Protective & Marine Coatings

PHENICON® HS

PART A	920WA11	OFF WHITE
PART A	920A175	LIGHT GRAY
PART A	920L175	LIGHT BLUE- OAP
PART B	700C685	HARDENER
PART B	700C825	LOW TEMPERATURE HARDENER

Revised March 17, 2015

PRODUCT INFORMATION

TRM.25

PRODUCT DESCRIPTION

PHENICON HIGH SOLIDS is a VOC-compliant epoxy novolac phenolic coating formulated for use as an internal lining for tanks used to hold crude oil and most refined petroleum products including unleaded gasoline, MTBE, aromatic solvents, and most octane booster blending stocks. Also formulated for secondary containment uses.

- Light Blue contains Opti-Check OAP pigment technology for rapid holiday detection with safe blue light inspection lamps.
- Chemical Resistant
- Low temperature hardener available for applications from 35°F (1.6°C) minimum to 80°F (27°C) maximum

PRODUCT CHARACTERISTICS

Finish:	Semi-Gloss
Color:	Off White, Light Gray, Light Blue
Volume Solids:	75% ± 2%, mixed
Weight Solids:	86% ± 2%, mixed
VOC (calculated):	<250 g/L; 2.08 lb/gal, mixed
Mix Ratio:	4:1 by volume

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**7.0** (175)	**9.0** (225)
Dry mils (microns)	**5.0** (125)	**7.0** (175)
~Coverage sq ft/gal (m^2/L)	**200** (4.9)	**240** (5.9)
Theoretical coverage sq ft/gal (m^2/L) @ 1 mil / 25 microns dft	**1200** (29.4)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 7.0 mils wet (175 microns):

With 700C685	@ 55°F/13°C	@ 77°F/25°C *50% RH*	@ 120°F/49°C
To touch:	7 hours	3 hours	1 hour
To recoat:			
minimum:	48 hours	18 hours	4 hours
maximum:	30 days	30 days	30 days
Cure to service:	14 days	7 days	3 days
Pot Life:	4 hours	2 hours	30 minutes
Sweat-in-time:	30 minutes	15 minutes	None

Drying Schedule @ 7.0 mils wet (175 microns):

With 700C825	@ 35°F/1.6°C	@ 55°F/13°C	@ 77°F/25°C *50% RH*
To touch:	12 hours	4 hours	2 hours
To recoat:			
minimum:	24 hours	18 hours	12 hours
maximum:	30 days	30 days	30 days
Cure to service:	7 days	5 days	3 days
Pot Life:	4 hours	2 hours	1 hour
Sweat-in-Time:	15 minutes	None	None

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.

Shelf Life:	36 months Store indoors at 40°F (4.5°C) to 100°F (38°C).
Flash Point:	80°F (27°C), PMCC, mixed
Reduction:	Not recommended
Clean Up:	255-C-005

RECOMMENDED USES

- Internal tank lining for most petroleum products such as: crude oil, unleaded gasoline, most aromatic solvents, motor fuels, alkalies, and brines.
- Secondary containment.
- Heavy duty exterior structural coating
- Acceptable for use with cathodic protection systems
- Nuclear Power Plants
- Nuclear fabrication shops
- DOE Nuclear Fuel Facilities
- DOE Nuclear Weapons Facilities
- This product meets specific design requirements for non-safety related nuclear plant applications in Level II, III and Balance of Plant, and DOE nuclear facilities*.

* Nuclear qualifications are NRC license specific to the facility.

