Protective & Marine Coatings

MAGNALUX™ #304 FF
FLAKE FILLED VINYL ESTER

PART A	921-W-304	WHITE
PART B	531-0-006	CATALYST MEK PEROXIDE-RED
PART B	531-0-001	CATALYST MEK PEROXIDE-CLEAR
	970-C-949	WAX SOLUTION

Revised: July 2, 2015

PRODUCT INFORMATION

TRM.45

PRODUCT DESCRIPTION

MAGNALUX #304 FF VINYL ESTER COATING is a chemical resistant immersion coating formulated with an extended pot life for application with conventional or airless spray equipment. Magnalux utilizes a highly cross-linked vinyl ester resin with mica flakes for maximum chemical and temperature resistance. Magnalux can be applied to steel or concrete surfaces.

PRODUCT CHARACTERISTICS

Finish: Matte

Color: White or Pink (depending on color of MEKP used)

Volume Solids: 82% ± 2% theoretical

Note: Magnalux #304 FF is a reactive material, however some shrinkage will occur in application due to styrene evaporation as well as normal spray losses. Resulting practical volume solids will be a approximately 50%

VOC (ASTM D 2369 method E): <150 g/L; 1.25 lb/gal, mixed

Mix Ratio:
Use MEK Peroxide catalyst at the rate of 2.0 - 3.5 fluid oz. per gallon of Part A. See Application Bulletin.

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**28.0** (700)	**32.0** (800)
Dry mils (microns)	**14.0** (350)	**16.0** (400)
~Coverage sq ft/gal (m^2/L)	**58** (1.4)	**68** (1.7)
Theoretical coverage sq ft/gal (m^2/L) @ 1 mil / 25 microns dft	**1312** (32.1)	

Drying Schedule @ 30.0 mils wet (750 microns):

@ 77°F/25°C
50% RH

To touch: 1 hour
To recoat:
minimum: 2-3 hours
maximum: 5 days
To cure: 2-3 days

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

Pot Life: 45 minutes
Sweat-in-time: None required

Shelf Life: 3 months, unopened
Store indoors at 77°F (25°C).
Flash Point: 68°F (19°C), PMCC, mixed
Reducer: Not recommended
Clean Up: MEK, R6K10

RECOMMENDED USES

- Interior lining for steel storage tanks
- Secondary containment
- 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.

- Suitable for use in wine storage tanks

RECOMMENDED USES (CONT'D)

Acceptable for use in Canadian Food Processing facilities categories: D4 (Confirm acceptance of specific part numbers/rexes with your SW Sales Representative)
According to FDA 21CFR175.300, this product has been tested and complies with conditions of use D, E, and F:

- Covering hot filled or pasturized below 150°F (66°C)
- Room temperature filled and stored (no thermal treatment in the container)
- Refrigerated storage (no thermal treatment in the container)

This covers food types I, II, III, IVA and IVB, V, VI, VII, and VIII within these ranges:

I. Nonacid (pH above 5.0), aqueous products; may contain salt or sugar or both, and including oil-in-water emulsions of low- or high-fat content.
II. Acidic (pH 5.0 or below), aqueous products; may contain salt or sugar or both, and including oil-in-water emulsions of low- or high-fat content.
III. Aqueous, acid or nonacid products containing free oil; may contain salt or sugar or both, and including oil-in-water emulsions of low- or high-fat content.
IV. Dairy products and modifications: A. Water-in-oil emulsion, high- or low-fat. B. Oil-in-water emulsion, high- or low-fat.
V. Low moisture fats and oils.
VI. Beverages: A. Containing alcohol. B. Nonalcoholic.
VII. Bakery products.
VIII. Dry solids.

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP10/NACE 2

System Tested*:

2 cts. Magnalux 304 @ 14 mils (350 microns) dft/ct
*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance (1 coat)	ASTM D4060	63 mg
Adhesion	ASTM D4541	Steel: 2260 psi Concrete: 948 psi
Corrosion Weathering	ASTM D5894, 9 cycles, 3000 hrs	Rating 10 per ASTM D714 for blistering; Rating 10 per ASTM D610 for rusting
Direct Impact Resistance	ASTM D2794	60 in. lb.
Durometer Hardness (Shore D)	ASTM D2240	78
Nuclear Decontamination	ASTM D4256/ANSI N 5.12	99.6% Water Wash; 93% Overall
Radiation Tolerance	ASTM D4082 / ANSI 5.12	Pass at 32 mils (800 microns)
Salt Fog	ASTM B117, 3000 hours	Rating 10 per ASTM D714 for blistering; Rating 10 per ASTM D610 for rusting

