



Composite Solutions for Piping and Structures

PermaWrap™ & WeldWrap™

“The Next Generation Repair Systems”
Tested and Proven at the EXTREMES



- *“Smart Pig” Detectable* • *Diamond Lock Technology*
 - *No Shutdown* • *No Hot Work* • *No Heavy Equipment*
 - *D.O.T. Compliant* • *45 Minute Installation*
 - *2-Man Operation* • *Permanent Solution* • *Fix and Forget*
 - *Manufactured under US Patent # 6,774,066*
 - *ISO TS-24817/ ASME PCC-2*
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AN ADVANCEMENT IN PIPE REPAIR

Pipe Specimen: 12.75" O.D. x .375" Wall; API-5LX-52

Defect – 6.5" x 6.5" x .300" Deep

Completed Installation in 35 minutes

Pipe Body Failure @ 4,260 psi



PermaWrap™ Kit:

- ◆ PermaWrap and WeldWrap Composite Sleeve - uses a superior laminate construction with proven materials to form a high tensile strength, rigid, “magnetically detectable” fiberglass wrap for the PERMANENT structural reinforcement of “blunt” type external defects on piping with up to 80% wall loss.
- ◆ Two-part proprietary Adhesive System used to bond the PermaWrap Sleeve to the pipe surface and to bond between composite layers to form a monolithic structure.
- ◆ Two-part proprietary high compressive strength Putty used to fill all cavities and tented areas to ensure a “load-transfer” path from the pipe surface to the PermaWrap Sleeve.
- ◆ Installation Accessory Kit provides all items to properly apply the PermaWrap System with minimal additional tooling.
- ◆ The PermaWrap™ System is suitable for repairs to 4” thru 56” Diameter Piping.
- ◆ The PermaWrap™ Kit comes in five (5) standard widths – 6”, 9”, 12”, 15” & 18”.

Repair:

- ◆ Corrosion Defects
- ◆ Blunt Dents and Gouges
- ◆ Girth Weld Zone Repairs
- ◆ Field Bends & Elbows (greater than 5 D)
- ◆ Vertical & Horizontal Piping
- ◆ Corrosion at Pipe Supports

Testing:

- ◆ Cyclic Fatigue 120,000 cycles
- ◆ Dent Fatigue to 305,000 cycles
- ◆ Hydrostatic Burst - Bare Pipe & Reinforced
- ◆ Adhesive Bond Testing
- ◆ Tensile Strength Evaluations
- ◆ Compressive Strength Evaluations

Material Properties:

Cure Time	2 Hours
Max Operating Temperature	161 °F / 72 °C
Chemical Resistance (pH range)	4-11
Tensile Strength (psi)	90,000 psi
Tensile Modulus (psi)	5.5 msi
Flexural Strength (psi)	26,000 psi
Flexural Modulus (psi)	2 msi
% Elongation @ 77 °F – Composite	1%
% Elongation @ 77 °F – Adhesive	40%
% Elongation @ 77 °F – Putty	<1%
Lap Shear Strength @ 140 °F – Adhesive (psi)	2,725 psi
Compressive Strength @ 140 °F – Putty (psi)	10,000 psi
Hardness – Shore D	78

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