- Acceptable for use in Canadian Food Processing facilities categories: E8 (Confirm acceptance of specific part numbers/rexes with your SW Sales Representative)

PERFORMANCE CHARACTERISTICS

Test Name	Test Method	Results
Fuel Contribution*	NFPA 259	5233 btu/lb
Radiation Tolerance*	ASTM D4082 / ANSI 5.12	Pass at 7.1 mils (177.5 microns) & 9.9 mils (247.5 microns)
Surface Burning*	ASTM E84 / NFPA 255	Flame Spread Index 15; Smoke Development Index 35 (at 12.5 mils or 312.5 microns)

*Substrate: Steel

Complies with NACE SP0198 CUI System CS-3

RESISTANCE GUIDE

IMMERSION (Ambient temperature)

- Alkalies ..... Recommended
- Crude oil ..... Recommended
- Diesel fuel / DEF ..... Recommended
- Lubricating oils ..... Recommended
- Fuel oils ..... Recommended
- Aromatic solvents ..... Recommended
- Hi-aromatic gasoline ..... Recommended
- Ethanol gasohol ..... Recommended
- MTBE, ETBE, TAME ..... Recommended
- Ether/fuel blends (reformed gas) ..... Recommended
- Acids ..... Recommended*
- Methanol, ethanol, or blends ..... Recommended**
- Aviation Gasoline/Jet Fuel ..... Recommended

SECONDARY CONTAINMENT (Immersion service up to 72 hours)

- Alkalies ..... Recommended
- Crude oil ..... Recommended
- Diesel fuel / DEF ..... Recommended
- Lubricating oils ..... Recommended
- Fuel oils ..... Recommended
- Aromatic solvents ..... Recommended
- Hi-aromatic gasoline ..... Recommended
- Ethanol gasohol ..... Recommended
- MTBE, ETBE, TAME ..... Recommended
- Ether/fuel blends (reformed gas) ..... Recommended
- Dilute acids ..... Recommended
- Methanol, ethanol, or blends ..... Recommended
- Aviation Gasoline/Jet Fuel ..... Recommended

Epoxy coatings may darken or yellow following application and curing.

* Consult your Sherwin-Williams representative for specific application, temperature, concentration, and exposure recommendations.

** Not recommended when using Low Temperature Hardener

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PRODUCT INFORMATION

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RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Steel:			
2 cts.	Phenicon HS Epoxy Phenolic	5.0-7.0	(125-175)
Steel:			
1 ct.	Phenicon HS Flake Filled	5.0-7.0	(125-175)
1-2 cts.	Phenicon HS Epoxy Phenolic	5.0-7.0	(125-175)
Steel, with hold primer:			
1 ct.	Copoxy Shop Primer	1.0-1.5	(25-40)
2 cts.	Phenicon HS Epoxy Phenolic	5.0-7.0	(125-175)
Concrete, smooth:			
2 cts.	Phenicon HS Epoxy Phenolic	5.0-7.0	(125-175)
Concrete, rough:			
1 ct.	Corobond 100 Epoxy Primer/Sealer	4.0-7.0	(100-175)
1-2 cts.	Kem Cati-Coat HS Epoxy Filler/Sealer as required to fill voids and provide a continuous substrate	10.0-20.0	(250-500)
1-2 cts.	Phenicon HS Epoxy Phenolic	5.0-7.0	(125-175)

The systems listed above are representative of the product's use, other systems may be appropriate.

DISCLAIMER

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SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel:
Immersion: SSPC-SP10/NACE 2, 2 mil (50 micron) profile

Concrete & Masonry:
Immersion: SSPC-SP13/NACE 6 or ICRI No. 310.2R, CSP 2-3

Surface Preparation Standards

Condition of Surface		ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Tinting is acceptable for use in guide coat or prime coat **only**. Use Maxitoner Colorants up to 1/4 oz per gallon maximum.

APPLICATION CONDITIONS

Temperature: (air and surface)
- 700-C-685 Hardener: 55°F (13°C) minimum, 120°F (49°C) maximum
- 700-C-825 Hardener: 35°F (1.6°C) minimum, 80°F (27°C) maximum

Material must be mixed at 55°F (13°C) minimum
At least 5°F (2.8°C) above dew point

Relative humidity: 85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging: 5 gallons (18.9L) mixed
- Part A: 4 gallons (15.1L) in a 5 gallon (18.9L) container
- Part B: 1 gallon (3.78L)

Weight: 12.45 ± 0.2 lb/gal ; 1.5 Kg/L, mixed

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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Revised March 17, 2015

APPLICATION BULLETIN

TRM.25

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel (immersion service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Remove all weld spatter and round all sharp edges. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Iron & Steel (atmospheric service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 2-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910. Primer required.

