MAGNALUX™ #304 FF FLAKE FILLED VINYL ESTER

PRODUCT INFORMATION

TRM.45

PART A
PART B
PART B

921-W-304
531-0-006
531-0-001
970-C-949

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 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 VOC (ASTM D 2369 method E):

Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Wet mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
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<tbody>
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<td>28.0 (700)</td>
<td>32.0 (800)</td>
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Wet mils (microns)

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<thead>
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<th>Dry mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
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<tbody>
<tr>
<td>14.0 (350)</td>
<td>16.0 (400)</td>
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Dry mils (microns)

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<td>58 (1.4)</td>
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Coverage sq ft/gal (m²/L)

<table>
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<tr>
<th>Theoretical coverage sq ft/gal (m²/L) @ 1 mil / 25 microns dft</th>
<th>Minimum</th>
<th>Maximum</th>
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<tbody>
<tr>
<td>1312 (32.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Theoretical coverage sq ft/gal (m²/L)

Drying Schedule @ 30.0 mils wet (750 microns):

| 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/recipes 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)

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 approximately 50%.

Recrystallization: None

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 Resistance | ASTM D5594, 9 cycles, 3000 hrs | Rating 10 per ASTM D714 for blistering |
| Direct Impact Resistance | ASTM D2794 | 60 lb. in. |
| Durability 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 |

IMERSION (Ambient temperature)

• CRUDE OIL .................................................. RECOMMENDED
• DIESEL FUEL .............................................. RECOMMENDED
• LUBRICATING OILS ........................................ RECOMMENDED
• FUEL OIL .................................................. RECOMMENDED
• AROMATIC SOLVENTS ...................................... RECOMMENDED
• H2/H2-AROMATIC GASOLINE ........................... RECOMMENDED
• ETHANOL, GASOLINOL ................................. 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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continued on back

Trimmer: Magnalux 304 FF 2015-07-02
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

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

Surface Preparation Standards

<table>
<thead>
<tr>
<th>Condition of Surface</th>
<th>ISO 8501-1</th>
<th>BS7097: A1</th>
<th>SIS055900</th>
<th>Swedish Std.</th>
<th>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>Sa 3</td>
<td>Sa 3</td>
<td>Sa 1</td>
<td>D St 2</td>
<td>SP 7</td>
<td>4</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>Sa 3.5</td>
<td>Sa 3.5</td>
<td>Sa 1.5</td>
<td>D St 2</td>
<td>SP 7.2</td>
<td>4</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>Sa 2</td>
<td>Sa 2</td>
<td>Sa 2</td>
<td>D St 2</td>
<td>SP 7</td>
<td>4</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
<td>Sa 1</td>
<td>Sa 1</td>
<td>Sa 1</td>
<td>D St 2</td>
<td>SP 7</td>
<td>4</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>Rusted</td>
<td>Pitted &amp; Rusted</td>
<td>D St 2</td>
<td>D St 2</td>
<td>SP 7</td>
<td>4</td>
</tr>
<tr>
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<td>D St 2</td>
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<td>SP 7</td>
<td>4</td>
</tr>
</tbody>
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TINTING
Do not tint.

APPLICATION CONDITIONS
Temperature: 60°F (16°C) minimum, 110°F (43°C) maximum
Relative humidity: 85% maximum

ORDERING INFORMATION

<table>
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<tr>
<td>Part A: 5 gallons (18.9L)</td>
</tr>
<tr>
<td>Part B: 1 gallon (3.78L) MEKP</td>
</tr>
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<td>Wax Solution: 1 gallon (3.78L)</td>
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Weight: 10.0 ± 0.2 lb/gal ; 1.20 Kg/L

SAFETY PRECAUTIONS

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

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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<tr>
<td>White Metal</td>
<td>Sa 3</td>
<td>Sa 3</td>
<td>SP 5</td>
<td>1</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>Sa 2.5</td>
<td>Sa 2.5</td>
<td>SP 10</td>
<td>2</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>Sa 2</td>
<td>Sa 2</td>
<td>SP 6</td>
<td>3</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
<td>Sa 1</td>
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<td>SP 7</td>
<td>4</td>
</tr>
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<td>Hand Tool Cleaning</td>
<td>C St 2</td>
<td>C St 2</td>
<td>SP 2</td>
<td>-</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>C St 3</td>
<td>C St 3</td>
<td>SP 3</td>
<td>-</td>
</tr>
</tbody>
</table>

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 Ablading 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.

Application Conditions

- **Temperature**: 60°F (16°C) minimum, 110°F (43°C) maximum (air, surface, material)
- **Relative humidity**: 85% maximum

Application Equipment

### Airless Spray
- **Pump Ratio**: 45:1 minimum
- **Fluid Hose**: 3/8" ID
- **Tip Orifice**: 0.17" - 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
- **Atomization Pressure**: 75 - 85 psi
- **Fluid Pressure**: 35 - 40 psi

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

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**Drying Schedule @ 30.0 mils wet (750 microns):**

- 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.

<table>
<thead>
<tr>
<th>Life</th>
<th>Pot</th>
<th>Sweat-in-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>To touch</td>
<td>45 minutes</td>
<td>None required</td>
</tr>
</tbody>
</table>

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.

Refer to the MSDS sheet before use.

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**TRM.45**