MACROPOXY® 646 PW
POTABLE WATER EPOXY

Part A  B58WX610  Mill White
Part A  B58LX600  Light Blue
Part A  B58RX610  Red
Part A  B58HX610  Buff
Part B  B58VX600  Hardener
Part B  B58VX605  OAP Hardener

Product Information

Product Description
MACROPOXY 646 PW EPOXY is a high solids, high build, fast drying, polyamide epoxy classified by UL to ANSI/NSF 61 as a tank lining for potable water storage tanks. The high solids content ensures adequate protection of sharp edges, corners, and welds. B58VX605 Hardener contains Opti-Check OAP pigment technology for rapid holiday detection with safe blue light inspection lamps.

- Low odor
- Outstanding application properties

Product Characteristics

| Finish: | Semi-Gloss |
| Color: | Mill White, Light Blue, Buff, and Red |
| Volume Solids: | 72% ± 2%, mixed |
| Weight Solids: | 85% ± 2%, mixed |
| VOC (EPA Method 24): | Unreduced: <250 g/L; 2.08 lb/gal
mixed Reduced 10%: <300 g/L; 2.50 lb/gal |
| Mix Ratio: | 1:1 by volume |

Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Standard</th>
<th>AWWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mils (microns)</td>
<td>7.0 175 135 340 4.2 105 8.3 208</td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>5.0 125 10 250 3.0 75 6.0 150</td>
</tr>
<tr>
<td>Coverage sq ft/gal (m²/L)</td>
<td>116 2.8 232 5.6 192 4.7 384 9.4</td>
</tr>
</tbody>
</table>

Thermal coverage sq ft/gal (m²/L) @ 1/16”/25 micron dft: 1152 (28.2)

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance. * See Recommended Systems on reverse side

Drying Schedule @ 7.0 mils wet (175 microns):

<table>
<thead>
<tr>
<th>At 40°F/4.5°C</th>
<th>At 77°F/25°C</th>
<th>At 100°F/38°C 50% RH</th>
</tr>
</thead>
<tbody>
<tr>
<td>To touch:</td>
<td>4-5 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>To handle:</td>
<td>48 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td>To recoat:</td>
<td>minimum: 48 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td>maximum: 1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>Cure for immersion:</td>
<td>14 days</td>
<td>7 days</td>
</tr>
</tbody>
</table>

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

Pot Life: 10 hours
Sweat-in-Time: 30 minutes

For Potable Water Service, allow a minimum cure time of 7 days at 77°F (25°C) prior to placing in service. Sterilize and rinse per AWWA C652.

| Shelf Life: | 36 months, unopened
| Store indoors at 40°F (4.5°C) to 100°F (38°C) |
| Flash Point: | 91°F (33°C), TCC, mixed |
| Reducer/Clean Up: | Reducer R7K15 |

Recommended Uses

Potable Water Tank Restrictions
7 Day Cure; Tanks ≥ 1,500 gallons: 2-3 cts
Maximum DFT: 20.0 mils (up to 10 mils/ct)
21 Day Cure; Pipes ≥ 15”, 2 cts
Maximum DFT: 8 mils/ct

- Conforms to AWWA D102 ICS #1, #2, and #5, and OCS #5***
- Refer to respective systems

Acceptable for use as a primer in an ablative antifouling system.

Performance Characteristics

Substrate*: Steel
Surface Preparation*: SSPC-SP10/NACE 2
System Tested*: 1 ct. Macropoxy 646 PW Fast Cure @ 6.0 mils (150 microns) dft

Test Name | Test Method | Results
---|---|---
Abrasiveness | ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load | 84 mg loss
Adhesion | ASTM D4541 | 1,037 psi
Corrosion Resistance | ASTM D5894, 36 cycles, 12,000 hours | Rating 10 per ASTM D714 for blistering; Rating 9 per ASTM D610 per rusting
Direct Impact Resistance | ASTM D2794 Modified | *120 in. lb.
Dry Heat Resistance | ASTM D2485 | 250°F (121°C)
Flexibility | ASTM D522, 180° bend, 3/4” mandrel | Passes
Humidity Resistance | ASTM D4585, 6000 hours | No blistering, cracking, or rusting
Immersion | 5 year potable water | Rating 10 per ASTM D610 for Rusting; Rating 10 per ASTM D714 for Blistering
Immersion | 18 months fresh and salt water | Passes, no rusting, blistering, or loss of adhesion
Pencil Hardness | ASTM D3363 3H | Epoxy coatings may darken or discolor following application and curing.
Water Vapor Permeance | ASTM D363 | 1.16 grains/day

* Unless otherwise noted below

Footnotes:
1 Zinc Clad II Plus Primer
2 Galvapac/2 cts Macropoxy 646 PW

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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
- Atmospheric: SSPC-SP2/3
- Immersion: SSPC-SP10/NACE 2, 2-3 mil profile

Concrete & Masonry
- Immersion: SSPC-SP13/NACE 6-4.3.1 or 4.3.2, or ICRI No. 310.2R, CSP 1-3

