DiamondWrap®

DiamondWrap® is an engineered, wet-applied repair system made of proprietary carbon fiber cloth applied with a two-part epoxy and a high-modulus filler material. It functions as a pressure-containing repair to seal leaks and as a reinforcing repair to restore original pipe strength in both the hoop and axial directions.

As a superior alternative to clamps and pipe replacement, DiamondWrap® is used regularly in plants, refineries, tank farms, terminals, and offshore locations around the globe and is ideal for complicated geometry, such as tees, flanges, and varying diameter pipe. It repairs through-wall defects and installs easily in challenging environments where there is complicated pipe architecture.

DiamondWrap® can be installed with minimal disruption to the operation of a pipe, without the use of hot work. It has an exceptional track record in situations where internal corrosion caused by harsh chemicals threatens the integrity of high-consequence piping, and it is proven to have excellent chemical resistance in the event of substrate failure.

The proprietary epoxies developed for use with DiamondWrap® are unmatched in range, quality, and performance. Specialty epoxies appropriate for high-temperature systems and acid systems that carry harsh chemicals include DiamondWrap® HTA™ and DiamondWrap® UHT™.

Applications

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

Features

- Excellent adhesion to virtually any substrate
- Strong chemical resistance
- Available in multiple kit sizes for any diameter pipe or configuration
- Engineered repairs are designed by qualified engineers following ISO or ASME guidelines
- Design conforms to ASME PCC-2, ASME B31, ISO 24817, DOT, API and CSA Z662 standards for nonmetallic reinforcing solutions

BENEFITS:

- Eliminates unplanned down time for high-consequence piping
- Extends the life of aging and corroding assets
- No pipe cutting or welding
- Minimal creep ensures a long service life
- No VOCs
- Prevents future external corrosion

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QUALIFICATION DATA

PROPERTIES	STANDARD	HIGH-TEMP AMBIENT	ULTRA HIGH-TEMP
Glass Transition Temperature	212°F (100°C)	340°F (171°C)	615°F (324°C)
Max Operating Temperature	180°F (82°C)	300°F (148°C)	500°F (260°C)
Installation Temperature	60°F – 140°F (15.5°C – 60°C)	120°F – 300°F (49°C – 149°C)	275°F – 450°F (135°C – 232°C)
Cure Time	8 hours at 77°F (25°C)	8 hours at 120°F (49°C)	8 hours at 300°F (149°C)
System Filler Available	Yes	Yes	No
Stretch Film Required	No	No	Yes
Kit Type	2-part epoxy	2-part epoxy	Pre-impregnated

PROPERTIES	RESULTS
Layer Thickness	0.023 inch (0.57 mm)
Tensile Modulus (Hoop)	7,130 ksi (49.1 GPa)
Tensile Modulus (Axial)	3,460 ksi (23.8 GPa)
Tensile Strength (Hoop)	83 ksi (576 MPa)
Tensile Strength (Axial)	35 ksi (247 MPa)
Tensile Strain to Failure (Hoop)	1.27%
Tensile Strain to Failure (Axial)	1.3%
Poisson's Ratio	0.196
Lap Shear Strength to Steel (Sandblasted)	2,500 psi (17.2 MPa)
Hardness	80 Shore D
Thermal Expansion Coefficient (Hoop)	5.16 x 10^{-6}/°F (9.29 x 10^{-6}/°C)
Thermal Expansion Coefficient (Axial)	9.33 x 10^{-6}/°F (16.79 x 10^{-6}/°C)
Service Temperature Limits for Non-Leaking Defects	-67°F to 580°F (-55°C to 304°C)

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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