MACROPOXY® 646-100
FAST CURE EPOXY

PRODUCT DESCRIPTION
MACROPOXY® 646-100 FAST CURE EPOXY is a high solids, less than 100 g/L VOC, high build, fast drying, polyamide epoxy designed to protect steel and concrete in industrial exposures. Ideal for maintenance painting and fabrication shop applications. The high solids content ensures adequate protection of sharp edges, corners, and welds. This product can be applied directly to marginally prepared steel surfaces.

- <100 g/L VOC
- Chemical resistant
- Low odor
- Abrasion resistant
- Outstanding application properties

PRODUCT CHARACTERISTICS

| Finish: | Semi-Gloss |
| Color: | Mill White and a wide range of colors available through tinting |
| Volume Solids: | 73% ± 2%, mixed |
| Weight Solids: | 83% ± 2%, mixed |
| VOC (EPA Method 24): | Unreduced: <100 g/L; .83 lb/gal |
| Mix Ratio: | 1:1 by volume |

Mix Ratio

Recommended Spreading Rate per coat:

| Minimum | Maximum |
| Wet mils (microns) | 7.0 (175) | 13.5 (338) |
| Dry mils (microns) | 5.0* (125)* | 10.0* (250)* |
| Coverage sq ft/gal (m²/L) | 116 (2.8) | 232 (5.7) |
| Theoretical coverage sq ft/gal (m²/L) | 1166 (28.6) |

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

*May be applied at 3.0-10.0 mils (75-250 microns) dft in a multi-coat system. Refer to Recommended Systems and Performance Tips Sections.

Drying Schedule @ 7.0 mils wet (175 microns):

| @ 40°F/4.5°C | @ 77°F/25°C | @ 100°F/38°C 50% RH |
| To touch: | 4-5 hours | 2 hours | 1.5 hours |
| To handle: | 48 hours | 8 hours | 4.5 hours |
| To recoat: | minimum 48 hours | 8 hours | 4.5 hours |
| maximum 1 year | 1 year | 1 year |
| Cure for: | service 10 days | 7 days | 4 days |
| immersion 14 days | 7 days | 4 days |

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Test Name | Test Method | Results |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion Resistance</td>
<td>ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load</td>
<td>84 mg loss</td>
</tr>
<tr>
<td>Accelerated Weathering - QUV¹</td>
<td>ASTM D4587, QUV-A, 12,000 hours</td>
<td>Passes</td>
</tr>
<tr>
<td>Adhesion</td>
<td>ASTM D4541</td>
<td>1,037 psi</td>
</tr>
<tr>
<td>Corrosion Weathering¹</td>
<td>ASTM D5894, 36 cycles, 12,000 hours</td>
<td>Rating 10 per ASTM D714 for blistering; Rating 9 per ASTM D610 for rusting</td>
</tr>
<tr>
<td>Direct Impact Resistance</td>
<td>ASTM D2794</td>
<td>30 in. lb.</td>
</tr>
<tr>
<td>Dry Heat Resistance</td>
<td>ASTM D2485</td>
<td>250°F (121°C)</td>
</tr>
<tr>
<td>Exterior Durability</td>
<td>1 year at 45° South</td>
<td>Excellent, chalks</td>
</tr>
<tr>
<td>Flexibility</td>
<td>ASTM D522, 180° blend, 3/4” mandrel</td>
<td>Passes</td>
</tr>
<tr>
<td>Immersion</td>
<td>1 year 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>Salt Fog Resistance¹</td>
<td>ASTM B117, 6,500 hours</td>
<td>Rating 10 per ASTM D610 for rusting; Rating 9 per ASTM D1654 for corrosion</td>
</tr>
<tr>
<td>Water Vapor Permeance</td>
<td>ASTM D1653, Method B</td>
<td>1.16 grains/day</td>
</tr>
</tbody>
</table>

Epoxy coatings may darken or discolor following application and curing.

Footnotes:

¹ Zinc Clad II Plus Primer

www.sherwin-williams.com/protective
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
- **Aluminum**: SSPC-SP1
- **Galvanizing**: SSPC-SP1
- **Concrete & Masonry**
  - Atmospheric: SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3
  - 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>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</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>SP 10</td>
<td>2</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>Sa 2</td>
<td>SP 6</td>
<td>3</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
<td>Sa 1</td>
<td>SP 2</td>
<td>4</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>D St 2</td>
<td>SP 2</td>
<td>-</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>D St 3</td>
<td>SP 3</td>
<td>-</td>
</tr>
</tbody>
</table>

Tint Part A with Maxitoners at 150% strength. Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

Tinting is not recommended for immersion service.

**Application Conditions**

- Temperature: 40°F (4.5°C) minimum, 140°F (60°C) maximum (air, surface, and material)
- Relative humidity: 85% maximum
- At least 5°F (2.6°C) above dew point

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:** 13.24 ± 0.2 lb/gal ; 1.6 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**

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**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.

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.

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 (2-3 mils / 50-75 microns). Prime any bare steel the same day as it is cleaned.

Aluminum
Remove all oil, grease, dirt, oxide and other foreign material by Solvent Cleaning per SSPC-SP1.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Cleaning is recommended as the initial step. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

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 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.

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.

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.

Previously Painted Surfaces
If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply 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. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

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<td>SP 7</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>C St 2</td>
<td>SP 2</td>
</tr>
<tr>
<td>Pitted &amp; Rusted</td>
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<td>SP 2</td>
</tr>
<tr>
<td>Rusted</td>
<td>C St 3</td>
<td>SP 3</td>
</tr>
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Application Bulletin

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<tbody>
<tr>
<td>Temperature:</td>
</tr>
<tr>
<td>(air, surface, and material)</td>
</tr>
<tr>
<td>Relative humidity:</td>
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</tbody>
</table>

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.

Reducer/Clean Up ..........Reducer R7K111 or Oxsol 100

Airless Spray
- Pump .........................30:1
- Pressure ....................2800 - 3000 psi
- Hose .........................1/4" ID
- Tip ..........................017" - .023"
- Filter .........................60 mesh
- Reduction ...................As needed up to 10% by volume

Conventional Spray
- Gun ........................DeVilbiss MBC-510
- Fluid Tip ....................E
- Air Nozzle ...................704
- Atomization Pressure .......60-65 psi
- Fluid Pressure ...............10-20 psi
- Reduction ...................As needed up to 10% by volume
- Requires oil and moisture separators

Brush
- Brush ........................Nylon/Polyester or Natural Bristle
- Reduction ...................Not recommended

Roller
- Cover .........................3/8” woven with solvent resistant core
- Reduction ...................Not recommended

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.

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>
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<th>Wet mls (microns)</th>
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<th>Maximum</th>
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*May be applied at 3.0-10.0 mls (75-250 microns) df at a multi-coat system. Refer to Recommended Systems and Performance Tips Sections.

Drying Schedule @ 7.0 mls wet (175 microns):

- @ 40°F/4.5°C
  - To touch: 4-5 hours
  - To handle: 48 hours
  - To recoat: 48 hours
- @ 77°F/25°C
  - To touch: 2 hours
  - To handle: 8 hours
  - To recoat: 8 hours
- @ 100°F/38°C
  - To touch: 1.5 hours
  - To handle: 4.5 hours
  - To recoat: 4.5 hours

50% RH

Cure for

- Service: 10 days
- Immersion: 14 days

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

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 R7K111 or Oxsol 100. Clean tools immediately after use with Reducer R7K111 or Oxsol 100. Follow manufacturer’s safety recommendations when using any solvent.

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