>	Tank Skin Temps < 77°F / 25°C (Shore D of 78 required)	A Minimum 72 hours of Cure Time has been achieved prior to return to service
<input type="checkbox"/>	For Tank Skin Temps > 77°F / 25°C (Shore D of 78 required)	A Minimum 24 hours of Cure Time has been achieved prior to return to service

NOTE:

Cure times can be decreased by adding heat to the repair location.
Consult with HJ3 for specific cure schedules associated with elevated temperatures.

Notes About Job:



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