

SELECTION & SPECIFICATION DATA

Generic Type	Advanced Thermoset Polymer
Description	Polyclad ARO is a high performance pipe coating specially designed for the protection of FBE coated pipeline from gouge and mechanical damage during directional drilling or slip bore installations. Polyclad ARO is applied directly over FBE as an abrasion resistant overlay (ARO) and provides superior protection in rocky, rough and mountainous environments. It absorbs the destructive energy and minimizes coating damage.
Features	<ul style="list-style-type: none"> • Excellent gouge and abrasion resistance • High crosslink density results in tough film • Excellent adhesion to prepared FBE, Polyclad 975 and other coatings • Protects FBE, and other base coats during directional drilling applications • Zero VOCs, 100% solids • Apply up to 125 mils (3.2 mm) in one application • Rapid dry to handle, less than 20 minutes
Color	Standard colors are Tan (0200) and Black (0900) Colors are unmatched.
Gloss	Gloss
Primer	Apply over properly prepared coated pipe or otherwise as directed by Carboline Technical Service.
Service Temperature	Maximum operating temperature of 60°C (140°F)
Dry Film Thickness	635 - 3175 microns (25 - 125 mils) per coat Typical DFT is 30 mils
Solids Content	By Volume 100%
Theoretical Coverage Rate	39.4 m ² /l at 25 microns (1604 ft ² /gal at 1.0 mils) 1.6 m ² /l at 625 microns (64 ft ² /gal at 25.0 mils) 0.3 m ² /l at 3125 microns (13 ft ² /gal at 125.0 mils) Allow for loss in mixing and application.
VOC Values	As Supplied : 0.0
Limitations	ARO is composed of aromatic based polymers and will tend to yellow and darken with exposure to UV. The change in color on the surface does not affect performance.

SUBSTRATES & SURFACE PREPARATION

General	Surfaces <u>must</u> be properly cleaned. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Contact Carboline for specific recommendations.
Steel	Polyclad ARO is specifically designed to go over prepared FBE or other coatings as recommended. Contact Carboline Technical Service for recommendations over blasted steel.

SUBSTRATES & SURFACE PREPARATION

FBE	Prepare FBE, Polyclad 975 or other base coating by abrading the surface to remove gloss and create a profile. Wipe the abraded surface with MEK or other approved solvents to clean and remove dust and debris. Methods to abrade the surface include, sweep blasting or sanding the surface using a 60 grit sandpaper.
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PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	System	Results
ASTM D4541 Adhesion pull off test	One ct. of Polyclad ARO over prepared FBE surface	2000+ psi
Flexibility, CSA Z245.20 (12.11) at 32°F (0°C)	One ct. of Polyclad ARO at 30-40 mils	1.0°/pd
Flexibility, CSA Z245.20 (12.11) at 74°F (24°C)	One ct. Polyclad ARO at 30 to 40 mils	1.6°/pd
Partech Gouge Test R-33 Double-cut burr bit with 50 kg load	One ct. of Polyclad ARO at 32 mils	18.7 mils gouge depth & passed holiday test
Partech Gouge Test SL-1 Smooth blank bit with 50 kg load	One ct. of Polyclad ARO at 31 mils	11.3 mil gouge depth & passed holiday test
Resistance to abrasion, ASTM D4060	One ct. of Polyclad ARO	1400 cycles/mil

MIXING & THINNING

Mixing	General Mixing Guidelines: Power mix Part B until the pigments are dispersed in to a homogenous liquid. Part A does not need to be mixed. DO NOT BATCH MIX A & B. DO NOT THIN Polyclad ARO
Ratio	2:1 by volume (B:A)

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General)	Applicators must be trained and familiar with the application of these type 100% solids fast set high build coatings. Carboline Technical Service must review the project specifications and approve of the applicator prior to the start of the project. Applicators must follow the proper safety guidelines, operation and maintenance of the spray equipment.
Airless Spray	Use only heated plural component airless equipment with 2:1 mix ratio. The plural airless pump must have a minimum capability of two gallons per minute with a fluid pressure of up to 3,000 psi. The recommended spray system is a WIWA DUOMIX 333 or WIWA PU 460 plural component system utilizing typical transfer pumps to supply both the resin and catalyst to the spray system, in-line heaters capable of heating the material up to 130 degrees F as needed, heated hose bundle, and a Graco Fusion #310648E Solvent Purge Plural Component Gun with integrated static mixer. Other equipment of equal capabilities may suffice. Contact Carboline Technical Service Department for alternate spray equipment recommendations. We recommend that the applicator perform a mock up prior to and after mobilizing to the jobsite to be sure all equipment is performing properly.
Brush & Roller (General)	This product is not designed to be brushed or rolled. Repairs can be done by spray.

APPLICATION CONDITIONS

Condition	Surface	Ambient	Humidity
Minimum	4°C (40°F)	4°C (40°F)	1%
Maximum	43°C (110°F)	49°C (120°F)	85%

Part A application material temperature should be 90°F (32°C) to 110°F (43°C). Material temperature for Part B should be between 120°F (49°C) and 140°F (60°C). The Gel Time is between 25 and 45 seconds based on temperature. Industry standards are for substrate temperatures to be 5°F (3°C) above the dew point. Application and/or curing in humidity above maximum, or exposure to moisture from rain or dew may result in a loss of gloss, micro bubbling, and/or blistering of the product.

CURING PROGRAM

Surface Temp.	Cure for Service	Dry to Handle	Dry to Touch
23°C (73°F)	1 Hour	20 Minutes	5 Minutes

At 73°F (23°C) metal temperature, Polyclad ARO will get a shore D hardness of 75 in 20 minutes and a shore D hardness of 82 in one hour.

CLEANUP & SAFETY

Cleanup	Use Thinner #2 or #76 solvents. To clean lines, use Thinner #76 followed by Carboline's Polyclad Line Stabilizer for long term storage. Contact Carboline Technical Service for cleaning recommendations. In case of spillage, absorb and dispose of in accordance with local applicable regulations
Safety	Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Persons should wear proper personnel protection equipment.
Caution	This product does not contain flammable solvents; however, clean-up solvents that may be used do contain flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 12 months* Part B: 6 months* *Shelf Life: When kept at recommended storage conditions and in original unopened containers.
Shipping Weight (Approximate)	Shipping weight (Approximate) 13 lb/gal. (5.9 kg/gal.) Packaging: 15, 150 and 810 gallon kits
Storage Temperature & Humidity	40 to 90°F (4 to 32°C) Store indoors and keep dry. Blanket all partial drums or totes with nitrogen gas to prevent moisture contamination. Avoid freezing. Do not open until ready to use
Flash Point (Setaflash)	Part A 390°F (199°C) Part B >200°F (>93°C)

Polyclad ARO

PRODUCT DATA SHEET



WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.