Protective & Marine Coatings

ZINC CLAD® II LV
INORGANIC ZINC-RICH COATING

PART A B69VZ19 — **BASE**
PART F B69D11 — **ZINC DUST**

Revised: November 16, 2020

PRODUCT INFORMATION

6.14

PRODUCT DESCRIPTION

ZINC CLAD II LV is a solvent-based, two-component, inorganic ethyl silicate, zinc rich coating. This is a fast drying, high solids, low VOC coating with 82% by weight of zinc dust in the dry film.

- Coating self-heals to resume protection if damaged
- Provides cathodic/sacrificial protection by the same mechanism as galvanizing
- Forms an inorganic barrier to moisture and solvents
- Meets Class B requirements for slip coefficient and creep resistance, 0.53
- Meets AASHTO M-300-specification

PRODUCT CHARACTERISTICS

Finish:	Flat
Color:	Gray-Green
Volume Solids:	69% ± 2%, mixed (void content method)
Weight Solids:	86% ± 2%, mixed
VOC (EPA Method 24):	Unreduced: <400 g/L 3.33 lb/gal (mixed)
Zinc Content in Dry Film:	82% by weight
Mix Ratio:	2 components, premeasured 4.50 gallons (17.0L) mixed

Recommended Spreading Rate per coat:

	Minimum		Maximum	
Wet mils (microns)	**3.0**	75	**6.0**	150
Dry mils (microns)	**2.0**	50	**4.0**	100
~Coverage sq ft/gal (m^2/L)	**280**	6.8	**550**	13.4
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1104**	27.0		

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 @ 6.0 mils wet (150 microns):

	@ 40°F/4.5°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	25 minutes	20 minutes	5 minutes
To handle:	25 minutes	20 minutes	10 minutes
To topcoat:	4 days	24 hours	8 hours
To cure:	5 days	36 hours	24 hours
To stack:	6 hours	2 hours	1 hour

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

Pot Life: 8 hours @ 77°F (25°C)

High humidity will shorten pot life.

Sweat-in-Time: None required, but material should be mixed for at least 5 minutes before use.

Shelf Life:	Part A: 9 months, unopened Part F: 24 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C)
Flash Point:	65°F (18.3°C)
Reducer/Clean Up: Above 70°F (21°C): Below 70°F (21°C):	 R2KT4, 150 Flash Naphtha R2K4, Xylene

RECOMMENDED USES

For use over prepared blasted steel in areas such as:

- Bridges
- Shop or field application
- Nuclear Power Plants
- Nuclear fabrication shops
- Refineries
- Drilling rigs
- DOE Nuclear Fuel Facilities
- DOE Nuclear Weapons Facilities
- As a one-coat maintenance coating or as a permanent primer for severe corrosive environments (pH range 5-9)
- Ideal for application at low temperatures or service at high temperatures and/or humidity conditions
- Fresh and demineralized water immersion service (non-potable)
- 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.

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP10/NACE 2

System Tested*:

1 ct. Zinc Clad II LV @ 4.0 mils (100 microns) dft

*unless otherwise noted below

Test Name	Test Method	Results
Adhesion	ASTM D4541	10.025 MPa = 1454lb psi
Direct Impact Resistance	ASTM D2794	50 in lbs.
Dry Heat Resistance	ASTM D2485	750°F (399°C)*
Flexibility	ASTM D522, 180° bend, 1" mandrel	Passes
Moisure Condensation Resistance	ASTM D4585, 100°F, 1000 hours	Rating 10 per ASTM D714 for Blistering; Rating 10 per ASTM D610 for Rusting
Pencil Hardness	ASTM D3363	2H
Radiation Tolerance	ASTM D4082 / ANSI 5.12	Pass at 5 mils (125 microns)
Salt Fog Resistance	ASTM B117, 1000 hours	Rating 10 per ASTM D714 for Blistering; Rating 10 per ASTM D610 for Rusting
Slip Coefficient*	AISC Specifications for Structural Joints	Class B, 0.53

Provides performance comparable to products formulated to specifications Mil-P-38336 and Mil-P-46105 and SSPC Paint 20.

