



BlackDiamond®

BlackDiamond® is an engineered, wet-applied repair system that uses proprietary carbon fiber cloth combined with a two-part epoxy and a high-modulus filler material. It is a cost-effective, safety-enhancing alternative to welded sleeves, pipeline replacement, and repair clamps and is ideal for transmission pipeline integrity repairs on pipes of any diameter.

When properly engineered and installed, the high-strength carbon fiber composite assumes the stress of the pipe, extending the life of aging transmission and distribution lines. As the most tested carbon fiber composite repair system on the market, BlackDiamond® reinforces corrosion, dents, girth welds, wrinkle bends, crack-like defects, field bends, and more. Supplied in a kit, this system has been installed around the world on regulated transmission pipelines, distribution lines, and gathering lines.

System flexibility allows BlackDiamond® to be installed on bends, tees, and other fittings and to accommodate nearly any installation environment, including damp conditions. BlackDiamond® loses very little strength over time and can be designed to be stronger than the original pipe. It repairs pipelines ranging in operating temperature from -40°F to 180°F (-40°C to 82°C) with minimal disruption to operations, without hot work or heavy machinery.

BlackDiamond® can be used as DOT and CSA Z662 compliant permanent repairs for integrity digs. It has been validated by third parties including the Pipeline Research Council International (PRCI), Gas Technology Institute (GTI), Stress Engineering, ADV Integrity, TUV NORD and TUV SUD. Engineered repairs follow ISO or ASME guidelines.

Applications

- Regulated pipelines
- Gathering lines
- Low clearance
- Damp conditions
- Transmission and distribution pipelines
- On pipes with operating temperatures ranging from -40°F to 180°F (-40°C to 82°C)
- Straight lengths of pipe
- Flanges, tees, buckles and mitered elbows
- Repairs Corrosion, dents, girth welds, wrinkles bends, crack-like defects, field bends, and more

Features

- Available in multiple kit sizes for any diameter pipe or configuration
- Restores lines with up to 80% wall loss, mechanical damage, mill defects and axial flaws to maximum allowable operating pressure
- Excellent adhesion to virtually any substrate
- Simple marking band system makes repairs visible to in-line inspection tools.
- Compliant with ASME PCC-2 and ISO 24817
- DOT and CSA Z662 compliant permanent repairs for integrity digs

BENEFITS:

- Eliminates unplanned down time
- Minimal creep ensures a long service life
- No VOCs
- No hot work
- No special tools to install
- No environmental hazards
- No pipe cutting or welding



QUALIFICATION DATA

PROPERTIES	VALUE
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)	1.30%
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)	$5.16 \times 10^{-6}/^{\circ}\text{F}$ ($9.3 \times 10^{-6}/^{\circ}\text{C}$)
Thermal Expansion Coefficient (Axial)	$9.33 \times 10^{-6}/^{\circ}\text{F}$ ($16.8 \times 10^{-6}/^{\circ}\text{C}$)
Application Temperatures	40°F - 140°F (5°C - 60°C)
Service Temperature Limits for Non-Leaking Defects	180°F (82°C)
Glass Transition Temperature	212°F (100°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.

