



Protective ZINC CLAD® II ETHYL SILICATE & Marine Coatings

PART E B69V3 BINDER
PART F B69D11 ZINC DUST

Revised: April 27, 2016

PRODUCT INFORMATION

6.02

PRODUCT DESCRIPTION

ZINC CLAD II ETHYL SILICATE is a solvent-based two-package, inorganic ethyl silicate, zinc-rich coating.

- Meets Class B requirements for Slip Coefficient and Creep Resistance, 56
- Meets AASHTO M-300 specification
- 85% zinc content in dry film
- Coating self-heals to resume protection if damaged
- Provides cathodic/sacrificial protection by the same mechanism as galvanizing. Also protects steel by forming an inorganic moisture and solvent barrier

PRODUCT CHARACTERISTICS

Finish:	Flat
Color:	Gray-green
Volume Solids:	62% ± 2%, ASTM D2697, mixed
Weight Solids:	82% ± 2 %, mixed
VOC (calculated):	Unreduced: <500 g/L; 4.17 lb/gal mixed Reduced 10%: <500 g/L; 4.17 lb/gal
Zinc Content in Dry Film:	85% by weight
Mix Ratio:	2 components; premeasured 5 gallons (18.9L) mix

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	3.5 (88)	6.5 (163)
Dry mils (microns)	2.0 (50)	4.0 (100)
~Coverage sq ft/gal (m²/L)	248 (6.1)	496 (12.2)
Theoretical coverage sq ft/gal (m²/L) @ 1 mil / 25 microns dft	995 (24.3)	

Dry film thickness in excess of 6.0 mils (150 microns) per coat is not recommended.

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

Drying Schedule @ 5.0 mils wet (125 microns):

	@ 55°F/13°C	@ 77°F/25°C	@ 100°F/38°C
		50% RH	
Rain resistant:	1 hour	20-30 minutes	15 minutes
To touch:	30 minutes	15 minutes	5 minutes
To handle:	3 hours	1-2 hours	20 minutes
To recoat:	48 hours	18 hours	18 hours
To cure:	7 days	7 days	7 days
Immersion service:	14 days	14 days	14 days
<i>Drying time is temperature, humidity, and film thickness dependent.</i>			
Pot Life:	18 hours	8 hours	6 hours
Note: High humidity will shorten the pot life.			
Sweat-in-Time:	None required		

Shelf Life:	Part E: 9 months, unopened Part F: 24 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C).
Flash Point:	55°F (13°C), PMCC, mixed
Reducer/Clean Up:	
Below 80°F (27°C):	Xylene, R2K4
Above 80°F (27°C):	Reducer #58 or Reducer 100, R2K5

RECOMMENDED USES

- For use over properly prepared blasted steel.
- As a one-coat maintenance coating or as a permanent primer for severely corrosive environments (pH range 5-9)
 - Economical replacement for galvanizing with similar performance
 - Ideal for application at low temperatures or service at high temperatures and/or humidity conditions
 - Water intake and discharge lines (non-potable)
 - Where abrasion resistance and hardness is required
 - Bridges, refineries, drilling rigs
 - Shop or field application
 - Not recommended for severe acid or alkali exposure
 - 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 Power Plants • DOE Nuclear Fuel Facilities
 - Nuclear fabrication shops • DOE Nuclear Weapons Facilities

* Nuclear qualifications are NRC license specific to the facility.

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP10/NACE 2

System Tested*:

1 ct. Zinc Clad II @ 3.0 mils dft (75 microns)

*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	326 mg loss
Adhesion	ASTM D4541	6.77 MPa = 982 lb psi
Direct Impact Resistance	ASTM D2794	60 in. lbs.
Dry Heat Resistance	ASTM D2485	750°F (399°C)
Immersion Resistance (untopcoated)	1 year	Acceptable for: crude oil, fresh and demineralized water, gasoline
Moisure Condensation Resistance	ASTM D4585, 100°F (38°C), 2000 hours	No Failure
Pencil Hardness	ASTM D3363	3H
Radiation Tolerance	ASTM D4082 / ANSI 5.12	Pass at 5 mils (125 microns)
Salt Fog Resistance	ASTM B117, 2000 hours	No Failure
Slip Coefficient* (zinc only)	AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts	Class B, 0.56
Wet Heat Resistance	Non-immersion	115°F (46°C)

Provides performance comparable to products formulated to Federal Specifications: Mil-P-38336, Mil-P-46105, and SSPC Paint 20.

