

TYPE

A water-resistant epoxy coating polymerized with a polyamine type curing agent. Also available in a high abrasion resistant version.

INTENDED USE

A high performance lining for elevated temperature and pressure immersion services in high purity water, as well as the oil/water separating processes encountered in the petroleum industry.

TEMPERATURE RESISTANCE

Dry film basis is 350°F/177°C for short periods. Continuous immersion temperature and pressure limitations have been established for certain exposures. Call for specific recommendations.

COLORS: Ivory, Light Gray.

FILM THICKNESS PER COAT

A 5-6 mil/125-150 micron film is produced in one multi-spray coat. A total film thickness of 10-12 mils/250-300 microns is required for immersion service.

COVERAGE

1,092 mil ft²/gal. (theoretical). For estimating purposes, 87 ft²/gal (2.14 m²/l) will produce a 10-12 mil/250-300 micron DFT film (20% loss included). Two multi-pass spray coats will produce the 10-12 mil/250-300 micron DFT film recommended for immersion service.

DRYING TIME

Surface will normally be tack free in 2 to 4 hours at 70°F/21°C. Refer to Curing section for more detailed curing information

VOC CONTENT

Coating as Supplied (Determined Theoretically) 7159		Thinned 10% by Volume with Plasite Thinner #19 or 71 (Determined Theoretically)		
Color	Lbs./Gal.	g/L	Lbs./Gal.	g/L
Ivory	2.38 ± 2%	285 ± 2%	19 - 2.82 ± 2%	338 ± 2%
			71 - 2.79 ± 2%	334 ± 2%
Coating as Supplied (Determined Theoretically) 7159 HAR		Thinned 10% by Volume with Plasite Thinner #19 or 71 (Determined Theoretically)		
Ivory	2.32 ± 2%	278 ± 2%	19 - 2.77 ± 2%	332 ± 2%
			71 - 2.73 ± 2%	327 ± 2%

VOC Content varies between colors. Contact Carboline Technical Service Department for VOC of specific colors.

THINNERS

PLASITE Thinner #71 is recommended for normal application temperatures and conditions.

PLASITE Thinner #19 is recommended for above normal application temperatures and where tank design requires a slower evaporating thinner to help control overspray.

The amounts of thinner required will vary depending on air and surface temperatures and application equipment. Normal application temperatures and conditions will require the addition of approximately 10% by volume with approximately 5% additional thinner added for each 5°F/3°C of increased temperature. Airless spray equipment and above normal temperatures require additional thinning.

It is recommended that the thinner included on each order amount to approximately 20% of the coating order.

January 2007 replaces January 2004

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PHYSICAL SPECIFICATIONS

Abrasion Resistance: 7159.....35 milligrams
7159 HAR.....27 milligrams

Average loss per 1000 cycles, Taber CS-17 Wheel, 1000 gram weight. Ivory color.

Surface Hardness:.....Konig Pendulum Hardness (ASTM Method D4366-84)
7159...of 113 seconds
7159 HAR...of 104 seconds (Glass Standard = 250 seconds)

Pigments: Titanium dioxide, inerts and tinting colors.

Solids: 7159...84.1 ± 2% by weight; 68.1 ± 2% by volume
7159 HAR...85.3 ± 2% by weight; 68.3 ± 2% by volume

Pot Life:.....Approximately 8 to 10 hours at 70°F

Shelf Life:.....24 months at 70°F
Material in stock should be turned upside down every 3 months.

Shipping Weight: 7159...Approximately 15 lbs./gal.
7159 HAR...Approximately 15.25 lbs./gal.

CHEMICAL RESISTANCE

Pressurized Atlas Cell testing has been conducted. The test conditions consisted of three area phase layers: the bottom immersion phase of tap water; a second phase of a blend of equal parts of toluene and kerosene; and a gas phase consisting of 15% carbon dioxide, 84.5% methane and .5% hydrogen sulfide.

A pressurized Atlas Cell test was conducted at a pressure of 500 psi with a temperature of 200°F for 110 days with no detrimental effect to the coating. A second pressurized Atlas Cell test was conducted at a pressure of 1000 psi with a temperature of 200°F for 25 days with no detrimental effect to the coating. A third test consisted of a pressurized Atlas Cell containing demineralized water. Pressure was approximately 15 psi at 250°F. Test was run for six months with no effect to the coating.

Non-pressurized Atlas Cell test conditions consist of DI water at 212°F. No detrimental effect to coating at completion of one year test.

Note: Although the chemical tests indicated show that PLASITE 7159 is unaffected as listed, it is not meant to imply an express guarantee in actual service. The service is dependent upon proper application and actual operating conditions and it is recommended that users confirm adaptability of the product for a specific use by their own tests. PLASITE 7159 is not suitable for service in corrosive acids or oxidizing service for continuous immersion.

CLEANUP THINNER: Thinner #71

CURING

For immersion service, curing will normally take place in 7 days at 70°F/21°C, 10 days at 60° to 69°F, or 14 days at 50°-59°F/10-16°C. As ventilation and other factors affect the time/cure of coatings, additional time allowance is recommended at any temperature if cure time is questioned. When exposure is severe and 70°F/21°C, force curing is recommended to obtain maximum resistance.

With adequate ventilation, when applying at temperatures above 70°F/21°C, coating surfaces will normally be tack free in 2 to 4 hours.

PLASITE® 7159

Listed below are a few force curing schedules that may be used for time and work planning. When applying at 50-70°F/10-21°C, allow 16 to 24 hours air dry time prior to raising the metal temperature to the force curing temperature. When applying at temperatures above 70°F/21°C, allow 2 to 5 hours air dry time. After the appropriate air dry period, raise metal temperature approximately 30°F/17°C each 30 minutes until the desired force curing metal temperature is reached.