Surface Preparation Standards

<table>
<thead>
<tr>
<th>Condition of Surface</th>
<th>ISO 8501-1</th>
<th>Swedish Std.</th>
<th>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>Sa 2</td>
<td>Sa 2.5</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 7</td>
<td>3</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
<td>Sa 2</td>
<td>Sa 2</td>
<td>SP 7</td>
<td>4</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>Rusted</td>
<td>Rusted</td>
<td>SP 2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Pitted &amp; Rusted</td>
<td>Rusted</td>
<td>SP 2</td>
<td>-</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>Rusted</td>
<td>Rusted</td>
<td>SP 3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Pitted &amp; Rusted</td>
<td>Rusted</td>
<td>SP 3</td>
<td>-</td>
</tr>
</tbody>
</table>

Application Conditions

Temperature: 40°F (4.5°C) minimum, 110°F (43°C) maximum (material)
40°F (4.5°C) minimum, 140°F (60°C) (air and surface)
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: 1 gallon (3.78L) and 5 gallon (18.9L) containers
- Part B: 1 gallon (3.78L) and 5 gallon (18.9L) containers

Weight: 12.7 ± 0.2 lb/gal; 1.5 Kg/L mixed, may vary by color

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.

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.
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.

**Carbon Steel, Immersion Service:**
Clean and degrease the surface prior to abrasive blasting per SSPC-SP 1 Solvent Cleaning. Methods described in SSPC-SP 1 include solvents, alkali, detergent/water, emulsions, and steam. The surface shall be abrasive blasted to SSPC-SP10/NACE No. 2 Near-White Blast Cleaning with a 2-3 mil (50-75 micron) profile. The anchor pattern shall be sharp with no evidence of a polished surface. The finished surface shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter with no more than 5% staining. After blasting, all dust and loose residue should be removed from the surface by acceptable means. Coat steel the same day as it is prepared and prior to the formation of rust.

**Iron & Steel, Atmospheric Service:**
Minimum surface preparation is Hand Tool Clean per SSPC-SP2. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. For better performance, use Commercial Blast Cleaning per SSPC-SP6/NACE 3, blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel within 8 hours or before flash rusting occurs.

**Ductile Iron, Immersion Service:**
Refer to National Association of Pipe Fabricators Surface Preparations Standard NAPF 500-03 as follows:
- a. NAPF 500-03-01 “Solvent Cleaning”
- b. NAPF 500-03-02 “Hand Tool Cleaning”
- c. NAPF 500-03-03 “Power Tool Cleaning”
- d. NAPF 500-03-04 “Abrasive Blast Cleaning of Ductile Iron Pipe”.

**Concrete and Masonry**
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3. 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 hardened. Fill bug holes, air pockets and other voids with Steel-Seam FT910.

**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 1-3.

**Previously Painted Surfaces:**
If in sound condition, clean the surface of all foreign material. Scary the surface to create the desired surface profile. Apply coatings on a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, or if this product attacks the previous finish, removal of the previous coating may be necessary.

Surface Preparation Standards

<table>
<thead>
<tr>
<th>Condition of Surface</th>
<th>SI505900</th>
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<th>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>C2</td>
<td>D3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>C2</td>
<td>D3</td>
<td>2</td>
<td>3</td>
</tr>
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<td>C2</td>
<td>D3</td>
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<td>C2</td>
<td>D3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
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**Application Procedures**

Surface preparation must be completed as indicated.

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

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

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

**Recommended Spreading Rate per coat:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mils (microns)</td>
<td>7.0</td>
<td>175</td>
<td>135</td>
<td>340</td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>5.0</td>
<td>125</td>
<td>10</td>
<td>250*</td>
</tr>
<tr>
<td>Coverage sq ft/gal (m²/L)</td>
<td>116</td>
<td>2.8</td>
<td>232</td>
<td>5.6</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L)</td>
<td>455</td>
<td>2.8</td>
<td>700</td>
<td>5.6</td>
</tr>
</tbody>
</table>

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

* See Recommended Systems on reverse side

**Drying Schedule @ 7.0 mils wet (175 microns):**

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<td>48 hours</td>
<td>8 hours</td>
<td>4.5 hours</td>
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<tr>
<td>To recoat:</td>
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<td>4.5 hours</td>
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<tr>
<td>maximum:</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>Cure for:</td>
<td>immersion: 14 days</td>
<td>7 days</td>
<td>4 days</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Pot Life</th>
<th>10 hours</th>
<th>4 hours</th>
<th>2 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweat-in-Time</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

For **Potable Water Service**, allow a minimum cure time of 7 days at 77°F (25°C) prior to placing in service. Sterilize and rinse per AWWA C652.

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 R7K15. Clean tools immediately after use with Reducer R7K15.

**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, over thinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, adhesion and UL ANSI/ NSF 61 approval.

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 R7K15.

Tinting is not recommended for immersion service.

Quik-Kick Epoxy Accelerator is acceptable for atmospheric use.

Do not use Quik-Kick Epoxy Accelerator for immersion service when UL certification is required.

Insufficient ventilation, incomplete mixing, miscatalyzation, and external heaters may cause premature yellowing.

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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