

HydraTech STD HYDRAWRAP SYSTEM

Issue 2.09

HydraTech Standard HydraWrap System

- **HydraWrap** is FRP repair system engineered to restore or enhance the structural integrity of pipe and infrastructure.
- Each **HydraWrap** system is a uniquely designed high performance Carbon Fiber Reinforced Polymer (CFRP) Composite 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.

ADVANTAGE

- 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.
- Low temperature cure down to 40°F (4°C).
- Restores Maximum Allowable Operating Pressure (MAOP)
- Installed by fully trained application specialists
- Full contract support services available

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

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.

Concrete: NACE No.6* / SSPC-SP13*

Steel: NACE No.2* / SSPC-SP 10*
NACE No.3 / SSPC-SP 6
NACE No.5 / SSPC-SP 12

*indicates recommended method

PROPERTIES

	<u>Primer</u>	<u>Wet-Out</u>
Color	Steel Blue	Clear
Working Life – 68°F (20°C)	15 minutes	15 minutes
Dry Times – 68°F (20°C)	4 Hours	4 Hours
% Vol Solids (ASTM 2369)	100	100
Shore D Hardness (ASTM D2240)	80	85
Mix Ratio - Pre-measured 1:1		
Flash Point - > 200°F (93°C)		
Storage Life - Twelve months when stored in original sealed containers, between 50-77°F (10-25°C)		

PERFORMANCE DATA

Composite System (two ply bidirectional)	Hoop 200C	Hoop 300C	Axial 300C
Tensile Strength ASTM D3039 (ksi)	44.1	104	23.4
Tensile Modulus ASTM D3039 (msi)	4.44	8.26	2.21
% Elongation ASTM D3039	1.04	1.27	1.2
Flexural Strength ASTM D790 (ksi)	54.1	77.3	27.4
Flexural Modulus ASTM D-790 (msi)	2.36	3.8	1.27
CTE ASTM E831 (x10-6/°F)		5.6	
Lap Shear ASTM D3165 (ksi)		13.4	
Poisson's Ratio ASTM E132		0.249	

Maximum Operating Temp (°F)	200
Cycling Thermal ASTM D6944 (0-200°F)	>30 cycles
Pressure (62% SMYS) 80% Corrosion	641 cycles
Mechanical Damage (72% SMYS) 15% Gouge 15% Dent	11,092 cycles
Burst 80% Corrosion	3,576 psi
PRCI (72% SMYS) 40% Corrosion	>4,155 psi
60% Corrosion	>4,204 psi
75% Corrosion	>4,243 psi

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.

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 (24Hr cure)

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

APPLICATION REQUIREMENTS

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

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

NOTE

The **HydraTech** Standard **HydraWrap** System is not intended for applications with exposure to strong acids, organic acids, strong solvents (MEK, Acetone, Alcohol) or high temperatures (>200°F). To be applied by certified personnel only. See MSDS for safety information.

	Unit Size	Coverage
PRIMER	Pt	4.5 sqft
	Qt	9 sqft
	Hg	23.5 sqft
WET-OUT	Pt	4 sqft of fabric
	Qt	8 sqft of fabric

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

ORDER INFORMATION

Part No. for standard kits consist of: **System Code - Pipe Size - Pipe Style** ex. **SH-12-W** (STD HydraWrap for 12" Weld Repair)

System Code	Pipe Size		Pipe Style
SH – Standard HydraWrap	4 – will wrap up to one 4" pipe	12 – will wrap up to one 12" pipe	W – Weld
HH – High Temp HydraWrap	6 – will wrap up to one 6" pipe	16 – will wrap up to one 16" pipe	E – Elbow
AH – Acid Resistant HydraWrap	8 – will wrap up to one 8" pipe	18 – will wrap up to one 18" pipe	T – Tee
PH – Potable Water HydraWrap	10 – will wrap up to one 10" pipe	24 – will wrap up to one 24" pipe	SS – Strait Spiral

Custom kits are supplied to accommodate nearly any installation