

Selection & Specification Data

Generic Type PLASITE 4550 S is a 100% solids, flake filled, premium novolac epoxy coating designed for internal steel and concrete substrates. It is a two component system consisting of four-parts by volume of Part A resin and one part by volume of Part B hardener. It is applied by plural or single component spray equipment, in a total thickness range of 500-1500 microns in a single coat application for a variety of applications.

Typical Uses Applications

- Chemical Storage Tanks
- Wastewater Clarifiers
- Plating Vats
- Oil Storage Tanks
- Ethanol Storage Tanks
- Catwalks
- Concrete exposures in wastewater applications, chemical bunds etc
- Pulp and Paper liquor tanks

Features

- High impact resistance
- Superior bond ability to steel and concrete
- Resistance to a broad range of chemicals
- Can be applied up to 60 mils in one coat
- Can be sprayed using single component airless equipment
- Chemical Resistant:-
Resistant to a broad range of chemicals such as fuels, salts, alkalis, some solvent, and many acids (including concentrated sulfuric acid)

Colour

Light Grey, Tile Red & White

Primers

Refer to relevant job-specific specification

Dry Film Thickness

500 – 1500 microns (single coat*) depending upon service and condition of substrate.
*If applied in multiple coats care must be taken to suitably prepare earlier coats (refer to Lining Repair notes, page 3)

Solids Content

100% by volume

Theoretical Coverage Rate

2.0 square metres per litre at 500 microns DFT
1.0 square metre per litre at 1000 microns DFT
0.6 square metres per litre at 1500 microns DFT

Mix Ratio

4:1 by volume (Part A : Part B)

VOC Values

0 VOC as supplied

Thinner

Not recommended
Clean up with toluene or Thinner #2

Packaging

PLASITE 4550 S is available in 1 and 5 US gallon units.

One gallon (3.78 litres) unit includes:

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

Five gallon (18.9 litres) unit includes:

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

Storage Conditions

Warehousing:

Keep PLASITE 4550 S products tightly sealed in their original containers until ready for use. Store at 10-29°C, out of direct sunlight.

Properly stored, PLASITE 4550 S Part A has a shelf life of 6 months; Part B, 24 months.

Job Site:

Proper jobsite storage of PLASITE 4550 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 10-29°C, out of direct sunlight, and protected from the elements. Keep away from heat and flame.

Prior to Use:

For the 24-48 hours just prior to use, narrow the temperature range to 21-29°C to facilitate ease of mixing.

Precautions

PLASITE Thinner #71 or #2 Thinner is recommended for clean up of the PLASITE 4550 S material.

Before handling and application of this material consult the MSDS sheets. As with any product, those handling PLASITE 4550 S materials should employ proper safety practice. Hypersensitive persons should wear protective clothing, gloves, and use protective cream on any exposed areas.

When PLASITE 4550 S is used as a tank lining or in an enclosed area circulation should be used during and after the installation. Circulation can be discontinued once the material has cured. The ventilation equipment should be capable of preventing the solvent concentration from reaching the lower explosion level for the solvents used. The applicator should monitor the exposure levels or use OSH approved air respirators.

Typical Physical Characteristics

Tensile Strength	7500 psi (52 MPa) – ASTM D-638
Flexural Strength	10600 psi (74 Mpa) – ASTM D-790
Flexural Modulus of Elasticity	5.9 x 10 ⁶ psi (4 x 10 ⁴ MPa) ASTM D-790
Hardness	75 (ASTM D-224- Shore D)
Adhesion	1700 psi (12 MPa)
Specific Gravity	1.25 kg / litre
Pot Life	45 – 60 minutes @ 24°C
Cure Times	
Dry to Touch	12 hours @ 24°C
Firm	24 hours @ 24°C
Flammability	Non-flammable

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, 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 3 mm 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.

The steel must be blasted to a minimum near White Metal Finish AS 1627.4 Class 2½ (SSPC SP 10) with a 100 micron 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 695 PM or Carboguard 510 Concrete Repair Mortar or specified restoration materials.

Honeycombs or any form voids in vertical surfaces must be filled. Use putty made with Carboguard 695 PM or 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 is likely to 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 3°C of the dew point.

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

Application Guidelines & Equipment

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 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 (or other) 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 a ratio of 45:1 or larger such as Graco "King" airless spray pump.

All filters should be removed from the pump. Use a 9 mm (3/8 in.) spray hose from pump to gun, not to exceed 30 metres. It is best to bring the material directly to the gun body via a swivel coupling 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 0.019-0.035". If using an in-line filter, use a 60-mesh screen size.

The mixed material temperature should be 24-38°C for best spraying.

Note: Ambient temperature above 29°C will shorten pot life.

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

When using a 45:1 pump 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 psi (360-430 kpa). If using a 56:1, the siphon tube may remain attached.

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 (or equal) 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 reversible tips from 0.019 to 0.035". See equipment specifications for more details.

Note: The "A" side should be at a minimum of 43°C and the "B" side 32-38°C. This will ensure proper spraying of PLASITE 4550 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.

Spray Methodology

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

All spray equipment should be clean and in proper working order. 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 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.

Mixing - For Touch-Up Only

We recommend using 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 colour. Any sediment in the container must be thoroughly scraped up and redispersed.

Combine Parts A and B and thoroughly stir for 2 minutes.

Application Guidelines & Equipment cont'd

CURING

Plasite 4550 S will be dry to the touch in 12 hours at 24°C.

Surface Temperature and 50% RH	Dry to Handle Time	Final Cure For Mild Immersion Service
10°C	30 hours	7 days
16°C	24 hours	4 days
24°C	12 hours	36 hours
32°C	4 hours	24 hours

For more aggressive services or for force curing schedules, please contact Carboline Technical Service for specific requirements.

Cure for Immersion service (min 15°C)

Crude oil, water or aliphatic hydrocarbons 36 hours @ 24°C

LINING REPAIR

Plasite 4550 S does have a propensity to blush during its cure cycle. The blush must be removed before repairing or recoating.

The first coat must be cured firm to the touch. Coating on floors must be able to support foot traffic. Scrub the first coat with soap and water and thoroughly rinse and dry it. Lightly sand or mechanically abrade the areas that will receive additional coats.

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 properly calibrated non-destructive magnetic gauge.

GENERAL RECOMMENDATIONS

- Apply only on a clean, sound, properly prepared substrate.
- Minimum ambient or substrate temperature is 10°C, at the time of application. Optimal temperature is 24°C.
- Maximum ambient or substrate temperature is 38°C.
- Relative humidity should be between 0-90%.
- Substrate temperature should be 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.

NOTES

Material Safety Data Sheets on PLASITE 4550 S are available upon request.

Specific information regarding the chemical resistance of PLASITE 4550 S can be found by contacting Carboline's Technical Service Department.

USEFUL REFERENCES

- NACE No. 6 / SSPC-SP 13 Surface Preparation of Concrete
- Carboline Bulletin PA-3 "Lining Of Vessels For Immersion Service"

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