Follow the standard methods listed below when applicable:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI No. 310.2R Concrete Surface Preparation.

Concrete, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 1.3.2 or ICRI No. 310.2R, CSP 2-3.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature: (air and surface)
700-C-685 Hardener: 55°F (13°C) minimum, 120°F (49°C) maximum
700-C-825 Hardener: 35°F (1.6°C) minimum, 80°F (27°C) maximum
Material must be mixed at 55°F (13°C) minimum
At least 5°F (2.8°C) above dew point

Relative humidity: 85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reduction .....Not recommended

Cleanup 255-C-005

Airless Spray:
Pressure.....3000 psi minimum
Hose.....3/8" - 1/2" ID
Tip .....017" - .021"
Filter.....60 mesh

Conventional Spray:
Gun .....Binks 95
Tip and Needle.....66/65
Air Cap.....65 PR
Atomization Pressure.....65-75 psi
Fluid Pressure.....15-20 psi

Brush:
Brush.....Nylon/Polyester or Natural Bristle

Roller:
Cover .....3/8" woven with solvent resistant core

If specific application equipment is not listed above, equivalent equipment may be substituted.

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APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mixing Instructions: Mix contents of each component thoroughly, by using low speed power agitation. Make certain no pigment remains on the bottom of the can. Then combine 4 parts by volume of Part A with 1 part by volume of Part B. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated. Re-stir before using.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**7.0** (175)	**9.0** (225)
Dry mils (microns)	**5.0** (125)	**7.0** (175)
~Coverage sq ft/gal (m^2/L)	**200** (4.9)	**240** (5.9)
Theoretical coverage sq ft/gal (m^2/L) @ 1 mil / 25 microns dft	**1200** (29.4)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 7.0 mils wet (175 microns):

With 700C685	@ 55°F/13°C	@ 77°F/25°C *50% RH*	@ 120°F/49°C
To touch:	7 hours	3 hours	1 hour
To recoat:			
minimum:	48 hours	18 hours	4 hours
maximum:	30 days	30 days	30 days
Cure to service:	14 days	7 days	3 days
Pot Life:	4 hours	2 hours	30 minutes
Sweat-in-time:	30 minutes	15 minutes	None

Drying Schedule @ 7.0 mils wet (175 microns):

With 700C825	@ 35°F/1.6°C	@ 55°F/13°C	@ 77°F/25°C *50% RH*
To touch:	12 hours	4 hours	2 hours
To recoat:			
minimum:	24 hours	18 hours	12 hours
maximum:	30 days	30 days	30 days
Cure to service:	7 days	5 days	3 days
If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.			
Pot Life:	4 hours	2 hours	1 hour
Sweat-in-Time:	15 minutes	None	None

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer 255-C-005. Clean tools immediately after use with Reducer 255-C-005. Follow manufacturer's safety recommendations when using any solvent.

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PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Reduction of material will affect film build, appearance, and adhesion.

Do not mix previously catalyzed material with new.

Do not apply the material beyond recommended pot life.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with reducer 255-C-005

Low temperature hardener recommended for applications below 55°F (13°C).

Low temperature hardener not recommended for use at application temperatures above 80°F (27°C)

Use of low temperature hardener may cause accelerated yellowing of the coating.

Do not use low temperature hardener for immersion service in methanol, ethanol, or blends.

Excessive film build, poor ventilation, and cool temperatures may cause solvent entrapment and premature coating failure.

For Immersion Service: (if required) Holiday test in accordance with ASTM D5162 for steel, or ASTM D4787 for concrete.

Guidance on techniques and required equipment to inspect a coating system incorporating Opti-Check OAP Technology can be found in SSPC-TU 11.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

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