

SELECTION & SPECIFICATION DATA

Generic Type	Organic Zinc-Rich Epoxy
Description	Low VOC organic zinc epoxy steel primer with extremely fast cure-to-topcoat characteristics for in-shop applications and quick turnaround requirements in the field. Carbozinc 859 has less than 3 lbs/gallon (359.5 g/l) VOC (thinned) and is used extensively in virtually all industrial markets.
Features	<ul style="list-style-type: none"> • Meets Class B slip co-efficient and creep testing criteria for use on faying surfaces • Rapid cure. Dry to recoat in 30 minutes at 75°F (24°C) and 50% relative humidity. • Complies with SSPC Paint 20 (Type II) • Low temperature cure down to 35°F (2°C) • Excellent adhesion • Protects against undercutting corrosion • Field proven primer that applies well by spray methods • Excellent touch-up primer by brush or roll for small areas. • VOC compliant to current AIM regulations • Approved for MPI #20
Color	Green (0300); Gray (0700)
Finish	Flat
Primer	Self Priming
Dry Film Thickness	3 - 5 mils (76 - 127 microns) per coat Dry film thickness in excess of 10.0 mils (250 microns) per coat is not recommended.
Total Zinc Dust in Dry Film	By Weight: 81%
Solids Content	By Volume 66% +/- 2% Tested in accordance with ASTM D2697.
Theoretical Coverage Rate	1059 ft ² /gal at 1.0 mils (26.0 m ² /l at 25 microns) 353 ft ² /gal at 3.0 mils (8.7 m ² /l at 75 microns) 212 ft ² /gal at 5.0 mils (5.2 m ² /l at 125 microns) Allow for loss in mixing and application.
VOC Values	Thinner 236 E : 13 oz/gal: 2.72 lbs./gal (326 g/l) Thinner 2 : 13 oz/gal: 3.12 lbs./gal (374 g/l) Thinner 33 : 13 oz/gal: 3.15 lbs./gal (378 g/l) As Supplied : 2.72 lbs./gal (326 g/l) These are nominal values. *Use Thinner 76 for projects requiring non-photochemically reactive solvents.
Dry Temp. Resistance	Continuous: 400°F (204°C) Non-Continuous: 425°F (218°C)
Topcoats	Acrylics, epoxies, polyurethanes and others as recommended by your Carboline sales representative. Under certain conditions, a mist coat is required to minimize topcoat bubbling.

SUBSTRATES & SURFACE PREPARATION

General	Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.
Steel	SSPC-SP6 with a 1.0-3.0 mil (25-75 micron) surface profile. SSPC-SP2 or SP3 with a roughened surface for touch-up. When using under fireproofing products, defer to the primer surface preparation requirements in the product data sheet of the fireproofing product.

PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	System	Results
ASTM D2794 Impact	A. 859 B. 859/ Polyurethane Gardner Impact Tester, Direct (Intrusion), inch-pounds, over 1/8" (0.32 cm) steel	A. 160 B. 100 min.
ASTM D4541 Adhesion	A. Carbozinc 859 B. 859 / Polyurethane C. 859 / Epoxy/Polyurethane	A. 841 psi Pneumatic B. 1,100 min. psi Pneumatic C. 602 psi Elcometer
ASTM D522 Flexibility	A. 859 B. 859/Polyurethane	A. >6% B. >5%
ASTM D870 Immersion	A. Carbozinc 859/Epoxy/Polyurethane Salt Water (5% sodium chloride) at 75°F (24°C), 30 days B. 859 / Epoxy/ Polyurethane; Fresh Water @75°F for 30 d	A & B had no rusting in the scribe; and no blistering, softening or discoloration with either environment
Slip Co-efficient	Carbozinc 859 A-490 bolt spec; 6 mils dry film maximum 10% max thinning	Meets requirements for class B rating

Test reports and additional data available upon written request.

