product data carboline® **Plasite® 4501** CLASSIFIED UL WATER QUALITY

PRODUCT DESCRIPTION
Plasite 4501 is a solventless, self-priming, epoxy lining for a variety of cargos including water, potable water, wastewater, seawater, fuels, oils, and other solutions. It can be applied using standard airless spray equipment, as a single coat lining for ballast tanks or other storage vessels. It exhibits excellent film-build and edge protection. It has low to no odor, exhibits excellent chemical resistance, and cures fast. It is a tough abrasion resistant film with excellent flexibility and impact resistance. It is resistant to cathodic disbondment and will cure down to 35°F.

USES/APPLICATIONS
Typically used to line tanks that store crude oil, fuels, straight gasoline, fuel oil, salt or fresh water, potable water, municipal and some industrial wastewater, jet fuel, and some salt solutions. It also may be used to protect structural steel, piping, equipment, and tankage that might be exposed to these type chemicals. It is suitable for use over steel or concrete substrates.

PRODUCT FEATURES
- High build, edge retentive lining
- Single-coat economics
- Fast-cure to service
- Outstanding water resistance
- Excellent abrasion and impact resistance
- Suitable for standard airless equipment
- High gloss aesthetic appearance
- Extreme resistance to blushing
- Low temperature cure
- Excellent cathodic disbondment resistance

CHEMICAL RESISTANCE
Excellent crude oil resistance up to 180°F, fuel oils, jet fuels, gasoline (straight), water (95°F), seawater, potable water (95°F), municipal wastewater, and some industrial waste streams. Consult Carboline's Technical Service Department for specific exposure recommendation.

COLORS
White, Blue, and Grey

FINISH
High Gloss (Epoxies lose gloss, discolor and eventually chalk in sunlight exposure).

FILM THICKNESS
For most applications:
1 coat at 12-20 mils (300-500 microns) depending on service. May be applied up to 30 mils max in a single coat.

For potable water applications:
1 coat at 15-30 mils (375-750 microns) or 2 coats for a total of 30-60 mils (750-1500 microns) for a maximum of 60 mils (1500 microns).

SOLIDS CONTENT
By Volume: 99% ± 1%

THEORETICAL COVERAGE
1572 mil ft^2 (38.6 m^2/l at 25 microns)
130 ft^2 at 12 mils (3.2 m^2/l at 300 microns)
Allow for loss in mixing and application.

APPROVALS
Suitable for use in potable water service for tanks larger than 100 gal and pipe diameter 18 inches or larger

PHYSICAL CHARACTERISTICS

Bond Strength..... 2600 psi (ASTM D4541)

Abrasion Resistance ..... 145 mg loss (ASTM)

Cathodic Disbondment ..... 6-7 mm disbondment (NACE TM0104; 30 days)

Hardness..... .... 70 (ASTM D-2240 Shore D)

Chemical Resistance (Atlab Cell Testing ... 12 months)

Crude oil (180°F)	Jet fuel (100°F)	Diesel fuel (100°F)
Pure gasoline (90°F)	Tap Water (95°F)	Seawater (95°F)

VOC Values: ..... 0.06 lbs/gal (7 g/l) (EPA 24 Calc.)

Dry Temperature Resistance* ..... 250°F continuous
300°F non-continuous
**Discoloration and loss of gloss observed about 200°F*

SUBSTRATE PREPARATION
General: Remove all oil or grease from the surface to be coated with clean rags soaked in Thinner 2 or Carboline Surface Cleaner 3 (refer to Surface Cleaner 3 instructions) in accordance with SSPC-SP1. For girth weld areas, all burrs, weld slag and other matter shall be removed to achieve a smoother surface prior to blasting.

Steel: Abrasive blast to a Near White Metal Finish in accordance with SSPC-SP 10 and obtain a 3.0 mil (75 micron) blast profile.

Concrete: Clean and dry. Remove all loose, unsound concrete. Do not apply coating unless concrete has cured at least 28 days @ 70°F (21°C) and 50% RH or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require filling/surfacing.

APPLICATION 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): The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco, and WIWA.

Airless Spray: Airless spray equipment capable of 6000 psi (minimum 64:1 airless pump) is required for the application of this material. Recommended tip size is 0.21-0.25". Contact Carboline Technical Service for additional information. Plural-component airless spray is also an acceptable means of application.

Plasite® 4501

MIXING AND THINNING

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

Mixing: Premix each component separately, than add together and mix until uniform. **Ratio by volume** 4:1 Ratio (A to B)

Thinning: Thinning is not recommended. For best results use material temperatures that are between 75-85°F. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life: 30 minutes in a 3-gal mass at 75°F (24°C). The pot life ends when the material becomes too viscous to use.

CLEAN-UP AND SAFETY

Cleanup: Use Thinner #2 or Acetone. 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. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation: While this is a solventless epoxy, it is common practice when used as a tank lining or in enclosed areas to circulate the air during and after application until the coating is cured. Minimal protection is needed when proper ventilation is achieved. The ventilation system should be capable of preventing any solvent vapor concentration from reaching the lower explosion limit for any solvents that may be present. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

Caution: This product may contain flammable solvents if thinned. 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.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Normal	75°F (24°C)	60-85°F (16-29°C)	60-85°F (16-29°C)	40-80%
Minimum	70°F (21°C)	35°F (2°C)	35°F (2°C)	10%
Maximum	90°F (32°C)	110°F (43°C)	110°F (43°C)	80%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

CURING SCHEDULE

The following cure schedule is based on film thickness and service conditions (single coat system).

Surface Temp. & 50% RH	Dry to Handle	Cure for Immersion Service		
		Crude Oil (12-16 mils)	Potable Water (up to 30 mils)	All Other Service (16-25 mil)
35°F (2°C)	72 Hours	7 days	30 days	10 days
50°F (10°C)	36 Hours	5 days	21 days	7 days
75°F (24°C)	10 Hours	3 days	15 days	3 days
100°F (38°C)	6 Hours	36 hours	7 days	36 hours

Force Cure Bake Cycle (optional)

Ambient Cure at 75°F (24°C)	Then Bake at Surface Temperature of 130°F (54°C)*
15 Minutes	3.5 Hours

***Note:** For the bake cycle, increase the surface temperature from 75°F (24°C) to 130°F (54°C) at a rate not exceeding 30°F (16°C) every 15 minutes. Following the 3.5-hour cure, allow the lining to air dry for an additional two hours prior to placing in service.

The following cure schedule is for film thicknesses in the 30-60 mil range (one or two coat system).

Surface Temp. & 50% Relative Humidity	Dry to Handle or Recoat	Standard Cure for Immersion Service	Cure for Potable Water Service
35°F (2°C)	6 days	20 days	60 days
50°F (10°C)	3 days	15 days	40 days
75°F (24°C)	24 hours	7 days	30 days
100°F (38°C)	12 Hours	3 days	15 days

Insufficient ventilation or cooler temperatures will require longer cure times. This product has an extremely high resistance to blushing. If however under rare circumstances a blush appears, it must be removed by water washing if recoating.

PACKAGING, HANDLING, AND STORAGE

Shipping Weight (Approximate)	1 Gallon Kit	5 Gallon Kit
	14 lbs. (6.3 kg)	69 lbs. (31 kg)

Flash Point (Setaflash)
Plasite 4501 Part A: >205°F (96°C)
Plasite 4501 Part B: >230°F (110°C)

Storage Temperature & Humidity
40° - 110°F (4°- 43°C) Store indoors.
0-80% Relative Humidity

Shelf Life
Part A: 24 months at 75°F (24°C)
Part B: 18 months at 75°F (24°C)

***Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.**

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