MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600
PART B B58V600
SERIES HARDENER

PROTECTIVE & MARINE COATINGS

PRODUCT INFORMATION

Revised: Sept. 29, 2015

PRODUCT DESCRIPTION

MACROPOXY 646 FAST CURE EPOXY is a high solids, 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.

- Low VOC
- Chemical resistant
- Low odor
- Abrasion resistant
- Outstanding application properties
- Meets Class A requirements for Slip Coefficient, 0.36 @ 6 mils / 150 microns dft (Mill White only)

PRODUCT CHARACTERISTICS

Finish:
Semi-Gloss

Color:
Mill White, Black and a wide range of colors available through tinting

Volume Solids:
72% ± 2%, mixed, Mill White

Weight Solids:
85% ± 2%, mixed, Mill White

VOC (EPA Method 24):
Unreduced: <250 g/L; 2.08 lb/gal
Reduced: 10%: <300 g/L; 2.08 lb/gal

Mix Ratio:
1:1 by volume

Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Wet mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0 (175)</td>
<td>13.5 (338)</td>
<td></td>
</tr>
</tbody>
</table>

| Dry mils (microns) | 5.0* (125) | 10.0* (250) |

Coverage sq ft/gal (m²/L):

- Dry mils (microns):
  - Coverage sq ft/gal (m²/L) @ 1 mil / 25 microns dft
    - Theoretical: 1152 (28.2)

- Unreduced:
  - Reduced: 10%:

Flash Point:
91°F (33°C), TCC, mixed

Recover Clean Up:
Reduction, R7K15

In California:
Reduction R7K111 or Oxsol 100

PRODUCT CHARACTERISTICS (Cont’d)

Shelf Life:
36 months, unopened

Flash Point:
Store indoors at 40°F (4.5°C) to 110°F (43°C)

Reducer/Clean Up:
Reduction, R7K15

In California:
Reduction R7K111 or Oxsol 100

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP10/NACE 2

System Tested*:
1 ct. Macropoxy 646 Fast Cure @ 6.0 mils (150 microns) dft

*unless otherwise noted below

Test Name
Abrasion Resistance
Accelerated Weathering
Adhesion
Corrosion Resistance
Direct Impact Resistance
Dry Heat Resistance
Exterior Durability
Flexibility
Fuel Contribution
Humidity Resistance
Immiscibility
Radiation Tolerance
Pencil Hardness
Salt Fog Resistance
Slip Coefficient, Mill White*
Surface Burning
Water Vapor Permeance

Results
84 mg loss
Passes
1,037 psi
Passes
84 mg loss
Passes
1,037 psi
Passes
84 mg loss
Passes
1,037 psi
Passes
1,037 psi
Passes
1,037 psi
Passes
1,037 psi

EXCEPTIONS:

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

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

Paint temperature must be at least 40°F (4.5°C) minimum.

When used as an intermediate coat as part of a multi-coat system:

Drying Schedule @ 5.0 mils wet (125 microns):

<table>
<thead>
<tr>
<th>@ 35°F/1.7°C</th>
<th>@ 77°F/25°C</th>
<th>@ 100°F/38°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% RH</td>
<td>50% RH</td>
<td>50% RH</td>
</tr>
<tr>
<td>To touch: 6 hours</td>
<td>2 hours</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>To handle: 48 hours</td>
<td>8 hours</td>
<td>4.5 hours</td>
</tr>
<tr>
<td>To recoat: minimum: 48 hours</td>
<td>8 hours</td>
<td>4.5 hours</td>
</tr>
<tr>
<td>maximum: 1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>To cure: Service: 10 days</td>
<td>7 days</td>
<td>4 days</td>
</tr>
<tr>
<td>Immersion: 14 days</td>
<td>7 days</td>
<td>4 days</td>
</tr>
</tbody>
</table>

To recoat:

- Minimum: 16 hours
- Maximum: 1 year

When used as a multi-coat system:

Drying Schedule @ 5.0 mils wet (125 microns):

<table>
<thead>
<tr>
<th>@ 35°F/1.7°C</th>
<th>@ 77°F/25°C</th>
<th>@ 100°F/38°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% RH</td>
<td>50% RH</td>
<td>50% RH</td>
</tr>
<tr>
<td>To touch: 3 hours</td>
<td>1 hour</td>
<td>1 hour</td>
</tr>
<tr>
<td>To handle: 48 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>To recoat: minimum: 16 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>maximum: 1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
</tbody>
</table>

Disclaimer:

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**MACROPOXY® 646**

**FAST CURE EPOXY**

**PART A**

B58-600

**PART B**

B58V600

**SERIES**

HARDENER

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**PRODUCT INFORMATION**

**4.53**

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**RECOMMENDED USES**

- Marine applications
- Fabrication shops
- Pulp and paper mills
- Offshore platforms
- Nuclear Power Plants
- Nuclear fabrication shops
- Mill White and Black are acceptable for immersion use for salt water and fresh water, not acceptable for potable water
- Suitable for use for USDA inspected facilities
- Acceptable for use in Canadian Food Processing facilities, categories: D1, D2, D3 (Confirm acceptance of specific part numbers/recipes with your SW Sales Representative)
- Conforms to AWWA D102 OCS #5
- Conforms to MPI # 108
- 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 the Mining & Minerals Industry
- Acceptable for use over and/or under Luxon S1 and Luxon H1 Caulking

