

## HydraTech High-Temperature HydraWrap® Structural Composite Repair System for High-Temperature Applications

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The HydraWrap system is a performance driven product that provides a chemical and corrosion resistant structural repair. The HydraWrap system is backed by our engineering staff that services each application with assessment and technical support. It offers a low cost, long term solution to the most challenging demands of the industry.

### PRODUCT DESCRIPTION

- HydraWrap is Carbon Fiber Reinforced Polymer (CFRP) repair system engineered to restore or enhance the structural integrity of pipe and infrastructure.
- Each HydraWrap product is a uniquely designed high performance system that consists of a 100% solids high build epoxy Primer, a 100% solids epoxy Wet-Out resin, and carbon fiber fabric.
- The Primer provides excellent adhesion to a variety of substrates while allowing a sag free application at high film builds.
- The Wet-Out resin is designed to thoroughly wet out the fiber forming a composite matrix with a very high tensile and flexural properties.
- The High-Temperature HydraWrap System is designed to provide a structural repair that will withstand elevated temperatures with minimal post-cure.

### Advantages

- High Temperature resistance with minimal post-cure
- Chemical and Corrosion Resistant Structural Repair
- High Tensile / Flexural Modulus and Strength
- 100% Solvent-Free, Zero V.O.C.
- Restores Maximum Allowable Operating Pressure (MAOP)
- Installed by fully trained application specialists
- Full contract support services available

### PHYSICAL PROPERTIES

	Primer	Wet-Out
Color	Steel Red	Clear
Working Life – 200°F (93°C)	60 minutes	60 minutes
Dry Times – 68°F (20°C)	>24 Hours	>24 Hours
% Vol Solids (ASTM 2369)	100	100
Shore D Hardness (ASTM D2240)	75	80
Mix Ratio	Pre-measured 1:1	
Flash Point	> 200°F (93°C)	
Storage	Store in original sealed containers, between 50-77°F (10-25°C)	

### PERFORMANCE DATA

#### CHEMICAL RESISTANCE ASTM D543 (30 day immersion)

Water	No effect
Sodium Hydroxide 5%	No effect
Ammonium Hydroxide 5%	No effect
Sodium Hypochlorite (bleach)	No effect
Ferric Chloride 1%	No effect
Sulfuric Acid 20%	No effect
Nitric Acid 1%	No effect
Detergent Solution	No effect
Gasoline	No effect
Toluene	No effect

#### ADHESION ASTM D4541 (psi)

Cold Rolled Steel	>2,000
Hot Rolled Steel	>2,000
Cast Iron	>2,000
304 Stainless Steel	>2,000
316 Stainless Steel	>2,000
Concrete	Concrete Failure

(Testing reflects results after 24 hour cure)

Composite System  
(two ply bidirectional )

	Hoop 200C	Hoop 300C	Axial 300C
<b>Tensile Strength</b> ASTM D3039 (ksi)	41.08	88.3	13.79
<b>Tensile Modulus</b> ASTM D3039 (msi)	4.48	8.44	2.32
<b>% Elongation</b> ASTM D3039	0.95	1.03	0.68
<b>Flexural Strength</b> ASTM D790 (ksi)	64.4	106	19
<b>Flexural Modulus</b> ASTM D-790 (msi)	3.16	4.18	0.98
<b>CTE</b> ASTM E831 (x10-6/°F)		16.8	
<b>Maximum Operating Temperature</b> (°F) Continuous / Intermittent	350 / 400		

Conforms to DOT regulations • PCC-2 Art 4.1, 4.2 ASME B31.1•3•4•8 • API 570 • ISO15649 ISO13623 • ACI 440.2R08

For details regarding the testing associated with the provided data refer to the HydraWrap Testing and Design Sheet.

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### APPLICATION RECOMMENDATIONS

Minimum Application Temp	40°F (4.4°C)
Maximum Relative Humidity	85%
Substrate Temperature	5°F (3°C) above dew point
Thinning	Do not thin
Cleaning Fluid	Universal Equipment Cleaner

To aid application at low temperatures, both components should be warmed to 60-68°F (15.5-20°C) prior to mixing.

### SUBSTRATE PREPARATION

Substrate preparation dictates the adhesion performance of any coatings system. A properly prepped surface will ensure maximum life and performance of the system.

<b>Concrete:</b>	NACE No.6*	/	SSPC-SP 13*
<b>Steel:</b>	NACE No.2*	/	SSPC-SP 10*
	NACE No.3	/	SSPC-SP 6
	NACE No.5	/	SSPC-SP 12

\*indicates recommended method

### NOTE

The HydraTech High Temperature HydraWrap System is intended for short-term repairs in critical applications and some long-term applications. The High Temperature HydraWrap system is not intended for applications with exposure to strong acids, organic acids, strong solvents (MEK, Acetone, Alcohol) or temperatures exceeding 350°F. To be applied by certified personnel only. See MSDS for safety information.

### INSTALLATION PROCEDURE

- Prep substrate according to NACE / SSPC spec.
- Measure fabric around pipe to ensure proper length.
- Mechanically mix together both primer components until uniform.
- Apply primer to prepared substrate via brush or spreader.
- Mix both Wet-Out components for two minutes.
- Apply Wet-Out to fabric via spreader or impregnator ensuring complete wet out of fabric.
- Apply saturated fabric to wet primer ensuring a consistent, smooth wrap free of voids.
- System must be post-cured @ 350°F for 2 hours minimum, for best results a total of 6 hours.
- If exposed to sunlight, top coat the wrap with a light stable top coat.

For details regarding application refer to the HydraWrap Installation Procedure

### COVERAGE

	UNIT SIZE	COVERAGE
<b>PRIMER</b>	Pt	4.5 sqft
	Qt	9 sqft
	Hg	23.5 sqft
<b>WET-OUT</b>	Pt	4 sqft of fabric
	Qt	8 sqft of fabric

Primer coverage based on 32mil film build.  
Wet-Out coverage based on 99.36gg/sqft of 300C fabric.

### ORDER INFORMATION

Part No. for standard kits consist of: **System Code – Pipe Size – Pipe Style**

ex. **SH-12-W** (Standard HydraWrap for 12" Weld Repair)

SYSTEM CODE	PIPE SIZE		PIPE STYLE
<b>SH</b> = Standard	<b>2</b> = will wrap up to one 2" pipe	<b>14</b> = will wrap up to one 14" pipe	<b>W</b> = Weld
<b>A</b> = Acid	<b>4</b> = will wrap up to one 4" pipe	<b>16</b> = will wrap up to one 16" pipe	<b>E</b> = Elbow
<b>M</b> = Mid-Temperature	<b>6</b> = will wrap up to one 6" pipe	<b>20</b> = will wrap up to one 20" pipe	<b>T</b> = Tee
<b>H</b> = High Temperature	<b>10</b> = will wrap up to one 10" pipe	<b>22</b> = will wrap up to one 22" pipe	<b>SS</b> = Spiral
<b>SS</b> = SubSea	<b>12</b> = will wrap up to one 12" pipe	<b>24</b> = will wrap up to one 24" pipe	<b>U</b> = Universal

\*\*\* **NOTE:** Custom kits are available to accommodate nearly any installation. \*\*\*

Add an **M** for the Marine Kit Option. Marine Kits includes tools for mixing and applying the HydraWrap System. ex. SH-12-W-M