Plasite® 4100

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Vinyl Ester
Description	Plasite 4100 is a high performance lining-grade coating reinforced with inert flake pigments combined with a special curing system to provide outstanding chemical resistance and physical properties. It has exceptional resistance to inorganic and organic acids, oxidizing agents and salts. It can handle dry heat up to 380 °F (193 °C) and will resist condensing acid vapors (sulfuric) typically found in FGD (flue gas desulfurization) systems.
Features	• Exceptional resistance to inorganic and organic acids • Thick film for tank lining service • Excellent abrasion resistance and hardness • Handles dry heat to 380 °F (193 °C) • Meets FDA requirements for 21 CFR 175.300 and 177.2420 • Excellent caustic resistance
Color	Grey (0700)
Primer	Primer (optional, as needed): Self-priming to steel To control outgassing on concrete: Dudick Primer 27 Pit/void filler and surfacer: Dudick Scratch-Coat 800 Control Moisture Vapor Transmission (MVT): Dudick Vapor Stop
Dry Film Thickness	15 - 20 mils (381 - 508 microns) per coat 2-3 multi-pass spray coats will produce 35-45 mils (875-1125 microns) dry film thickness range recommended for immersion service. Consult Carboline Technical Service Department for any deviation to this film thickness.
Theoretical Coverage Rates	960 ft² at 1 mil (89 m^2 at 25 microns) This practical coverage rate includes factors such as loss in can, spray loss, small amount of shrink-age, etc. Application by conventional spray equipment may also affect coverage. Allow for loss in mixing and application
VOC Values	**As Supplied** : 0.50 lb/gal (60 g/L) ± 2% Thinner 76 : 0.78 lb/gal (93 g/L) ± 2%
Dry Temp. Resistance	Continuous: 380°F (193°C) Non-Continuous: 460°F (238°C) Wet temperature resistance depends upon concentration and chemical exposure
Topcoats	Not Applicable
Density	82.3 lbs./ft^3 0.27438 lbs./ft^2 at 40 mils.

SUBSTRATES & SURFACE PREPARATION

General	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.
Steel	Cleanliness: Abrasive blast to SSPC-SP10/NACE No. 2 (minimum) Profile: Minimum 4 mil (100 micron) dense, sharp anchor profile of peening, as measured by ASTM D 4417. Defects exposed by blasting must be repaired.

SUBSTRATES & SURFACE PREPARATION

Concrete or CMU	All concrete requires abrasive blasting to remove laitance and to provide a hard, firm, clean and fully-cured concrete surface. All concrete surfaces are required to be filled and sealed prior to application of PLASITE 4100. Contact Carboline for recommendations.

PERFORMANCE DATA

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

Test Method	System	Results
*Surface Hardness ASTM Method D4366-84	Plasite 4100	Konig Pendulum Hardness of 134 seconds (Glass Standard = 250 seconds)
Abrasion Resistance	Plasite 4100	Average loss per 1000 cycles Taber CS-17 Wheel, 1000 gram weight: 36 milligrams
Elongation ASTM D638	Plasite 4100	1.7%
Thermal Shock	Plasite 4100	Unaffected by minus 70 °F to plus 200 °F in 5 cycles, or 40 °F to 380 °F in 10 cycles

*Note: Above tests were conducted on film cured at 150 °F.

MIXING & THINNING

Mixing

Pre-mix Part A using a mechanical high speed mixer. While continuing to mix part A, gradually sift in the Part B component into Part A, maintaining a good vortex while mixing until a homogenous liquid is achieved, free of any unmixed particles of pigment (approximately 10-15 minutes). Scrape the sides of the bucket to ensure no unblended components of the mix remain before proceeding to the next step. After the pigments and liquid are thoroughly blended together, and while continuing to mix, add the entire amount of the measured Part D (liquid promoter) until no color streaking remains visible. Allow to cool if material temperature increases, (NOTE: Part A, Part B and Part D may be premixed up to 72 hours prior to adding Part C) then add Part C (catalyst) and necessary amount of Plasite Thinner 20. Mix an additional three to five minutes.
WARNING! The promoter (Part D) and the catalyst (Part C) must be separately mixed into the coating (Parts A&B). Any contact of unmixed Part C with Part D may lead to a fire or an explosion! Continuous agitation during use is required. Operator should wear face mask during high speed mixing of the coating components. Avoid breathing dust.

