

**PRODUCT DESCRIPTION**

Plasite 4500 S is a 100% solids, flake-filled, premium epoxy coating designed for internal steel and concrete tanks and pipe lining. It is a two component system consisting of 4-parts by volume of Part A resin and one part by volume of Part B hardener. It is applied by plural component or single component spray equipment, in a one-coat application (20-60 mils) for internal lining applications. It also meets AWWA C210 specification. (Formerly known as Plasite 140 S)

**USES/APPLICATIONS (examples)**

- Chemical storage tanks
- Wastewater clarifiers
- Equipment supports
- Oil storage tanks
- Immersion Service for Jet Fuel
- Catwalks
- Concrete exposures in wastewater applications
- Potable water tanks and pipelines – meets or exceeds ANSI/NSF Std. 61 for tanks larger than 1000 gallons or pipe with 42" diameter or greater.

**PRODUCT ADVANTAGES**

- High impact resistance
- Superior adhesion to steel and concrete
- Resistance to a broad range of chemicals
- Can be applied in a one-coat application up to 60 mils
- Can be sprayed using single component airless equipment
- VOC compliant

**CHEMICAL RESISTANCE**

In addition to excellent water immersion resistance, Plasite 4500 S is resistant to a broad range of chemicals such as fuels, salts, alkalies, many acids, and some solvents.

**COLORS**

Light gray, light blue, and white. Use light grey for potable water service.

**PACKAGING**

Plasite 4500 S is offered in one gallon and five gallon units.

One gallon unit includes:

- 1 gallon (partial) can of Part A (resin)
- 1 quart can of 4500S/4550S Part B (hardener)

Five gallon unit includes:

- 5 gallon (partial) pail of Part A (resin)
- 1 gallon can of 4500S/4550S Part B (hardener)

**FILM THICKNESS**

Depends on service, typically applied at 30-40 mil/1 mm in a one coat application. Do not exceed 60 mils for ANSI/NSF Std. 61 use.

**COVERAGE**

The theoretical coverage of PLASITE 4500 S is 1,604 mil sq. ft./gal. For estimating purposes, one gallon will cover 32 sq. ft./gal. at 40 mil/1 mm (20% loss included).

**THINNERS (No thinner is recommended )**

Clean up: Thinner #2

VOC CONTENT	Coating as Supplied	
Color	Lbs./Gal.	g/L
Lt. Gray	0.00	0.00

**PHYSICAL CHARACTERISTICS**

<b>Tensile Strength</b> .....	7,000 psi (ASTM D-638)
<b>Flexural Strength</b> .....	10,800 psi (ASTM D-790)
<b>Flexural Modulus of Elasticity</b> .....	5.9 psi x 10 <sup>6</sup> (ASTM D-790)
<b>Hardness</b> .....	75 (ASTM D-2240 Shore D)
<b>Weight per Mixed Gallon</b> .....	10 lbs
<b>Pot-life</b> .....	@75°F/24°C: 45-60 min.
<b>Cure Time (Approx.)</b>	
Dry To Touch.....	@ 75°F/24°C: 12 hrs
Firm.....	@ 75°F/24°C: 24 hrs
<b>Cure for Immersion Service (min 50°F)</b>	
Crude oil or aliphatic hydrocarbons ....	@ 75°F/24°C: 36 hrs
All Others .....	@ 75°F/24°C: 7 days
<b>Flammability</b> .....	Nonflammable
<b>Bond Strength (Steel)</b> .....	1700 psi

**STORAGE CONDITIONS**

Keep Plasite 4500 S products tightly sealed in their original containers until ready for use. Store at 50-85°F/10-29°C, out of direct sunlight. Properly stored, Plasite 4500 S products have a shelf life of six months. To ensure maximum film build, Plasite 4500 S should be used within three months of the manufacture date. Proper jobsite storage of Plasite 4500 S is essential to its performance. Follow these general procedures for storage at the jobsite:

Store components (Part A and Part B) unopened, in a dry place, at 50-85°F/10-29°C, out of direct sunlight, and protected from the elements. Keep away from heat and flame.

For the 24-48 hours just prior to use, narrow the storage temperature to 70-85°F/21-29°C to facilitate ease of mixing.

**SUBSTRATE PREPARATION**

**Steel**

Immediately prior to application of the coating or lining, the steel substrate must be clean of all oil, grease, dirt, dust, mill scale, rust, flash rust, corrosion products, salts, solvents, chlorides, other chemicals, and existing coatings.

All welds must be smooth and continuous; no skip welds. All weld splatter, buckshot, laminations, and slivers must be removed and ground smooth; undercuts and pinholes must be ground smooth and filled with weld metal. All projections, sharp edges, high points and fillets must be ground smooth to a radius of at least 1/8 in./0.32 cm and all corners must be likewise rounded.

All pitting, gouges, scratches, and other defects must be repaired either by welding or by filling with repair materials that are compatible with the coating or lining system and suitable for the intended service conditions.

All surfaces to be coated or lined must be readily accessible.

# PLASITE® 4500 S

The steel must be blasted to a Near White Metal Finish (NACE No. 2, SSPC SP 10) with a 3-4 mil/100 microns dense, sharp anchor profile free of peening, as measured by ASTM D 4417.

