

SELECTION & SPECIFICATION DATA

Generic Type	Solvent-free aromatic polyurethane, ASTM D16 Type V
Description	Polyclad 777 PL is a high performance 100% solids structural polyurethane designed to provide superior corrosion protection for steel, ductile iron and concrete pipe. Tenacious adhesion and high impact resistance allow its use in the harshest environments. It forms a dense, long-term impermeable barrier that is ready for service moments after application through a fast-set cure mechanism. No primer is required.
Features	<ul style="list-style-type: none"> • Rapid curing to increase plant throughput • Excellent abrasion resistance for use as a rock shield, slip bore and in directional drill applications • Superior wetting properties for outstanding adhesion • Mix ratio of 1:1 with easy application properties • Can be topcoated by Carbothane series of products • Unlimited film-build with single or multi-pass coats
Color	Standard colors are: Yellow (0600) and Medium Blue (0100)
Finish	Gloss (70-85)
Primer	No primer needed- direct to steel
Dry Film Thickness	635 - 1016 microns (25 - 40 mils) For most applications on steel. 635 - 3175 microns (25 - 125 mils) For other applications on steel, depending on service conditions.
Typical Uses	Steel pipeline exteriors, steel valves & fittings, steel pilings, steel poles (above & below ground), buried tank exteriors, penstocks. Also other applications requiring high abrasion resistance, rapid cure and superior corrosion protection for steel.
Solids Content	By Volume 100% +/- 0%
Theoretical Coverage Rates	
VOC Values	As Supplied : 0.00 lbs/gal
Approvals	Meets requirements of AWWA C222-08
Limitations	Due to its aromatic composition Polyclad 777 PL will tend to yellow or darken in exterior UV exposure. This will not affect performance.
Topcoats	Carbothane Acrylic Polyurethanes (Optional) Contact Carboline Technical Service for more information.

SUBSTRATES & SURFACE PREPARATION

General	Prepare surface as noted below. Ensure dust/smut from blasting operation does not interfere with adhesion. Recommend using ISO 8502-3 to confirm low surface dust with a preferred rating of "1" or "2". Apply coating prior to any flash rusting or contamination fall-out.
Steel	Remove all contaminants in accordance with SSPC-SP 1. Near White Metal Blast clean in accordance with NACE No. 2/SSPC-SP 10 and create 3 to 5 mils, (75 to 125 microns), of dense angular anchor profile.

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SUBSTRATES & SURFACE PREPARATION

Ductile or Cast Iron | Remove all contaminants in accordance with SSPC-SP 1. Abrasive blast clean in accordance with National Association of Pipe Fabricators, Inc., NAPF 500-03-04.

PERFORMANCE DATA

Test Method	System	Results
Abrasion Resistance ASTM D4060	1 Coat Polyclad 777 PL	27 mg loss
Adhesion to Steel ASTM D4541	1 Coat Polyclad 777 PL	Minimum 1500 psi
Cathodic Disbondment ASTM G-95	1 Coat Polyclad 777 PL	4 mm
Chemical Resistance ATSM D543	1 Coat Polyclad 777 PL	Pass 30 day immersion
Dielectric Strength D149	1 Coat Polyclad 777 PL	> 500 V/mil
Flexibility ASTM D522	1 Coat Polyclad 777 PL	Pass 3 inch 180 degrees
Hardness: ASTM D2240 Shore D	1 Coat Polyclad 777 PL	77 + Shore D
Impact Resistance ASTM G14	1 Coat Polyclad 777 PL	101 in-lbs
Tensile Strength ASTM D412	1 Coat Polyclad 777 PL	> 4000 psi
Water Absorption ASTM D570	1 Coat Polyclad 777 PL	< 1.6%

MIXING & THINNING

Mixing | Power mix part B until the pigments are dispersed into a homogeneous liquid. Do not batch mix parts A & B. Do not thin.

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.

General | Applicators must be trained and familiar with the application of 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 1:1 mix ratio. The plural airless pump must have a minimum capability of 1.25 gallons per minute with a fluid pressure of up to 3,000 psi. The recommended spray system is a Graco Reactor 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 160 degrees F as needed, heated hose bundle, and a Graco Fusion Plural Component Gun. 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.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	52°C (125°F)	-18°C (-0°F)	2°C (35°F)	0%
Maximum	71°C (160°F)	49°C (120°F)	49°C (120°F)	85%
Optimum	63°C (145°F)	21°C (70°F)	21°C (70°F)	35%

Industry standards are for substrate temperatures to be 5 F(3 C) above the dew point. Caution: this product in the liquid stage is moisture sensitive and needs to be protected from high humidity, dew and direct moisture contact until cured to a firm state. 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.

Note: for applications on concrete please contact your Carboline representative for proper application procedures.

CURING SCHEDULE

Surface Temp.	Cure for Service	Dry to Handle	Dry to Touch
24°C (75°F)	1 Hour	9 Minutes	90 Seconds

Lower metal temperatures will slow the dry time and higher metal temperatures will speed up dry time. Polyclad 777 PL is ready for holiday testing as soon as it reaches its dry-to-handle state. It is ready for service when the hardness reaches Shore D 70 (typically 1 hour)

For added UV resistance, Polyclad 777 PL may be topcoated with Carbothane aliphatic polyurethanes as soon as it is dry to touch. Maximum recoat time with Carbothane series is 28 days. To topcoat past the maximum recoat time the surface must be abraded and cleaned.

Maximum recoat with itself is two hours.

CLEANUP & SAFETY

Cleanup	Use Thinner 2 or 76. 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 spills, 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 SDS for this product. Employ normal workmanlike safety precautions. Workers should wear proper personal 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, workers should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: Min. 12 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C) *When kept at recommended storage conditions and in original unopened containers.
Shipping Weight (Approximate)	9.8 lbs per kit gal (4.4 kg per gal)
Storage Temperature & Humidity	60° - 90°F (16°-32°C) 0-100% Relative Humidity

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PACKAGING, HANDLING & STORAGE

Flash Point (Setaflash) | Part A =390°F (199°C)
Part B >200°F (93°C)

Storage | Store indoors and keep dry. Blanket all partial drums with nitrogen gas to prevent moisture contamination. Do not allow Part A to freeze. Do not open until ready to use.

Packaging | 10 gallon, 110 gal, 528 gal and dual cartridge kits

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 to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. Carboline warrants our products to be free of manufacturing defects in accord with applicable Carboline quality control procedures. THIS WARRANTY IS NOT VALID WHEN THE PRODUCT IS NOT: (1) APPLIED IN ACCORDANCE WITH CARBOLINE'S SPECIFICATIONS, AND/OR (2) PROPERLY STORED, CURED, AND USED UNDER NORMAL OPERATING CONDITIONS. Carboline assumes no responsibility for coverage, performance, injuries, or damages resulting from use of the product. If this product is found not to perform as specified upon inspection by a Carboline representative during the warranty period, Carboline's sole obligation, if any, is to replace the Carboline product(s) proven to be defective or refund the purchase price thereof, at Carboline's sole option. Carboline shall not be liable for any other losses or damages. This warranty excludes (1) labor and costs of labor for the application or removal of any product, and (2) any incidental or consequential damages, whether based on breach of express or implied warranty, negligence, strict liability or any other legal theory. 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. The whole text of this Product Data Sheet, as well as the documents derived from it, have been written in English, and for legal purposes the English version shall prevail.