Kit components match as follows:
Small, gallon kit:
Part A - Approximately 3/4 of a gallon in a one gallon container
Part B - Approximately 5.5 pounds in a one gallon container
Part C - Approximately 3.5 fluid ounces in a 6 ounce plastic bottle
Part D - Less than 1 fluid ounce in a 2 ounce plastic bottle
Large, 5 gal kit:
Part A - Approximately 3.75 gallons in a 6 gallon container
Part B - Approximately 28 pounds in a 5 gallon container
Part C - Approximately 18 fluid ounces in a 1 quart plastic bottle
Part D - Approximately 1.5 fluid ounces in a 2 ounce plastic bottle

Thinning

Carboline Thinner 76, 2% to 10%, depending upon temperature and application conditions. Consult Carboline's Technical Service Department for unusual thinning requirements.

MIXING & THINNING

Pot Life	1.5-3 hours in one gallon units and 1.5-2 hours in five gallon units at 70 °F to 90 °F MATERIAL temperature. MATERIAL temperatures in excess of 90 °F will significantly reduce pot life. **CAUTION:** Do not attempt to extend pot life by mixing newly catalyzed coating into coating near the end of its pot life.

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.

Conventional Spray	59ASS Fluid Nozzle 251 Air Cap 559SS Needle Pot pressure of approximately 50 psi Atomizing pressure of approximately 60 psi Use standard production type pressure pot with dual regulators and lid-mounted agitator. CONTINUOUS MIXING DURING USE IS REQUIRED. Heavy-duty trigger spring on spray gun is recommended. Note: Application by conventional spray equipment may affect maximum film building capabilities and coverage rates. Applicators may prefer to apply additional coats to achieve the 40 mil nominal DFT.
Airless Spray	• Pump Ratio: 30:1 minimum • GPM Output: 3 gal/minute • Material Hose: 3/8" • Tip Size: 0.025" or larger • Output PSI: 1800-2200 • Filter Size: Remove all filters • PTFE packings are recommended and available from pump manufacturers
Brush	Brush application is not recommended, but may be used for repairs or touchup. Continuous mixing during use is required.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	70°F (21°C)	60°F (16°C)	60°F (16°C)	0%
Maximum	90°F (32°C)	100°F (38°C)	100°F (38°C)	80%

Material requires a minimum of 70 °F (21 °C) for polymerization to occur. Surfaces as low as 60 °F (16°C) can be tolerated for 12 hours, but must be brought back up to 70° F (21°C) to apply subsequent coats.
NOTE: Any moisture from condensation of any source will kill the cure on freshly applied coating before it reaches a "non-tacky" state.

CURING SCHEDULE

Surface Temp.	Dry to Recoat	Set to Handle	Cure Time
70°F (21°C)	5 Hours	10 Hours	10 Days
90°F (32°C)	3 Hours	5 Hours	7 Days

The curing schedule above is based on 50% relative humidity. "Set to Handle" times listed are times where the material will tolerate light foot traffic.
Discontinuity testing may be done 48 hours after final coat has been applied at 70 °F (21 °C) or 36 hours at 90 °F (32 °C).
Note: Previously applied coating exposed to an accumulation of 24 hours of sunlight (UV) or surface temperatures exceeding 130 °F (54 °C) may result in intercoat disbondment. Topcoat within 24 hours; or abrade the surface prior to subsequent coats. If not exposed to UV or elevated temperatures, maximum recoat time is 30 days.

CLEANUP & SAFETY

Cleanup	Use Carboline Thinner 76. 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 SDS for this product. Employ normal workmanlike safety precautions. Keep container closed when not in use.
Ventilation	When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. 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 contains 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

Packaging	**Kit components match as follows:** Small, gallon kit: Part A - Approximately 3/4 of a gallon in a one gallon container Part B - Approximately 5.5 pounds in a one gallon container Part C - Approximately 3.5 fluid ounces in a 6 ounce plastic bottle Part D - Less than 1 fluid ounce in a 2 ounce plastic bottle Large, 5 gal kit: Part A - Approximately 3.75 gallons in a 6 gallon container Part B - Approximately 28 pounds in a 5 gallon container Part C - Approximately 18 fluid ounces in a 1 quart plastic bottle Part D - Approximately 1.5 fluid ounces in a 2 ounce plastic bottle
Shelf Life	At 75°F (24°C) Part A: 12 months Part B: 24 months Part C: 12 months Part D: 24 months
Storage Temperature & Humidity	Cooler storage temperatures will increase shelf life. Higher temperatures can result in substantially shorter shelf life.
Storage	Store indoors

PACKAGING, HANDLING & STORAGE

Shipping Weight (Approximate)	1 gallon kit: 12 lbs 5 gallon kit: 60 lbs
Flash Point (Setaflash)	Part A: 73 °F (23 °C) Part B: >200 °F (93 °C) Part C: 25 °F (-4 °C) Part D: 100 °F (38 °C)

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.