Defects exposed by blasting must be repaired.

Refer to Plasite Bulletin PA-3.

## Concrete

Immediately prior to application of coating, concrete substrate must be:

- Adequately cured (generally, at least 28 days; check with Carboline if concrete has cured less than 28 days).
- Structurally sound.
- Free of all dirt, dust, debris, oil, grease, fats, chemical contamination, salts, solvents, surface hardeners, incompatible curing compounds and form release agents, laitance and efflorescence.
- Concrete surface must be dry.

And must have:

- Tensile strength of at least 300 psi.
- pH in the range of 7 to 11.
- All fins, projections and splatter removed.
- All defects repaired using patching as described herein.
- Failed or otherwise incompatible old coatings removed.
- A surface texture similar to medium sandpaper (40 to 60 grit).

Refer to Carboline's separate document "Surface Preparation – Concrete" for further instruction in the preparation of concrete surfaces.

Locate all expansion joints, control joints, floor drains, equipment base plates, and mid-floor termination points. Handle them as per Carboline's separate document "Construction Details".

Degraded concrete on horizontal surfaces should be restored using Carboguard 510 Concrete Repair Mortar or specified restoration materials.

Honeycombs or any form voids in vertical surfaces must be filled. Use a putty made with Carboguard 510 Concrete Repair Mortar.

Concrete is a very porous material. As it warms during the day it expels air, or "outgasses". A coating applied while the concrete is outgassing likely will develop bubbles and pinholes.

To avoid this, the material should be applied when the temperature of the concrete is falling. Usually this is from late afternoon into the night. Stop applying the material well before dawn, so it has time to set up firm to the touch before outgassing begins. This may be anywhere from 1 to 6 hours, depending upon the weather conditions. In addition, it is a good idea to shade the work area from direct sunlight. Do not apply material when temperature will fall within 5°F/3°C of the dew point.

Priming may be required in situations where outgassing could be a problem. Consult Carboline for primer recommendations.

## MASKING & PROTECTION

Mask or remove adjacent surfaces and equipment that are not to be lined. Once applied, PLASITE 4500 S is difficult to remove. Protect nearby pumps, motors and other equipment from spent abrasive venting from the tank during blasting.

## APPLICATION GUIDELINES

Before mixing and applying any material, make sure environmental conditions are satisfactory for application. Weather conditions, and especially dew point, should be constantly monitored in light of the work being done. Final blast cleaning and application of the lining system must only be performed when it is clear the temperature of the steel substrate will not fall within 5°F/3°C of the dew point. Dehumidification and/or temperature control may be necessary to meet

this requirement. Use a surface thermometer to frequently monitor the temperature of the steel substrate.

## EQUIPMENT

### Single Component Airless Spray

All pumps and hoses must be in proper working order, clean and free of foreign matter. Use air motor with an air ratio of 45:1 or larger such as Graco "King" airless spray pump.

All filters should be removed from the pump. Use a minimum 3/8 in./0.95 cm spray hose from pump to gun, not to exceed 100 in./30.5 in. m. It is best to bring the material directly to the gun body and not go through a tube in the handle.

The size of airless spray tip will depend on the area being sprayed, the viscosity, and the temperature of the materials. Use sizes from 0.19 - 0.35 in. If using an inline filter, use a 60-mesh screen size.

The mixed material temperature should be 75-85°F/ 24-38°C for best spraying.

**Note:** Ambient temperature above 85°F/29°C will shorten pot life.

To prepare the material for spraying, mix Part A with a jiffy type mechanical mixer for two minutes, mix Part B until color is well blended, then mix Part A and Part B together for two minutes using the jiffy mixer.

When using a 45:1, set the mixed material under the pump (it is best to remove the siphon tube and pump directly from the bottom of the pump) and start spraying. The air pressure required will vary between 55-65 lbs.

When spraying is completed, solvent purge the lower unit and spray gun, then remove the bottom ball valve and clean thoroughly.

### Plural Spray

Use a fixed ratio (4:1 by volume) plural component spray rig such as: Graco King Hydro-Cat, Graco XTR or equal Extreme Machine with heated hoppers, heated hoses to a mixer manifold through a static mixer to a 50 ft whip hose followed by a silver gun (Binks 1M or equal) utilizing self-cleaning reverse-a-tips from 0.19 to 0.35 inches. See equipment specifications for more details.

**Note:** The "A" side should be at a minimum of 110°F/43°C and the "B" side at 90-100°F/32-38°C. This will ensure proper spraying of PLASITE 4500 S.

Take care to prevent the mixed material from setting up in your hoses. For best results, keep your hoses as short as possible, purge them immediately if work is interrupted, keep them out of direct sunlight and insulated from hot surfaces.

## APPLICATION

### Mixing

#### For Single Component Spray

Use Jiffy type mixers for all mixing and stirring. When operating the mixer avoid plunging it up and down in the bucket, this can fold air into the resin, which may cause bubbles to form in the coating after it has been applied. Individually stir each separate Part A and Part B component to a smooth, uniform consistency and color. Any sediment in the container must be thoroughly scraped up and redispersed.