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**RECOMMENDED SYSTEMS**

<table>
<thead>
<tr>
<th>Condition of Surface</th>
<th>Dry Film Thickness / ct. Mils</th>
<th>Docs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel: Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (125-250)</td>
<td>5.0-10.0 (125-250)</td>
</tr>
<tr>
<td>Concrete Block:</td>
<td>5.0-10.0 (125-250)</td>
<td></td>
</tr>
<tr>
<td>Atmosphere:</td>
<td>1 ct. Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (75-150)</td>
</tr>
<tr>
<td>Metallic</td>
<td>1 ct. Recoatable Epoxy Primer</td>
<td>4.0-6.0 (100-150)</td>
</tr>
<tr>
<td></td>
<td>2 ct. Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (125-250)</td>
</tr>
<tr>
<td>Steel:</td>
<td>1 ct. Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (125-250)</td>
</tr>
<tr>
<td></td>
<td>1-2.cts.</td>
<td>3.0-6.0 (75-150)</td>
</tr>
<tr>
<td>Steel:</td>
<td>1 ct. Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (125-250)</td>
</tr>
<tr>
<td></td>
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<td>3.0-6.0 (75-150)</td>
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<td></td>
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</tr>
<tr>
<td>Steel:</td>
<td>1 ct. Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (125-250)</td>
</tr>
<tr>
<td></td>
<td>1-2.cts.</td>
<td>3.0-6.0 (75-150)</td>
</tr>
<tr>
<td>Aluminum:</td>
<td>2 ct. Macropoxy 646 Fast Cure Epoxy</td>
<td>5.0-10.0 (125-250)</td>
</tr>
</tbody>
</table>

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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 (50-75 micron) profile

- **Aluminum**
  - Galvanizing:
  - SSPC-SP1; See Surface Preparations section on page 3 for application of FIRETEX intumescent coating systems

Concrete & Masonry

- Atmospheric:
  - SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3
  - Immersion:
  - SSPC-SP13/NACE 6-4.3.1, or ICRI No. 310.2R, CSP 2-4

**Surface Preparation Standards**

- Temperature: 35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface)
- Minimum recommended surface preparation:
  - **Steel**
  - Atmospheric:
  - SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3
  - Immersion:
  - SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile

- **Concrete & Masonry**
  - Atmospheric:
  - SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3
  - Immersion:
  - SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile

- **Aluminum**
  - Galvanizing:
  - SSPC-SP1; See Surface Preparations section on page 3 for application of FIRETEX intumescent coating systems

- **Concrete & Masonry**
  - Atmospheric:
  - SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3
  - Immersion:
  - SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile

**TINTING**

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: 35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface)
- At least 5°F (2.8°C) above dew point
- Relative humidity: 85% maximum

**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: 12.9 ± 0.2 lb/gal; 1.55 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.

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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, 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). Remove all weld spatter and round all sharp edges by grinding. 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 Clean per SSPC-SP1 (recommended solvent is VM&P Naphtha). 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.

In preparing galvanized steel substrates for the application of FIRE-TEX intumescent coating systems, Surface Preparation Specification SSPC-SP 16 must be followed obtaining a surface profile of minimum 1.5 mils (38 microns). Optimum surface profile will not exceed 2.0 mils (50 microns).

**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 dust, 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 2-4.

Follow the standard methods listed below when applicable:
- ASTM D4260 Standard Practice for Cleaning Concrete.
- ASTM D4259 Standard Practice for Abrading 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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**Application Conditions**

Temperature: 35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface)
40°F (4.5°C) minimum, 120°F (49°C) maximum (material)

Relative humidity: 85% maximum

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**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**

Reduction............ Reducer R7K15

In California............. Reducer R7K111

**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

Requirements: Requires oil and moisture separators

**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

**Plural Component Spray**


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

| 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) @ 1 mil / 25 microns dft | 1152 (28.2) |

*May be applied at 3.0-10.0 mils (75-250 microns) dft in atmospheric conditions. Refer to Recommended Systems (page 2). See Performance Tips section also.

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

Drying Schedule @ 7.0 mils wet (175 microns):

| @ 35°F/1.7°C | @ 77°F/25°C | @ 100°F/38°C |
| 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 |
| To cure: | 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. Paint temperature must be at least 40°F (4.5°C) minimum.

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

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.

Excessive reduction of material can affect film build, appearance, and adhesion.

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. In California use Reducer R7K111.

Tinting is not recommended for immersion service.

Use only Mill White and Black for immersion service.

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.

QuiK-Kick Epoxy Accelerator is acceptable for use. See data page 4.99 for details.

When coating over aluminum and galvanizing, recommended dft is 2-4 mils (50-100 microns).

Acceptable for Concrete Floors.

Can be used as a metalizing sealer. Consult Technical Bulletin - Sealers for Thermal Spray Metalizing, or your local Sherwin-Williams representative.

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

Safety Precautions

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Cleaning up Instructions

Clean spills and spatters immediately with Reducer R7K15. Clean tools immediately after use with Reducer R/K15. In California use Reducer R7K111. Follow manufacturer's safety recommendations when using any solvent.

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