Selection & Specification Data

**Generic Type**  
Amine-Cured Novolac Epoxy

**Description**  
Highly cross-linked, glass flake-filled polymer that offers exceptional barrier protection and resistance to wet/dry cycling at elevated temperatures. Suitable for insulated and non-insulated pipes, stacks and equipment operating up to 450°F (232°C). This coating provides excellent resistance to corrosion, abrasion and permeation; its novolac-modification resists severe chemical attack.

**Features**  
- Temperature resistance up to 450°F (232°C)
- High-build single-coat capabilities
- Excellent resistance to thermal shock
- Superior abrasion and chemical resistance through internal reinforcement
- Ambient-temperature cure
- VOC compliant to current AIM regulations

**Color**  
Red (0500); Gray (5742)

**Finish**  
Eggshell

**Primers**  
Self-priming. May be applied over epoxies and phenolics.

**Topcoats**  
Epoxies, Polyurethanes

**Dry Film Thickness**  
8.0-10.0 mils (200-250 microns)  
Do not exceed 15 mils (375 microns) per coat.

**Solids Content**  
By Volume: 70% ± 2%

**Theoretical Coverage Rate**  
1117 mil ft² (27.9 m²/l at 25 microns)  
Allow for loss in mixing and application

**VOC Values**  
As supplied: 2.08 lbs/gal (250 g/l)  
Thinned:  
13 oz/gal w/#213: 2.58 lbs/gal (308 g/l)  
13 oz/gal w/#2: 2.54 lbs/gal (305 g/l)  
These are nominal values.

**Dry Temp. Resistance**  
Continuous: 425°F (218°C)  
Non-Continuous: 450°F (232°C)  
Discoloration and loss of gloss may be observed above 200°F (93°C).

**Limitations**  
Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.

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**  
Non-Insulated: SSPC-SP6  
Insulated: SSPC-SP10  
Surface Profile: 2.0-3.0 mils (50-75 microns)

**Stainless Steel**  
Surface profile should be a dense angular 2.0-3.0 mils and is best achieved through abrasive blasting. Remove all surface contaminants that would interfere with the performance of stainless steel for the intended service such as, but not limited to, imbedded iron or chlorides.

Performance Data

<table>
<thead>
<tr>
<th>Test Method</th>
<th>System</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM D3359 Adhesion</td>
<td>Blasted Steel 2 cts. 450</td>
<td>4A</td>
</tr>
<tr>
<td>ASTM D4060 Abrasion</td>
<td>Blasted Steel 2 cts. 450</td>
<td>171 mg loss after 1000 cycles; CS17 wheel, 1000 gram load</td>
</tr>
<tr>
<td>ASTM D2794 Impact</td>
<td>Blasted Steel 1 ct. 450</td>
<td>.375 in. from damaged area. 100-in./lbs</td>
</tr>
<tr>
<td>Heat Cycling Test</td>
<td>Blasted Steel 1 ct. 450</td>
<td>No cracking, blistering or delamination of film after 425°F for 1 hr/ambient/ -10°F for 24 hrs/ambient/ 425°F for 24 hrs/ambient/ -10°F for 24 hrs/ambient/ 425°F for 200 hr/ambient</td>
</tr>
<tr>
<td>Modified NACE Std. TM-01-74B Immersion</td>
<td>Blasted Steel 2 cts. 450</td>
<td>No effect to coating film except discoloration after 6 month exposure, Deionized water</td>
</tr>
</tbody>
</table>

Chemical Resistance  
Blasted Steel 1 ct. 450  
Resistant to fumes of commons acids, alkalis, solvents and hydrocarbon compounds. Resistant to splash and spillage of alkalis, solvents and hydrocarbons. Acid contact may cause discoloration of coating.
Application Equipment

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.

**General Guidelines:**

- **Spray Application (General):** The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.
- **Conventional Spray:** Pressure pot equipped with dual regulators, ¼" I.D. minimum material hose, .110" I.D. fluid tip and appropriate air cap.
- **Airless Spray:**
  - **Pump Ratio:** 45:1 (min.)
  - **GPM Output:** 3.0 (min.)
  - **Material Hose:** .035-204" (min.)
  - **Tip Size:** .041"
  - **Output PSI:** 2200-2500

- **Brush:** For stripping of welds and touch-up of small areas only. Use a medium natural bristle brush and avoid rebuffing.
- **Roller:** Not recommended.

**Mixing & Thinning**

- **Mixing:** Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.
- **Ratio:** 4:1 Ratio (A to B)
- **Thinning:** May be thinned up to 13 oz/gal (10%) with Thinner #213. For application on horizontal surfaces, may be thinned up to 13 oz/gal (10%) with Thinner #2. Agitate Thinner #213 before use. Thinner #213 will have a thick viscous appearance which is normal. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
- **Pot Life:** 3 Hours at 75°F (24°C). Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures.

**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 MSDS 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. User should test and monitor exposure levels to assure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.
- **Caution:** 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.

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**Application Conditions**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Material</th>
<th>Surface</th>
<th>Ambient</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>65°-85°F (18°-29°C)</td>
<td>65°-85°F (18°-29°C)</td>
<td>65°-85°F (18°-29°C)</td>
<td>30-60%</td>
</tr>
<tr>
<td>Minimum</td>
<td>55°F (13°C)</td>
<td>50°F (10°C)</td>
<td>50°F (10°C)</td>
<td>0%</td>
</tr>
<tr>
<td>Maximum</td>
<td>90°F (32°C)</td>
<td>110°F (43°C)</td>
<td>100°F (38°C)</td>
<td>90%</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Surface Temp. &amp; 50% Relative Humidity</th>
<th>Dry to Handle</th>
<th>Dry to Topcoat w/ Other Finishes</th>
<th>Final Cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>50°F (10°C)</td>
<td>18 Hours</td>
<td>48 Hours</td>
<td>21 Days</td>
</tr>
<tr>
<td>60°F (16°C)</td>
<td>12 Hours</td>
<td>32 Hours</td>
<td>14 Days</td>
</tr>
<tr>
<td>75°F (24°C)</td>
<td>6 Hours</td>
<td>16 Hours</td>
<td>7 Days</td>
</tr>
<tr>
<td>90°F (32°C)</td>
<td>3 Hours</td>
<td>8 Hours</td>
<td>4 Days</td>
</tr>
</tbody>
</table>

These times are based on a 10.0 mil (250 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. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. If the final cure time is exceeded, the surface must be abraded by sweep blasting prior to the application of additional coats.

**Packaging, Handling & Storage**

<table>
<thead>
<tr>
<th>Shipping Weight</th>
<th>1 Gallon Kit</th>
<th>5 Gallon Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Approximate)</td>
<td>12 lbs (6 kg)</td>
<td>58 lbs (26 kg)</td>
</tr>
<tr>
<td><strong>Flash Point (Setaflash)</strong></td>
<td>Part A: 53°F (12°C)</td>
<td>Part B: &gt;200°F (93°C)</td>
</tr>
<tr>
<td><strong>Storage (General)</strong></td>
<td>Store Indoors.</td>
<td></td>
</tr>
<tr>
<td><strong>Storage Temperature &amp; Humidity</strong></td>
<td>40° - 110°F (4°-43°C)</td>
<td>0-90% Relative Humidity</td>
</tr>
<tr>
<td><strong>Shelf Life</strong></td>
<td>Part A &amp; B: Min. 36 months at 75°F (24°C)</td>
<td></td>
</tr>
</tbody>
</table>

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

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