**Spray:** Immediately before applying a spray coat, stripe all continuous welds and edges with a brush-coat to assure adequate protection of these areas.

**Brush/Roll:** Normally recommended for touch-up or repair areas. Consult Technical Service or your local representative for specific guidelines and procedures.

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All spray equipment should be clean and in proper working order. Contact Carboline Technical Service for start-up and clean-up procedures. Adjust pressure to 50-70 psi and open the valves at the manifold and purge materials at the spray gun. Attach spray tip and begin to spray. Dependent upon tip size, each pass will be 8-14 mil/200-350 microns per pass. Apply material to specified thickness.

Apply criss-cross multi-passes, moving gun at a fairly rapid rate, maintaining a wet appearing film. Use a wet film thickness gauge to monitor film build.

**Note:** Force curing may be desirable in certain circumstances. Check with Carboline's Technical Service Department.

## CURING

PLASITE 4500 S will be dry to the touch in 12-18 hours at 75°F/24°C, 36-48 hours at 50°F, will be firm to the touch in 24 hours at 75°F/24°C or 48-72 hours at 50°F, and will be suitable for limited chemical service in 36 hours at 75°F/24°C or 4-5 days at 50°F. For most service final cure time for immersion is 7 days at 75°F/24°C or 14 days at 50°F. Consult Carboline Technical Service for specific chemical service.

**Note:** All linings used for potable water service must be cleaned to local specifications to meet potable water standards. There are several methods to disinfect and prepare a tank for service. The following is a synopsis of Method 2 of ANSI/AWWA Standard (C652) for Disinfection of Water-Storage Facilities.

1. Thoroughly rinse the entire tank.
2. Apply a solution of Sodium Hypochlorite (household bleach) of 200 mg/liter (0.2% solution) for a period of 30 minutes.
3. Thoroughly rinse with clean water.
4. Check the surface with pH paper.
5. The pH should be 6.8 to 7.2.

Plasite 4500 S does have a propensity to blush during its cure cycle. The blush is to be removed before top-coating or placing this material into potable water service.

## LINING REPAIR

Before any touch-up or recoat material can be applied, the first coat must be properly prepared for intercoat adhesion.

The first coat must be cured firm to the touch. Coating on floors must be able to support foot traffic.

If the first coat cures more than 24-hours, lightly sand or mechanically abrade the surface after scrubbing it down with soap and water.

Any surface to be touched up or recoated should be protected. When the recoat material is applied, the surface must be dry and free of all dirt, dust, debris, oil, grease and other contamination.

## INSPECTION

Degree of surface preparation shall conform to appropriate specifications as outlined in SURFACE PREPARATION section. Film thickness of each coat and total dry film thickness of the coating system shall be determined with a non-destructive magnetic gauge properly calibrated.

## RECOMMENDATIONS

- Apply only on a clean, sound, properly prepared substrate.
- Minimum ambient or substrate temperature is 50°F/10°C. Optimal temperature is 75°F/24°C.
- Maximum substrate temperature is 100°F/38°C at the time of application.
- Relative humidity should be between 0-90%.
- Substrate temperature should be 5°F/3°C above the dew point.

- Application and curing times are dependent upon ambient conditions. Consult Carboline's Technical Service Department if conditions are not within recommended guidelines.

## PRECAUTIONS

- Before handling and application of this material consult the MSDS sheets. As with any product, those handling PLASITE 4500 S materials should employ proper safety practice. Hypersensitive persons should wear protective clothing, gloves, and use protective cream on any exposed areas.

## NOTES

- Material Safety Data Sheets on PLASITE 4500 S are available upon request.
- Specific information regarding the chemical resistance of PLASITE 4500 S can be found by contacting Carboline Technical Service.
- A staff of technical service engineers is available to assist with product application, or to answer questions related to Carboline products.
- Requests for technical literature or service can be made through local sales representatives and offices worldwide.

### SAFETY READ THIS NOTICE SAFETY AND MISCELLANEOUS EQUIPMENT

For tank lining work or enclosed spaces, it is recommended that the operator provide himself with clean coveralls and rubber soled shoes and observe good personal hygiene. Certain personnel may be sensitive to various types of resins which may cause dermatitis.

**THE SOLVENT IN THIS COATING IS FLAMMABLE AND CARE AS DEMANDED BY GOOD PRACTICE, OSHA, STATE AND LOCAL SAFETY CODES, ETC. MUST BE FOLLOWED CLOSELY.**

Keep away from heat, sparks and open flame and use necessary safety equipment, such as, air mask, explosion-proof electrical equipment, non-sparking tools and ladders, etc. Avoid contact with skin and breathing of vapor or spray mist. When working in tanks, rooms and other enclosed spaces, adequate ventilation must be provided. Refer to PLASITE Bulletin PA-3. Keep out of the reach of children.

**CAUTION** - Read and follow all caution statements on this product data sheet, material safety data sheet and container label for this product.

This data sheet provides standard information on the coating and application procedure. Since varying conditions may not be covered, consult with your local sales representative or Carboline Technical Service Department for further information.



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