**MACROPOXY® 646 PW**

**POTABLE WATER EPOXY**

**PART A**  B58WX610  **MILL WHITE**  
**PART A**  B58LX600  **LIGHT BLUE**  
**PART A**  B58RX601  **RED**  
**PART A**  B58HX610  **BUFF**  
**PART B**  B58VX600  **HARDENER**  
**PART B**  B58VX605  **OAP HARDENER**

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**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

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**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: 10 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.

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**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

*unless otherwise noted below

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

- **At 40°F/4.5°C**  
  - To touch: 4-5 hours
  - To handle: 48 hours
  - To recoat: minimum: 48 hours, maximum: 1 year
  - Cure for immersion: 14 days

- **At 77°F/25°C**  
  - To touch: 2 hours
  - To handle: 8 hours
  - To recoat: minimum: 8 hours, maximum: 1 year
  - Cure for immersion: 7 days

- **At 100°F/38°C 50% RH**  
  - To touch: 1.5 hours
  - To handle: 4.5 hours
  - To recoat: minimum: 4.5 hours, maximum: 1 year
  - Cure for immersion: 4 days

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.

**Test Name**  
**Test Method**  
**Results**

<table>
<thead>
<tr>
<th>Abrasion Resistance</th>
<th>ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load</th>
<th>84 mg loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>ASTM D4541</td>
<td>1,037 psi</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>ASTM D5894, 36 cycles, 12,000 hours</td>
<td>Rating 10 per ASTM D714 for blistering; Rating 9 per ASTM D610 per rusting</td>
</tr>
<tr>
<td>Direct Impact Resistance</td>
<td>ASTM D2794 Modified</td>
<td>*120 in. lb.</td>
</tr>
<tr>
<td>Dry Heat Resistance</td>
<td>ASTM D2485</td>
<td>250°F (121°C)</td>
</tr>
<tr>
<td>Flexibility</td>
<td>ASTM D522, 180° bend, 3/4&quot; mandrel</td>
<td>Passes</td>
</tr>
<tr>
<td>Humidity Resistance</td>
<td>ASTM D4585, 6000 hours</td>
<td>No blistering, cracking, or rusting</td>
</tr>
<tr>
<td>Immersion2</td>
<td>5 year potable water</td>
<td>Rating 10 per ASTM D610 for Rusting; Rating 10 per ASTM D714 for Blistering</td>
</tr>
<tr>
<td>Immersion</td>
<td>18 months fresh and salt water</td>
<td>Passes, no rusting, blistering, or loss of adhesion</td>
</tr>
<tr>
<td>Pencil Hardness</td>
<td>ASTM D3363</td>
<td>3H</td>
</tr>
<tr>
<td>Water Vapor Permeance</td>
<td>ASTM D1653, Method B</td>
<td>1.16 US perms</td>
</tr>
</tbody>
</table>

*Performed on 1/16 inch blasted steel

Epoxy coatings may darken or discolor following application and curing.

**Footnotes:**

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

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**Product Information**

**Mix Ratio:** 1:1 by volume

- **Unreduced:** <250 g/L; 2.08 lb/gal
- **Reduced 10%:** <300 g/L; 2.50 lb/gal

**Volume Solids:** 85% ± 2%, mixed

**Weight Solids:** 85% ± 2%, mixed

**VOC (EPA Method 24):**

- Unreduced: <250 g/L; 2.08 lb/gal
- Reduced 10%: <300 g/L; 2.50 lb/gal

**Recommended Spreading Rate per coat:**

<table>
<thead>
<tr>
<th>Standard</th>
<th>AWWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>Wet mils (microns)</td>
<td>7.0</td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>5.0</td>
</tr>
<tr>
<td>Coverage sq ft/gal (m²/L)</td>
<td>116</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L)</td>
<td>1152 (28.2)</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

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**Color:** Mill White, Light Blue, Buff, and Red

**Volume Solids:** 72% ± 2%, mixed

**Weight Solids:** 85% ± 2%, mixed

**Mix Ratio:** 1:1 by volume

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**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:**

- R7K15

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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.