*Refer to Slip Certification document



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RECOMMENDED SYSTEMS

		Dry Film Thickness / ct.	
		Mils	(Microns)
Steel, Zinc Primer/Finish, immersion or atmospheric:			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
Steel, Acrylic Topcoat, atmospheric:			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
2 cts.	Pro Industrial DTM Acrylic Coating	2.5-4.0	(63-100)
Steel, Coal Tar Epoxy Topcoat, atmospheric:			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
1 ct.	Hi-Mil Sher-Tar Epoxy	16.0-20.0	(400-500)
Steel, Epoxy Topcoat, atmospheric:			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
1-2 cts.	Macropoxy HS	3.0-6.0	(75-150)
Steel, Epoxy Topcoat, atmospheric:			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
2 cts.	Tile-Clad HS Epoxy	3.0-4.0	(75-100)
Steel, Urethane Topcoat, atmospheric:			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
1 ct.	Macropoxy HS	3.0-6.0	(75-150)
1 ct.	Sherthane 2K Urethane	2.0-4.0	(50-100)

NOTE: 1 ct. of DTM Wash Primer or Pro Industrial Pro-Cryl Universal Primer can be used as an intermediate coat under recommended topcoats to prevent pinholing.

Steel, Class B Compliant System

1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
1 ct.	Steel Spec Epoxy Primer (red)	4.0-6.0	(100-150)
or			
1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)

FIRETEX ONLY:

Steel Substrates being primed for FIRETEX only:

1 ct.	Zinc Clad II Ethyl Silicate	2.0-4.0	(50-100)
1 ct.	Macropoxy 920 Pre-Prime	1.5-2.0	(40-50)

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-SP6/ NACE 3, 2 mil (50 micron) profile

Immersion: SSPC-SP10/NACE 2, 2 mil (50 micron) profile

Surface Preparation Standards

Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal	Sa 3	Sa 3	SP 5	1
Near White Metal	Sa 2.5	Sa 2.5	SP 10	3
Commercial Blast	Sa 2	Sa 2	SP 6	3
Brush-Off Blast	Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	C St 2	C St 2	SP 2	-
Rusted	C St 2	C St 2	SP 2	-
Pitted & Rusted	D St 2	D St 2	SP 3	-
Rusted	C St 3	C St 3	SP 3	-
Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Do not tint.

APPLICATION CONDITIONS

Temperature:

air and surface: 0°F (-17°C) minimum, 120°F (49°C) maximum

material: 40°F (4.5°C) minimum

At least 5°F (2.8°C) above dew point

Relative humidity: 40% - 90% maximum

Water misting may be required at humidities below 50%

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:

5 gallons (18.9L) mixed

Part E: 3.75 gallons (14.2L)

Part F: 73 lb (33.1 Kg) zinc dust

1.5 gallons (5.7L) mixed

Part E: 1.125 gallons (4.3L)

Part F: 22 lb (10 Kg) zinc dust

Weight: 20.9 ± 0.2 lb/gal ; 2.5 Kg/L, mixed

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.

Zinc rich coatings require direct contact between the zinc pigment in the coating and the metal substrate for optimum performance.

Iron & Steel (atmospheric service)

Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel the same day as it is cleaned 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 mils / 50 microns). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Note: If blast cleaning with steel media is used, an appropriate amount of steel grit blast media may be incorporated into the work mix to render a dense, angular 1.5-2.0 mil (38-50 micron) surface profile. This method may result in improved adhesion and performance.

Surface Preparation Standards

Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal	Sa 3	Sa 3	SP 5	1
Near White Metal	Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast	Sa 2	Sa 2	SP 6	3
Brush-Off Blast	Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	C St 2	C St 2	SP 2	-
Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	C St 3	C St 3	SP 3	-
Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:
air and surface: 0°F (-17°C) minimum, 120°F (49°C) maximum
material: 40°F (4.5°C) minimum
At least 5°F (2.8°C) above dew point
Relative humidity: 40% - 90% maximum
Water misting may be required at humidities below 50%

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

Below 80°F (27°C).....Xylene, R2K4
Above 80°F (27°C).....Reducer #58 or Reducer 100, R2K5

Airless Spray

(use Teflon packings and continuous agitation)

Pressure..... 1800 - 2000 psi
Hose..... 3/8" ID
Tip017" - .021"
Reduction..... As needed up to 10% by volume

Conventional Spray

(continuous agitation required)

Gun Binks 95
Fluid Nozzle 66
Air Nozzle..... 63PB
Atomization Pressure..... 30 - 40 psi
Fluid Pressure..... 10 - 20 psi
Reduction..... As needed up to 10% by volume

Keep pressure pot at level of applicator to avoid blocking of fluid line due to weight of material. Blow back coating in fluid line at intermittent shutdowns, but continue agitation at pressure pot.