MIXING & THINNING

Mixing	Power mix Part A completely. Then slowly sift in the zinc filler under agitation. Power mix Part B separately and add slowly to the mixture. Pour mixture through a 30 mesh screen. DO NOT MIX PARTIAL KITS. Tip: Sifting zinc through a window screen will aid in mixing process by breaking up or catching dry zinc lumps.
Thinning	Normally not required but may be thinned up to 13 oz/gal (106.8 g/l) (10%) with Thinner 2, Thinner 76 or Thinner 236E. In hot or windy conditions, may be thinned up to 13 oz/gal (106.8 g/l) with Thinner 33. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied. Use of Carboline Thinner 236E to thin this product will minimize HAP and VOC emissions. Consult Carboline Technical Service for guidance
Ratio	<u>0.80 Gal. Kit (3.03 Liters)</u> Part A: 0.35 gallons (1.32 L) Part B: 0.20 gallons (0.76 L) Zinc Filler: 14.6 lbs (6.62 kg) <u>4.00 Gal. Kit (15.1 Liters)</u> Part A: 1.77 gallons (6.7 L) Part B: 1 gallon (3.78 L) Zinc Filler: 73 lbs. (33.1 kg)

MIXING & THINNING

Pot Life | 4 Hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating loses body and begins to sag.

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General) | The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco. Keep material under mild agitation during application.

Conventional Spray | Agitated pressure pot equipped with dual regulators, 3/8" (0.95 cm) I.D. minimum material hose, 0.070" (0.18 cm) I.D. fluid tip and appropriate air cap.

Airless Spray | Pump Ratio: 30:1 (min.) with pail agitator*
GPM Output: 3.0 (min.)
Material Hose: 3/8" I.D. (0.95 cm) (min.)
Tip Size: 0.017-0.023" (0.04-0.06 cm)
Output PSI: 2000-2200
Filter Size: 60 mesh
*PTFE packings are recommended and available from the pump manufacturer

Brush & Roller (General) | For small areas and touch-up only. Preferred method for large areas is spray application.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	40°F (4°C)	35°F (2°C)	35°F (2°C)	0%
Maximum	90°F (32°C)	120°F (49°C)	110°F (43°C)	95%

Industry standards are for the substrate temperatures to be 5°F (3°C) above the dew point. This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions which are as follows: material 60-85°F (16-29°C), surface & ambient 60-90°F (16-32°C) and humidity 0% - 90%.

CURING SCHEDULE

Surface Temp.	Dry to Handle	Dry to Recoat & Topcoat w/ other finishes
35°F (2°C)	8 Hours	6 Hours
50°F (10°C)	5 Hours	2 Hours
75°F (24°C)	2 Hours	30 Minutes
100°F (38°C)	1 Hour	30 Minutes

These times are based on a 3.0 mil (75 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.

The general requirement is a 24 hour cure for Carboline epoxy intumescent applications. Maximum recoat time is unlimited. Recoat intervals may vary from those listed above when using under intumescent fireproofing products. Consult Carboline Technical Service for recommended cure times before applying Carboline intumescent products.

Must have a clean, dry surface free of chalk, zinc salts, etc. per typical good painting practices. Consult Carboline Technical Service for specific information.

CLEANUP & SAFETY

Cleanup | Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety | Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation | When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel. This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life | Part A: 36 months at 75°F (24°C)
Part B: 24 months at 75°F (24°C)
Part C: 24 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Storage Temperature & Humidity | 40-120°F (4-49°C) Store indoors
Can be stored down to 20°F (-7°C) for no longer than 30 days
0-100% Relative Humidity

Storage | Store Indoors

Shipping Weight (Approximate) | 0.80 Gallon (3.02 L) Kit - 22 lbs (10 kg)
4.00 Gallon (15.1 L) Kit - 105 lbs (48 kg)

Flash Point (Setaflash) | Part A: 49°F (9°C)
Part B: 38°F (3°C)
Zinc Filler: NA

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. Carboline warrants our products to be free of manufacturing defects in accord with applicable Carboline quality control procedures. THIS WARRANTY IS NOT VALID WHEN THE PRODUCT IS NOT: (1) APPLIED IN ACCORDANCE WITH CARBOLINE'S SPECIFICATIONS, AND/OR (2) PROPERLY STORED, CURED, AND USED UNDER NORMAL OPERATING CONDITIONS. Carboline assumes no responsibility for coverage, performance, injuries, or damages resulting from use of the product. If this product is found not to perform as specified upon inspection by a Carboline representative during the warranty period, Carboline's sole obligation, if any, is to replace the Carboline product(s) proven to be defective or refund the purchase price thereof, at Carboline's sole option. Carboline shall not be liable for any other losses or damages. This warranty excludes (1) labor and costs of labor for the application or removal of any product, and (2) any incidental or consequential damages, whether based on breach of express or implied warranty, negligence, strict liability or any other legal theory. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated. The whole text of this Product Data Sheet, as well as the documents derived from it, have been written in English, and for legal purposes the English version shall prevail.