---

*See Recommended Systems on reverse side

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**Footnotes:**

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

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PRODUCT INFORMATION

4.56

RECOMMENDED SYSTEMS

<table>
<thead>
<tr>
<th></th>
<th>Dry Film Thickness / ct.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Milis (Microns)</td>
</tr>
<tr>
<td>Immersion, Steel:</td>
<td></td>
</tr>
<tr>
<td>*AWWA D102: Inside Coating System No. 1</td>
<td></td>
</tr>
<tr>
<td>minimum AWWA</td>
<td>8.0 (200)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>3.0 (75)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>5.0 (125)</td>
</tr>
<tr>
<td>*AWWA D102: Inside Coating System No. 2</td>
<td></td>
</tr>
<tr>
<td>minimum AWWA</td>
<td>12.0 (300)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>3.0 (75)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>4.0 (100)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>5.0 (125)</td>
</tr>
<tr>
<td>*AWWA D102: Inside Coating System No. 5</td>
<td></td>
</tr>
<tr>
<td>minimum AWWA</td>
<td>10.0 (250)</td>
</tr>
<tr>
<td>1 ct. Corothane I Galvapac</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>2 cts. Macropoxy 646 PW</td>
<td>4.0 (100)</td>
</tr>
<tr>
<td>Steel, forced cure (100 gallon minimum tank size or 15&quot; or greater pipe diameter):</td>
<td></td>
</tr>
<tr>
<td>2 cts. Macropoxy 646 PW</td>
<td>5.0-6.0 (125-150)</td>
</tr>
<tr>
<td>*12 mils maximum film thickness</td>
<td></td>
</tr>
<tr>
<td>*Curing requirements</td>
<td></td>
</tr>
<tr>
<td>•Flash 2 hours @ 75°F (24°C)</td>
<td></td>
</tr>
<tr>
<td>•24 hours @ 150°F (66°C)</td>
<td></td>
</tr>
<tr>
<td>•24 hours @ 75°F (24°C)</td>
<td></td>
</tr>
<tr>
<td>Atmospheric, Steel:</td>
<td></td>
</tr>
<tr>
<td>*AWWA D102: Outside Coating System No. 5</td>
<td></td>
</tr>
<tr>
<td>minimum AWWA</td>
<td>6.0 (150)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>1 ct. Acrolon 218HS</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>*AWWA D102: Outside Coating System No. 6</td>
<td></td>
</tr>
<tr>
<td>minimum AWWA</td>
<td>6.0 (150)</td>
</tr>
<tr>
<td>1 ct. Corothane I Galvapac PW</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>1 ct. Macropoxy 646 PW</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>1 ct. Acrolon 218HS</td>
<td>2.0 (50)</td>
</tr>
<tr>
<td>Concrete/Masonry, smooth:</td>
<td></td>
</tr>
<tr>
<td>2 cts. Macropoxy 646 PW</td>
<td>3.0-6.0 (75-150)</td>
</tr>
</tbody>
</table>

Refer to UL.com for maximum dft restrictions

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

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.

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 (50-75 micron) profile
Concrete & Masonry
Immersion: SSPC-SP13/NACE 6-4.3.1 or 4.3.2, or ICRI No. 310.2R, CSP 1-3
Ductile Iron Pipe:
Atmospheric: NAPF 500-03-03 Power Tool Cleaning
Buried & Immersion: NAPF 500-03-04 Abrasive Blast Cleaning
Cast Ductile Iron Fittings: NAPF 500-03-05 Abrasive Blast Cleaning

TINTING

Do not Tint.

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 SDS 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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PART B  B58VX600  HARDENER
PART B  B58VX605  OAP HARDENER

APPLYING MATERIAL

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 abrasively blasted to SSPC-SP10/NACE No. 2 Near-White Blast Cleaning with at least 6°F (2.8°C) above dew point. Relative humidity: 85% maximum

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 NAPF 500-03-01. Prime any bare steel within 8 hours or before flash rusting occurs.

