Industrial & Marine Coatings

4.53 MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 **SERIES**
PART B B58V600 **HARDENER**

PRODUCT INFORMATION

Revised 3/07

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
- Low odor
- Chemical resistant
- Abrasion resistant

RECOMMENDED USES

- Marine applications
- Fabrication shops
- Pulp and paper mills
- Power plants
- Offshore platforms
- Refineries
- Chemical plants
- Tank exteriors
- Water treatment plants
- Mill White and Black are acceptable for immersion use for salt water and fresh water, not acceptable for potable water
- Suitable for use in USDA inspected facilities

Conforms to AWWA D102-03 OCS #5

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
mixed Reduced 10%: <300 g/L; 2.50 lb/gal

Mix Ratio: 1:1 by volume

Recommended Spreading Rate per coat:

Wet mils:	7.0 - 13.5
Dry mils:	5.0 - 10.0*
Coverage:	116 - 232 sq ft/gal approximate

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

Drying Schedule @ 7.0 mils wet and 50% RH:

	@ 40°F	@ 77°F	@ 100°F
To touch:	4-5 hours	2 hours	1½ hours
To handle:	48 hours	8 hours	4½ hours
To recoat:			
minimum:	48 hours	8 hours	4½ 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.

Pot Life:	10 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

Shelf Life: 36 months, unopened
Store indoors at 40°F to 100°F.

Flash Point: 91°F, TCC, mixed

Reducer/Clean Up: Reducer, R7K15
In California: Reducer R7K111 or Oxsol 100

PERFORMANCE CHARACTERISTICS

System Tested: (unless otherwise indicated)
Substrate: Steel
Surface Preparation: SSPC-SP10
1 ct. Macropoxy 646 Fast Cure @ 6.0 mils dft

Abrasion Resistance:
Method: ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load
Result: 84 mg loss

Accelerated Weathering - QUV, Zinc Clad II Plus Primer:
Method: ASTM D4587, QUV-A, 12,000 hours
Results: passes

Adhesion:
Method: ASTM D4541
Result: 1,037 psi

Corrosion Weathering, Zinc Clad II Plus Primer:
Method: ASTM D5894, 36 cycles, 12,000 hours
Result: Rating 10 per ASTM D714 for blistering
Rating 9 per ASTM D610 for rusting

Direct Impact Resistance:
Method: ASTM D2794
Result: 30 in. lb.

Dry Heat Resistance:
Method: ASTM D2485
Result: 250°F

Exterior Durability:
Method: 1 year at 45° South
Result: Excellent, chalks

Flexibility:
Method: ASTM D522, 180° bend, 3/4" mandrel
Result: Passes

Humidity Resistance
Method: ASTM D4585, 6000 hrs
Result: No blistering, cracking, or rusting

Immersion:
Method: 1 year fresh and salt water
Result: Passes, no rusting, blistering, or loss of adhesion

Irradiation-Effects on Coatings used in Nuclear Power Plants
Method: ANSI 5.12 / ASTM D4082-89
Result: Passes

Pencil Hardness:
Method: ASTM D3363
Result: 3H

Water Vapor Permeance:
Method: ASTM D1653, Method B
Result: 1.16 grains/ day

Salt Fog Resistance, Zinc Clad II Plus Primer::
Method: ASTM B117, 6,500 hours
Result: Rating 10 per ASTM D610 for rusting
Rating 9 per ASTM D1654 for corrosion

Slip Coefficient, Mill White:
Method: AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts
Result: Class A, 0.36

Epoxy coatings may darken or discolor following application and curing.

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PRODUCT INFORMATION

RECOMMENDED SYSTEMS

Immersion and atmospheric:

Steel:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Concrete/Masonry, smooth:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Concrete Block:
1 ct. Kem Cati-Coat HS Epoxy Filler/Sealer @ 10.0 - 20.0 mils dft, as needed to fill voids and provide a continuous substrate.
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Atmospheric:
***Steel:**
(Shop applied system, new construction, AWWA D102-03, can also be used at 3 mils minimum dft when used as an intermediate coat as part of a multi-coat system)
1 ct. Macropoxy 646 Fast Cure Epoxy @ 3.0 - 6.0 mils dft
1-2 cts. of recommended topcoat

Steel:
1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

***Steel:**
1 ct. Macropoxy 646 @ 4.0 - 6.0 mils dft
1-2 cts. Acrolon 218 Polyurethane @ 3.0 - 6.0 mils dft/ct
or Hi-Solids Polyurethane @ 3.0 - 5.0 mils dft/ct
or SherThane 2K Urethane @ 2.0 - 4.0 mils dft/ct

Steel:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct
1-2 cts. Tile-Clad HS Epoxy @ 2.5 - 4.0 mils dft/ct

Steel:
1 ct. Zinc Clad II Plus @ 3.0 - 6.0 mils dft
1 ct. Macropoxy 646 @ 5.0 - 10.0 mils dft
1-2 cts. Acrolon 218 Polyurethane @ 3.0 - 6.0 mils dft/ct

Steel:
1 ct. Zinc Clad III HS @ 3.0 - 5.0 mils dft
or Zinc Clad IV @ 3.0 - 5.0 mils dft
1 ct. Macropoxy 646 @ 5.0 - 10.0 mils dft
1-2 cts. Acrolon 218 Polyurethane @ 3.0 - 6.0 mils dft/ct

Aluminum:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Galvanizing:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

The systems listed above are representative of the product's use. Other systems may be appropriate.

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 good 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
Aluminum:	SSPC-SP1
Galvanizing:	SSPC-SP1
Concrete & Masonry	
Atmospheric:	SSPC-SP13/NACE 6, or ICRI 03732, CSP 1-3
Immersion:	SSPC-SP13/NACE 6-4.3.1 or 4.3.2, or ICRI 03732, CSP 1-3

TINTING

Tint Part Awith 844 Colorants 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 minimum, 140°F maximum (air, surface, and material)
	At least 5°F above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:

Part A:	1 and 5 gallon containers
Part B:	1 and 5 gallon containers
Weight per gallon:	12.9 ± 0.2 lb 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.

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PART A B58-600 SERIES
PART B B58V600 HARDENER

APPLICATION BULLETIN

Revised 3/07

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.

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). 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). 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.

Concrete and Masonry, Atmospheric Service:
For surface preparation, refer to NACE 6/SSPC-SP13, or ICRI 03732, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F. 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. Fill bug holes, air pockets and other voids with a cement patching compound. Weathered masonry and soft or porous cement board must be brush blasted or power tool cleaned to remove loosely adhering contamination and to get to a hard, firm surface. Laitance must be removed by etching with a 10% muriatic acid solution and thoroughly neutralized with water.

Concrete and Masonry, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 4.3.2, or ICRI 03732, CSP 1-3.

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.

APPLICATION CONDITIONS

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

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 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
Requires oil and moisture separators

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

Roller
Cover ..... 3/8" woven with phenolic core
Reduction ..... Not recommended

If specific application equipment is 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 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 to the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

Wet mils:	7.0 - 13.5
Dry mils:	5.0 - 10.0*
Coverage:	116 - 232 sq ft/gal approximate

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

Drying Schedule @ 7.0 mils wet and 50% RH:

	@ 40°F	@ 77°F	@ 100°F
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minimum:	48 hours	8 hours	4½ 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.

Pot Life:	10 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

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 Mil White and Black for immersion service.

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

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

CLEAN UP INSTRUCTIONS

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

SAFETY PRECAUTIONS

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