



DiamondWrap® Subsea

DiamondWrap® Subsea, the premier carbon fiber wrap system for rehabilitating and restoring damaged, corroded and eroded underwater piping and risers, is engineered to restore submerged pipe to the maximum allowable operating pressure (MAOP) and can be applied without interrupting production.

The system comprises three independently tested components to deliver the strongest available non-metallic repair on the market. Bi-directional, woven carbon-fiber materials provide reinforcement in the hoop and axial directions, while the epoxy primer ensures complete bonding and load transfer between the repair and the substrate. Polymeric epoxy resin, the binding force in the system, allows uniform loading through the wrap and can be applied to most substrates. A high-modulus filler also is used with the DiamondWrap® Subsea system on surfaces that have heavy pitting or irregular shapes. The structural system forms a creep-resistant pipe around a pipe, and each successive wrap increases the pressure rating, delivering a repair that is stronger than steel.

Because of its wet lay-up and low profile, DiamondWrap® Subsea can be installed on tees, elbows and straight runs of pipe and is ideal for confined spaces and irregular surfaces that require structural reinforcement or leak containment.

Applications

- Subsea pipelines, risers, and piping systems
- Straight lengths of pipe
- Elbows, tees, valves, fittings

Features

- Supplied as a complete kit
- Quick and easy installation
- Excellent adhesion to virtually any substrate
- Strong chemical resistance
- Independently tested (university and international laboratory)
- Compliant to DOT regulations, ASME B31, .8, .4, G and PCC-2 Art 4.1, 4.2 and API 570 [Refer to API 570, Section 8.1.4 – Non-welding Repairs (On-Stream)]

BENEFITS:

- Restores pipe strength to MAOP
- Minimal creep ensures a long service life
- No VOCs
- Prevents future external corrosion



QUALIFICATION DATA

PROPERTIES	VALUE
Maximum Recommended Operating Temperature	180° F (82°C)
Fabric	PAN (Polyacrylnitrile)
Biaxial Fabric Nominal Thickness	0.036" for 2-ply to 0.108 for 6-ply (0.91 mm for 2-ply to 2.74 mm for 6-ply)
Lap Shear (Adhesive) Strength	>1,250 psi at 140°F (>8,618 kpa at 60°C)
Compressive Strength of Putty	8,805 psi at 140°F (33,129 kpa at 60°C)
Hardness	78 to 84 Shore D
Linear Elastic Behavior	1.2% Strain to Failure
Biaxial Fabric Elastic Modulus (Hoop)	5.03×10^6 psi (3.47×10^7 kpa)
Biaxial Fabric Elastic Modulus (Axial)	4.59×10^6 psi (3.16×10^7 kpa)
Biaxial Fabric Tensile Strength (Hoop)	6.44×10^4 psi (4.44×10^5 kpa)
Biaxial Fabric Tensile Strength (Axial)	3.94×10^4 psi (2.72×10^5 kpa)
Coefficient of Thermal Expansion (Hoop)	$1.4 \times 10^{-5}/^{\circ}\text{F}$ ($2.52 \times 10^{-5}/^{\circ}\text{C}$)
Coefficient of Thermal Expansion (Axial)	$0.71 \times 10^{-5}/^{\circ}\text{F}$ ($1.278 \times 10^{-5}/^{\circ}\text{C}$)
Design Stress (Hoop)	4.96×10^4 psi (3.42×10^5 kpa)
Design Stress (Axial)	3.03×10^4 psi (2.09×10^5 kpa)

Warranty: ClockSpring|NRI routinely implements product improvements. Please contact your local distributor or office for the most current product specifications. ClockSpring|NRI warrants the quality of this product when used according to directions.



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