Ductile Iron Pipe, Atmospheric Service:
Minimum surface preparation is Power Tool Clean per NAPF 500-03-03. Remove all oil and grease from surface by Solvent Cleaning per NAPF 500-03-01.

Ductile Iron Pipe, Buried and Immersion Service:
Minimum surface preparation is Abrasive Blast Cleaning per NAPF 500-03-04. Ductile iron pipe external surfaces, in some cases, can be damaged by excessive abrasive blast cleaning beyond this standard. Remove all oil and grease from surface by Solvent Cleaning per NAPF 500-03-01.

Ductile Iron Fittings:
Minimum surface preparation is Abrasive Blast Cleaning of Cast Ductile Iron Fittings per NAPF 500-03-05. Remove all oil and grease from surface by Solvent Cleaning per NAPF 500-03-01.

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 at 75°F (24°C). Remote all loose mortar and debris 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.

Follow the standard methods listed below when applicable:
ASTM D4259 Standard Practice for Etching Concrete.
ASTM D4258 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Cleaning 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. Scrapyf 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>ISO 8501-1</th>
<th>Swedish Std</th>
<th>SSPC NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>Sa 3</td>
<td>Sa 3</td>
<td>SP 5</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>Sa 2.5</td>
<td>Sa 2.5</td>
<td>SP 10</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>Sa 2</td>
<td>Sa 2</td>
<td>SP 10</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
<td>Sa 1</td>
<td>Sa 1</td>
<td>SP 7</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>C St 2</td>
<td>D St 2</td>
<td>SP 2</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>D St 3</td>
<td>D St 3</td>
<td>SP 3</td>
</tr>
</tbody>
</table>

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.

Reducer/Clean Up 

Airless Spray
Pump........................30:1
Pressure.....................2800 - 3000 psi
Hose..........................1/4" ID
Tip...........................0.17" - .023"
Filter.........................60 mesh
Reduction................As needed up to 10% by volume

Brush
Brush.........................Nylon/Polyester or Natural Bristle
Reduction................As needed up to 10% by volume

Roller
Cover.........................3/8" woven with solvent resistant core
Reduction................As needed up to 10% by volume

Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Standard</th>
<th>AWWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mils (microns): 7.0 (175) - 13.5 (340)</td>
<td>4.2 (105) - 8.3 (208)</td>
</tr>
<tr>
<td>Dry mils (microns): 5.0 (125) - 10.0&quot; (250)</td>
<td>3.0 (75) - 6.0&quot; (150)</td>
</tr>
<tr>
<td>Coverage: 116 (2.8) - 232 (5.6)</td>
<td>192 (4.7) - 384 (9.4) sq ft/gal (m²/L)</td>
</tr>
</tbody>
</table>

*See recommended systems on Product Information page

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

**MACROPOXY® 646 PW POTABLE WATER EPOXY**

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**Part A** B58LX600 LIGHT BLUE
**Part A** B58RX610 RED
**Part A** B58HX610 BUFF
**Part B** B58VX600 HARDENER
**Part B** B58VX605 OAP HARDENER

Revised: June 22, 2020

**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:

<table>
<thead>
<tr>
<th>Spreading Rate per coat:</th>
<th>Standard</th>
<th>AWWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mils (microns)</td>
<td>7.0 175</td>
<td>135 340</td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>5.0 125</td>
<td>100* 250*</td>
</tr>
<tr>
<td>~Coverage sq ft/gal</td>
<td>116 2.8</td>
<td>232 5.6</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/ gal (m²/L) @ 1 mil/25 micron dft</td>
<td>1152 28.2</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Drying Schedule @ 7.0 mils wet (175 microns):</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ 40°F/4.5°C</td>
</tr>
<tr>
<td>To touch:</td>
</tr>
<tr>
<td>To handle:</td>
</tr>
<tr>
<td>To recoat:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cure for</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

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

**Performance Tips**

Strip 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 DS162 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**

Refer to the SDS sheet before use.

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