IMMERSION
(Ambient temperature)

- CRUDE OIL ..... RECOMMENDED
- DIESEL FUEL ..... 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
- METHANOL/METHANOL BLENDS ..... NOT RECOMMENDED

SECONDARY CONTAINMENT
(Immersion service up to 72 hours)

- Dilute acids ..... Recommended
- Methanol/methanol blends ..... Recommended

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

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PRODUCT INFORMATION

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RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Steel:			
2 cts.	Magnalux #304 FF Vinyl Ester Coating	14.0-16.0	(350-400)
Steel:			
1 ct.	Corobond Vinyl Ester Primer	2.0-3.0	(50-75)
2 cts.	Magnalux #304 FF Vinyl Ester Coating	14.0-16.0	(350-400)
Concrete, smooth:			
2 cts.	Magnalux #304 FF Vinyl Ester Coating	14.0-16.0	(350-400)
Concrete, smooth:			
1 ct.	Corobond Vinyl Ester Primer	3.5-4.5	(88-112)
2 cts.	Magnalux #304 FF Vinyl Ester Coating	14.0-16.0	(350-400)

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

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, 3-4 mil (75-100 micron) profile

Concrete & Masonry:
Atmospheric: SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 3-5
Immersion: SSPC-SP13/NACE 6-4.3.1 or 4.3.2

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

Do not tint.

APPLICATION CONDITIONS

Temperature: 60°F (16°C) minimum, 110°F (43°C) maximum
(air, surface, material)
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:
Part A: 5 gallons (18.9L)
Part B: 1 gallon (3.78L) MEKP
Wax Solution: 1 gallon (3.78L)

Weight: 10.0 ± 0.2 lb/gal ; 1.20 Kg/L

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.

DISCLAIMER

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APPLICATION BULLETIN

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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 (3-4 mils / 75-100 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 (3-4 mils / 75-100 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 3-5. 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.
Primer required.
If surface deterioration presents an unacceptably rough surface, prime with Corobond Vinyl Ester Primer. Patch and resurface with Poly-Glass Putty.
Fill all cracks, voids and bugholes with Poly-Glass Putty (over Corobond Vinyl Ester Primer).

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 3-5.

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
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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:	60°F (16°C) minimum, 110°F (43°C) maximum (air, surface, material) 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 .....MEK, R6K10

Airless Spray:
Pump Ratio .....45:1 minimum
Fluid Hose.....3/8" ID
Tip Orifice.....017"- 0.21"
Fan Width at 12" .....12"-14"
Fluid Pressure.....2500-3000 psi
Filter Screen.....60 mesh

Conventional Spray:
Gun .....Binks 95
Tip and needle 68
Air Cap .....302 or 306
Atomization Pressure.....75 - 85 psi
Fluid Pressure.....35 - 40 psi

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: Use MEK Peroxide catalyst at the rate of 2.0 - 3.5 fluid ounces per gallon of Part A. Mix with low speed drill and Jiffy Blade model ES mixer for three minutes and until uniform. Acceptable catalyst range is 2.0 to 3.5 fluid ounces per gallon (3.78L), depending on environmental conditions.

For second coat only: add 970-C-949 Wax Solution at the rate of 3.0 - 4.0 oz/gal of Part A to obtain a completely tack free surface. Add Wax Solution before adding catalyst. If wax is cloudy, it will clear with gentle warming. DO NOT USE FLAME to heat the Wax Solution.

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

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**28.0** (700)	**32.0** (800)
Dry mils (microns)	**14.0** (350)	**16.0** (400)
~Coverage sq ft/gal (m^2/L)	**58** (1.4)	**68** (1.7)
Theoretical coverage sq ft/gal (m^2/L) @ 1 mil / 25 microns dft	**1312** (32.1)	

Drying Schedule @ 30.0 mils wet (750 microns):

@ 77°F/25°C
50% RH

To touch:	1 hour
To recoat:	
minimum:	2-3 hours
maximum:	5 days
To cure:	2-3 days

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

Pot Life:	45 minutes
Sweat-in-time:	None required

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 MEK, R6K10. Clean tools immediately after use with MEK, R6K10. 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.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with MEK, R6K10

When 970-C-949 Wax Solution is used in final coat, surface must be solvent washed and abraded by sanding or brush blasting before touch-up.

TEMPERATURE: Do not apply when product ambient, or surface temperatures are below 60°F (16°C). Surface temperature must be at least 5°F above dew point. Material temperature must be at least 60°F for proper atomization.

Not recommended for tank sizes greater than 100' diameter.

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

Consult your Sherwin-Williams representative for specific application and performance recommendations.

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

SAFETY PRECAUTIONS

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