METAL TEMPERATURE	CURING TIME	METAL TEMPERATURE	CURING TIME
130°F/54°C	18 Hrs	170°F/77°C	3 ½ Hrs
140°F/60°C	10 Hrs	180°F/82°C	2 ½ Hrs
150°F/66°C	6 Hrs	190°F/88°C	2 Hrs
160°F/71°C	4 ½ Hrs	200°F/93°C	1 ¾ Hrs

Final cure may be checked by exposing coated surface to MIBK for 10 minutes. If no dissolving and only minor softening of film occurs, the curing can be considered complete. The film will reharder after exposure if cured.

SURFACE PREPARATION

Steel — Immersion Service

All sharp edges shall be ground to produce a radius and all imperfections, such as skip welds, delaminations, scabs, slivers and slag shall be corrected prior to abrasive blasting. Skip welds shall be welded solid.

Degrease surface prior to sandblasting. Organic solvents, alkaline solutions, steam, hot water with detergents or other systems that will completely remove dirt, oil, grease, etc. may be used. Used tanks may require additional decontamination.

The surface shall be blasted to an SSPC-SP5 or NACE No. 1 white metal surface using a Venturi blast nozzle supplied with 80-100 psi/6-7 bars. An anchor pattern or "tooth" in the metal shall correspond to approximately 20 to 25% of the total film thickness of the coating.

Contaminated grit shall not be used for the finish work. The blasting media used shall be a natural abrasive, or steel grit, or slag grit (similar or equal to BLACK BEAUTY®). These abrasives shall be sharp with a hard-cutting surface, properly graded, dry and of best quality. The media shall be of proper size to obtain the specified anchor pattern and shall be free of objectionable contaminants.

The anchor pattern shall be sharp and no evidence of a polished surface is allowed.

Remove all traces of grit and dust with a vacuum cleaner or by brushing. Care must be taken to avoid contaminating the surface with fingerprints or from detrimental material on the workers' clothes.

The surface temperature shall be maintained at a minimum of 5°F/3°C above the dew point to prevent oxidation of the surface. The coating shall be applied within the same day that the surface has been prepared.

Concrete

Contact Carboline for a recommendation.

Aluminum

Surface shall be clean and grease free with a blast produced anchor pattern or "tooth" as described earlier under STEEL. In addition, the blasted surface shall be given a chemical treatment such as:

ALODINE 1200S available from Henkel Surface Tech

IRIDITE 14-2 produced by MacDermid Incorporated

OAKITE CRYSCOAT 747LTS and OAKITE CRYSCOAT ULTRASEAL

produced by Oakite Products

APPLICATION

Mixing

The curing agent and coating are supplied in separate containers at a 4:1 ratio. Prestirring Part B will improve pourability. For splitting purposes, use 1 part curing agent to 4 parts coating by volume. Thoroughly mix coating, then add curing agent slowly and mix completely with coating. The coating should stand approximately 30 minutes after the curing agent has been thoroughly mixed.

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Note: Continuous mixing of the coating during application is required for 7159 HAR.

Spray

All spray equipment should be thoroughly cleaned and the hose, in particular, should be free of old paint film and other contaminants.

Use standard production type spray guns:

GUN	FLUID	AIR
DeVilbiss JGA-510	E	797
Binks #2001	66-SS	63-PB
Graco P800	04	02

NOTE: Atomizing air spray is recommended for 7159 HAR because of the high rate of wear to spray tips and pump parts of airless spray equipment.

When airless spray equipment is used, the recommended liquid pressure is 1500-1800 psi/100-120 bars with tip size from .015-.021 in/0.38-0.46 mm. Thinning requirements are more than for conventional spray.

Air supply shall be uncontaminated. Adjust air pressure to approximately 50 lbs./200 N at the gun and provide 5-10 lbs./20-40 N of pot pressure. Adjust spray gun by first opening liquid valve and then adjusting air valve to give an 8-12 in./20-30 cm wide spray pattern with best possible atomization.

Apply a "mist" bonding pass.

Allow to dry approximately one minute, but not long enough to allow film to completely dry.

Apply crisscross multi-passes maintaining an even continuous wet appearing film. This technique will enable a 7-8 mil/175-200 micron wet film (approximately 5-6 mil/125-150 micron DFT) to be applied per multi-pass coat. Repeat this procedure for the second coat to obtain a 10-12 mil/250-300 micron DFT.

Overcoat time will vary both with temperature and ventilation and will normally require 8 to 12 hours at 70°F/21°C for enclosed spaces with additional time needed if coating is being applied at lower temperatures. Remove all overspray by dry brushing or scraping if required.

Equipment must be thoroughly cleaned immediately after use with Plasite thinner to prevent the setting of the coating.

Note: Prior to spray application, stripe brush all welds, attachments and surface irregularities using PLASITE 7159/7159 HAR thinned a minimum of 50% by volume of PLASITE Thinner #19 or 71.

Brush

Recommended for small areas and repairs only. Use a high quality brush, and apply a very light crisscross brush coat. Allow to dry for approximately 5 minutes. Then apply a heavy coat using a crisscross brush pattern. "Flow" the coating on rather than try to "brush out." Allow to dry tack-free. Repeat until sufficient film thickness is obtained. Normally a film thickness of 2.5-3 mils/63-75 microns can be obtained per coat by this method.

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 coating system shall be determined with a properly calibrated nondestructive magnetic gauge.

Refer to Plasite Bulletin PA-3, Section 3, for inspection requirements.

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.