*Consult your Sherwin-Williams Representative regarding this product's Slip Certification document

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RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Steel, Untopcoated, Immersion or Atmospheric:			
1 ct.	Zinc Clad II LV	2.0-4.0	(50-100)
Steel, Epoxy Topcoat, Atmospheric:			
1 ct.	Zinc Clad II LV	2.0-4.0	(50-100)
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
Steel, Polyurethane Topcoat, Atmospheric:			
1 ct.	Zinc Clad II LV	2.0-4.0	(50-100)
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
1 ct.	Acrolon 218 HS	3.0-6.0	(75-150)
Steel, Polyurethane Topcoat, Atmospheric:			
1 ct.	Zinc Clad II LV	2.0-4.0	(50-100)
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
1 ct.	Hi-Solids Polyurethane	3.0-4.0	(75-100)

NOTE: 1 ct. of DTM Wash Primer can be used as an intermediate coat under recommended topcoats to prevent pinholing.

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 adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel:

Atmospheric: SSPC-SP6/NACE3, 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	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	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: 20°F (7°C) minimum, 100°F (38°C) maximum (air, surface, and material) 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: 4.50 gallons (17.0L) total, mixed
Part A: 3.25 gallon (12.3L) kit
Part F: 73 lbs (33.1 Kg) zinc dust

Weight: 22.99 ± 0.2 lb/gal ; 2.76 Kg/L, mixed

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.

DISCLAIMER

WARRANTY

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APPLICATION BULLETIN

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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	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	20°F (7°C) minimum, 100°F (38°C) maximum (air, surface, and material) 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
Above 70°F (21°C).....R2KT4, 150 Flash Naphtha
Below 70°F (21°C).....R2K4, Xylene

Airless Spray
(use Teflon packings and continuous agitation)
Unit.....Graco 30:1
Pressure.....2700 psi
Hose.....3/8" ID
Tip .....019" - .021"
Filter .....30 mesh
Reduction.....As needed up to 5% by volume
For continuous operation in larger areas, use Speeflo Airless Commander Zinc Pump. Set ball checks to maximum travel for viscous material.

Conventional Spray
(continuous agitation required)
Gun .....Binks 95
Fluid Nozzle 66
Fluid Hose.....1/2" ID, 50 ft maximum
Air Nozzle.....63PB
Air Hose .....1/2" ID, 50 ft maximum
Atomization Pressure.....25 psi
Fluid Pressure.....10-20 psi
Reduction.....As needed up to 5% 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 in small areas 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 LV comes in premeasured containers, which when mixed provides ready-to-apply material.

Mixing Instructions:
Thoroughly agitate Binder, Part A using low speed continuous air driven agitation. Slowly mix all of Zinc Dust, Part F, into all of Binder Part A until mixture is completely uniform. After mixing, pour mixture through 30-mesh screen. Mixed material must be used within 8 hours. Do not mix previously mixed material with new. No "sweat-in" period is required.

If reducer solvent is used, add only after 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)	**3.0** 75	**6.0** 150
Dry mils (microns)	**2.0** 50	**4.0** 100
~Coverage sq ft/gal (m^2/L)	**280** 6.8	**550** 13.4
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1104** 27.0	

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 @ 6.0 mils wet (150 microns):

	@ 40°F/4.5°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	25 minutes	20 minutes	5 minutes
To handle:	25 minutes	20 minutes	10 minutes
To topcoat:	4 days	24 hours	8 hours
To cure:	5 days	36 hours	24 hours
To stack:	6 hours	2 hours	1 hour

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

Pot Life: 8 hours @ 77°F (25°C)

High humidity will shorten pot life.

Sweat-in-Time: None required, but material should be mixed for at least 5 minutes before use.

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 R2KT4, 150 Flash Naphtha or R2K4, Xylene. Clean hands and tools immediately after use with Reducer R2KT4, 150 Flash Naphtha or R2K4, Xylene. Follow manufacturer's safety recommendations when using any solvent.

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.

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% to enhance cure rate.

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:

- Provide adequate ventilation and suitable application and substrate temperature.
- If pinholing develops during topcoating, apply a mist coat of the topcoat, reduced up to 50%. Allow 10 minutes flash off and follow with a full coat.

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

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

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 Reducer R2KT4, 150 Flash Naphtha.

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 and poor topcoat appearance.

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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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.