

## HydraTech Mid-Temperature HydraWrap<sup>®</sup> Structural Composite Repair System for Mid-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.
- ≠ Mid-Temperature HydraWrap system is designed to provide a structural repair that will dry at ambient temperatures of 215°F and intermittent temperatures up to 250°F.

### Advantages

- ≠ Rapid development of physical properties with ambient cure. No post cure required.
- ≠ 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

	<u>Primer</u>	<u>Wet-Out</u>
Color	Gray	Clear
Working Life – 68°F (20°C)	35 minutes	35 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)	58.40	83.10	16.90
<b>Tensile Modulus</b> ASTM D3039 (msi)	4.25	6.73	1.86
<b>% Elongation</b> ASTM D3039	1.34	19.19	0.95
<b>Flexural Strength</b> ASTM D790 (ksi)	72.80	58.0	28.0
<b>Flexural Modulus</b> ASTM D-790 (msi)	31.11	3.64	1.27
<b>Maximum Operating Temperature (°F)</b> Continuous / Intermittent	215 / 250		

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 Mid-Temperature HydraWrap System is designed per each application and can provide a long-term repair. The Mid-Temperature System is not intended for applications with exposure to strong acids, organic acids, strong solvents (MEK, Acetone, Alcohol) or high temperatures exceeding 250°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.
- ≠ Allow system to completely cure.
- ≠ 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>	<b>Pt</b>	<b>4.5</b> sqft
	<b>Qt</b>	<b>9</b> sqft
	<b>Hg</b>	<b>23.5</b> sqft
<b>WET-OUT</b>	<b>Pt</b>	<b>4</b> sqft of fabric
	<b>Qt</b>	<b>8</b> 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