Brush For touch-up only

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.

Zinc Clad II comes in 2 premeasured containers which when mixed provides 5 gallons (18.9L) of read-to-apply material.

Mixing Instructions: Thoroughly agitate Binder Part E using low speed continuous air driven agitation. Slowly mix all of Zinc Dust Part F into all of Binder Part E until mixture is completely uniform. After mixing, pour mixture through 30-60 mesh screen. Mixed material must be used within 8 hours. Do not mix previously mixed material with new. If reducer solvent is used, add only after both components have been thoroughly mixed. Continuous agitation of mixture during application is required, otherwise zinc dust will quickly settle out.

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

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	3.5 (88)	6.5 (163)
Dry mils (microns)	2.0 (50)	4.0 (100)
~Coverage sq ft/gal (m ² /L)	248 (6.1)	496 (12.2)
Theoretical coverage sq ft/gal (m ² /L) @ 1 mil / 25 microns dft	995 (24.3)	

Dry film thickness in excess of 6.0 mils (150 microns) per coat is not recommended.

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

Drying Schedule @ 5.0 mils wet (125 microns):

	@ 55°F/13°C	@ 77°F/25°C 50% RH	@ 100°F/38°C
Rain resistant:	1 hour	20-30 minutes	15 minutes
To touch:	30 minutes	15 minutes	5 minutes
To handle:	3 hours	1-2 hours	20 minutes
To recoat:	48 hours	18 hours	18 hours
To cure:	7 days	7 days	7 days
Immersion service:	14 days	14 days	14 days
<i>Drying time is temperature, humidity, and film thickness dependent.</i>			
Pot Life:	18 hours	8 hours	6 hours
Note: High humidity will shorten the pot life.			
Sweat-in-Time:	None required		

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 Xylene, R2K4. Clean tools immediately after use with Xylene, R2K4. Follow manufacturer's safety recommendations when using any solvent.

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PERFORMANCE TIPS

Topcoating: Note minimum cure times at normal conditions before topcoating. Longer drying periods are required if primer cannot be water mist sprayed when humidity is low. Water misting may be required at humidities below 50%.

Occasionally topcoats will pinhole or delaminate from zinc-rich coatings. This is usually due to poor ambient conditions or faulty application of topcoats. This can be minimized by:

- Providing adequate ventilation and suitable application and substrate temperature.
- Avoid dry spray of topcoat.
- If pinholing develops, apply a mist coat of the topcoat, reduced up to 50%. Allow 10 minutes flash off and follow with a full coat.
- Applying a wet full coat, but at minimum film build, prior to applying a complete full coat.

Excessive film build, poor ventilation, and cool temperatures may cause solvent entrapment and premature coating failure.

Any salting on the zinc surface due to weathering exposure must be removed prior to topcoating.

An intermediate coat is recommended to provide uniform appearance of the topcoat.

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 performance.

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 Xylene, R2K4.

Keep pressure pot at level of applicator to avoid blocking of fluid line due to weight of material. Blow back coating in fluid line at intermittent shutdowns, but continue agitation at pressure pot.

Application above recommended film thickness may result in mud cracking.

Not recommended for severe acid or alkali exposures.

Oil base, alkyd, epoxy ester, and silicone alkyd topcoats are not recommended.

Polyurethane topcoats require a tie coat of catalyzed epoxy or Pro Industrial Pro-Cryl Universal Primer.

Topcoats may be applied once 50 MEK double rubs are achieved. No zinc or only slight traces should be visible. Coin hardness test can also be used.

Cured films of inorganic zinc coatings contain no appreciable amounts of combustible materials. Both Fire and Smoke Indices would be expected to approach 0.

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

SAFETY PRECAUTIONS

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