

**SELECTION & SPECIFICATION DATA**

|                                    |  |
|------------------------------------|--|
| <b>Generic Type</b>                | Organic Zinc-Rich Epoxy  |
| <b>Description</b>                 | Ultra-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 VOC has less than 100 g/l VOC (thinned) and can be used in virtually all industrial markets.  |
| <b>Features</b>                    | <ul style="list-style-type: none"> <li>• Rapid cure. Dry to recoat in 30 minutes at 75°F (24°C) and 50% relative humidity.</li> <li>• Complies with SSPC Paint 20 (Type II)</li> <li>• Meets Class B slip co-efficient and creep testing criteria for use on faying surfaces up to 3 mils dry (See "Dry Film Thickness" section)</li> <li>• Low temperature cure down to 35°F (2°C)</li> <li>• Excellent adhesion</li> <li>• Protects against undercutting corrosion</li> <li>• Available in ASTM D520, Type II zinc version</li> <li>• Field proven primer that applies well by spray methods</li> <li>• Excellent touch-up primer by brush or roll for small areas.</li> <li>• Extremely low VOC (less than 100 g/l)</li> <li>• Low HAPS (0.51 lbs/solid gal)</li> </ul> |
| <b>Color</b>                       | Green (0300)   |
| <b>Finish</b>                      | Flat   |
| <b>Primer</b>                      | Self Priming   |
| <b>Dry Film Thickness</b>          | <p>3 - 5 mils (76 - 127 microns) per coat</p> <p>Dry film thicknesses of 2-3 mils are acceptable for performance on faying surfaces to maintain Class B certification. Thickness in excess of 10.0 mils (250 microns) per coat is not recommended.</p>   |
| <b>Total Zinc Dust in Dry Film</b> | By Weight: 81%   |
| <b>Solids Content</b>              | By Volume 66% +/- 2%   |
| <b>Theoretical Coverage Rate</b>   | <p>1059 ft<sup>2</sup>/gal at 1.0 mils (26.0 m<sup>2</sup>/l at 25 microns)</p> <p>353 ft<sup>2</sup>/gal at 3.0 mils (8.7 m<sup>2</sup>/l at 75 microns)</p> <p>212 ft<sup>2</sup>/gal at 5.0 mils (5.2 m<sup>2</sup>/l at 125 microns)</p> <p>Allow for loss in mixing and application.</p>  |
| <b>VOC Value(s)</b>                | <p>Per EPA Method 24: 0.79 lbs./gal (95 g/l)</p> <p>13 oz/gal of Thinner 225 E: 0.79 lbs./gal (95 g/l)</p> <p>13 oz/gal of Thinner 243 E: 0.79 lbs./gal (95 g/l)</p> <p>These are nominal values and may vary slightly with color. Product contains VOC-exempt t-butyl acetate. Check local regulations regarding product usage.</p>   |
| <b>Dry Temp. Resistance</b>        | <p>Continuous: 400°F (204°C)</p> <p>Non-Continuous: 425°F (218°C)</p>  |
| <b>Topcoats</b>                    | <p>May be coated with Acrylics, Epoxies, or Polyurethanes depending on exposure and need.</p> <p>Under certain conditions, a mist coat is required to minimize topcoat bubbling.</p>   |

## SUBSTRATES & SURFACE PREPARATION

|                |   |
|----------------|---|
| <b>General</b> | 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.   |
| <b>Steel</b>   | SSPC-SP6 with a 1.0-3.0 mil (25-75 micron) profile. SSPC-SP2 or SP3 with a roughened surface for touch-up.<br><br>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 D 2794 Impact             | A. 859 B. 859 / Polyurethane<br>Gardner Impact Tester, Direct (intrusion), inch-pounds, over 1/8" steel | A 160 B. 100 min.  |
| ASTM D4541 Adhesion            | A. Carbozinc 859 B. 859 / Polyurethane<br>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 D970 Immersion            | A. Carbozinc 859/Epoxy/Polyurethane<br>Salt Water (5% sodium chloride) at 75°F 30 days B. 859 / Epoxy   | A & B had no rusting in the scribe; and no blistering, softening or discoloration with either enviro |
| Slip Co-efficient (ASTM A-490) | Blasted Steel, One Coat (Up to 3 mils DFT, thinned up to 5%)  | Meets Class B Rating   |

Test reports and additional data available upon written request.

## MIXING & THINNING

|                 |   |
|-----------------|---|
| <b>Mixing</b>   | 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. <b>Tip:</b> Sifting zinc through a window screen will aid in mixing process by breaking up or catching dry zinc lumps. |
| <b>Thinning</b> | Normally not required but may be thinned up to 13 oz/gal (10%) with Thinner #243E or Thinner #225E. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.  |
| <b>Ratio</b>    | <u>.80 Gal. Kit</u><br>Part A: .35 gallons<br>Part B: .20 gallons<br>Zinc Filler: 14.6 lbs.<br><u>4.00 Gal. Kit</u><br>Part A: 1.77 gallons<br>Part B: 1 gallon<br>Zinc Filler: 73 lbs.   |
| <b>Pot Life</b> | 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" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

**Airless Spray** | Pump Ratio: 30:1 (min.)\*  
GPM Output: 3.0 (min.)  
Material Hose: 3/8" I.D. (min.)  
Tip Size: .017-.023"  
Output PSI: 2000-2200  
Filter Size: 60 mesh  
\*Teflon 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

## CURING SCHEDULE

| Surface Temp. | Dry to Handle | Dry to Topcoat |
|---------------|---------------|----------------|
| 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. **Specific topcoat products can be used in a much shorter re-coat interval. Consult Carboline for recommendations and test results.**  
**Maximum Recoat:** 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 for topcoating. "Loose" chalk or salts must be removed in accordance with good painting practice. 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.

### CLEANUP & SAFETY

|                    |   |
|--------------------|---|
| <b>Safety</b>      | 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.  |
| <b>Ventilation</b> | 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

|   |   |
|---|---|
| <b>Shelf Life</b>                         | Part A: Min. 24 months at 75°F (24°C)<br>Part B: Min. 24 months at 75°F (24°C)<br>Part C: 24 months at 75°F (24°C)<br><br>*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.  |
| <b>Storage Temperature &amp; Humidity</b> | 40° – 110°F (4° - 43°C).<br>0-95% Relative Humidity   |
| <b>Storage</b>                            | Store Indoors.<br><br>This product is solvent based and not affected by excursions below these published storage temperatures, down to 10°F, for a duration of no more than 14 days. Always inspect the product prior to use to make sure it is smooth and homogeneous when properly mixed. |
| <b>Shipping Weight (Approximate)</b>      | .80 Gallon Kit - 22 lbs (10 kg)<br>4.00 Gallon Kit - 105 lbs (48 kg)  |
| <b>Flash Point (Setaflash)</b>            | Part A: 48°F (9°C)<br>Part B: 69°F (20°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 Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. 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.