**Starting Formulation**

**SF 1040**  
High Solids, Zinc-Rich Epoxy Primer  
**EPON™ Resin 828 / EPIKURE™ Curing Agent 3164**

### Suggested Uses
- Recommended for shop- or field-applied steel primer

### Features
- Low toxicity maintenance primer  
- Excellent corrosion resistance; affords galvanic protection to adjacent undercoated areas  
- Low VOC (1.8 lb/gallon or 215 g/L)

### Formula

<table>
<thead>
<tr>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPON Resin 828</td>
<td>Hexion</td>
<td>105.8</td>
<td>10.96</td>
</tr>
<tr>
<td>TEXAPHOR™ 963 Dispersant</td>
<td>Cognis</td>
<td>6.0</td>
<td>0.79</td>
</tr>
<tr>
<td>Cab-O-Sil™ TS-720</td>
<td>Cabot Corporation</td>
<td>25.0</td>
<td>1.57</td>
</tr>
<tr>
<td>Mix well at moderate agitation, then add</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UP-4 Zinc Dust</td>
<td>Purity Zinc Metals</td>
<td>2,022.7</td>
<td>34.75</td>
</tr>
<tr>
<td><strong>High speed disperse to a texture of 4.5 to 5.5 Hegman., then add</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEETLE™ 216-8</td>
<td>Cytec Industries Inc.</td>
<td>20.0</td>
<td>2.30</td>
</tr>
<tr>
<td>MIBK</td>
<td>Shell Chemical Co.</td>
<td>20.0</td>
<td>3.00</td>
</tr>
<tr>
<td>Acetone</td>
<td>Shell Chemical Co.</td>
<td>19.8</td>
<td>3.00</td>
</tr>
<tr>
<td>Aromatic™ 100</td>
<td>Exxon Chemical Co.</td>
<td>135.4</td>
<td>18.63</td>
</tr>
<tr>
<td>Total Part A</td>
<td></td>
<td>2,354.7</td>
<td>75.00</td>
</tr>
<tr>
<td><strong>Part B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPIKURE Curing Agent 3164</td>
<td>Hexion</td>
<td>144.1</td>
<td>17.71</td>
</tr>
<tr>
<td>Cab-O-Sil™ TS-7620</td>
<td>Cabot Corporation</td>
<td>2.5</td>
<td>0.16</td>
</tr>
<tr>
<td>NICRON™ 402 talc</td>
<td>Luzenac America</td>
<td>76.0</td>
<td>3.24</td>
</tr>
<tr>
<td><strong>High speed disperse to a texture of 4.5 to 5.5 Hegman., then add</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>Shell Chemical Co.</td>
<td>13.2</td>
<td>2.00</td>
</tr>
<tr>
<td>n-Butanol</td>
<td>Shell Chemical Co.</td>
<td>12.8</td>
<td>1.89</td>
</tr>
<tr>
<td>Total Part B</td>
<td></td>
<td>248.6</td>
<td>25.00</td>
</tr>
</tbody>
</table>

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Mixing Instructions

<table>
<thead>
<tr>
<th></th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part A</td>
<td>2,354.7</td>
<td>75.00</td>
</tr>
<tr>
<td>Part B</td>
<td>248.6</td>
<td>25.00</td>
</tr>
<tr>
<td>Part A + B</td>
<td>2,603.3</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Typical Formulation Table 1 / Formulation Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mix ratio Part A : Part B</td>
<td>By volume</td>
<td>3 : 1</td>
</tr>
<tr>
<td></td>
<td>By weight</td>
<td>9.47: 1.0</td>
</tr>
<tr>
<td>Pigment : Binder Weight Ratio</td>
<td></td>
<td>8.7:1</td>
</tr>
<tr>
<td>Total weight solids</td>
<td>%</td>
<td>91.9</td>
</tr>
<tr>
<td>Total volume solids</td>
<td>%</td>
<td>70.0</td>
</tr>
<tr>
<td>Pigment volume concentration (PVC)</td>
<td>lb/gal</td>
<td>1.79</td>
</tr>
<tr>
<td>Volatile Organic Compound (VOC)</td>
<td>g/L</td>
<td>215</td>
</tr>
<tr>
<td>Induction Time</td>
<td>min.</td>
<td>30</td>
</tr>
</tbody>
</table>

Performance Data Table 2 / Performance data

<table>
<thead>
<tr>
<th></th>
<th>EPIKURE Curing Agent 3164 with EPON Resin 828</th>
<th>EPIKURE Curing Agent 3115 with EPON Resin 1001</th>
<th>Commercial zinc-rich epoxy/polyamide primer</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC, at 80 KU</td>
<td>2.20</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>7 day cure</td>
<td>5B</td>
<td>5B</td>
<td>5B</td>
</tr>
<tr>
<td>4 weeks cure</td>
<td>HB</td>
<td>HB</td>
<td>HB</td>
</tr>
<tr>
<td>Impact, in-lb.</td>
<td>30</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Cold-Rolled Steel</td>
<td>2.5 - 3.0 mils DFT</td>
<td>2.5 - 3.0 mils DFT</td>
<td>2.5 - 3.0 mils DFT</td>
</tr>
</tbody>
</table>

1000 hr

<table>
<thead>
<tr>
<th></th>
<th>NE in field</th>
<th>8MD blisters at scribe</th>
<th>8MD blisters in field at scribe.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt spray</td>
<td>&lt; 1 mm creep at scribe with no blisters.</td>
<td>No creep.</td>
<td>No creep.</td>
</tr>
<tr>
<td>Cleveland humidity</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>DI water immersion</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

2688 hr

<table>
<thead>
<tr>
<th></th>
<th>Very slight whitening</th>
<th>Failed</th>
<th>Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Exposure</td>
<td>Condition Description</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Cleveland humidity</td>
<td>2450 hr Prohesion wet/dry cyclic exposure</td>
<td>Very slight whitening. 0.5 mm creep at scribe. Slight rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4M blisters at interface. Recovered rapidly.</td>
<td></td>
</tr>
<tr>
<td>DI water immersion</td>
<td>4M blisters at interface. NE NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grit-Blasted Steel</td>
<td>3192 hr Salt spray</td>
<td>Very slight whitening. 1 mm creep at scribe. Slight rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6M blisters with 2mm creep. Moderate rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8M blisters with 3mm creep. Severe rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6F field blisters. No field blisters with severe whitening.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-8D blisters at scribe with 2 mm creep.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No field blisters with very slight whitening.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mm creep at scribe. Slight rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mm creep at scribe. Slight rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.0 - 3.5 mils DFT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8M blisters with 2mm creep. Moderate rust.</td>
<td></td>
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<td>6F field blisters. No field blisters with severe whitening.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6M blisters at scribe with 2 mm creep.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.0 - 3.5 mils DFT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8F blisters at scribe with 3 mm creep.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.0 - 3.5 mils DFT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3000 hr Prohesion wet/dry cyclic exposure</td>
<td>No field blisters with very slight whitening.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No field blisters. Moderate whitening.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8M blisters at scribe. 0.5 mm creep at scribe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6F blisters at scribe with 3 mm creep.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mm creep at scribe. Slight rust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.0 - 3.5 mils DFT</td>
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</tbody>
</table>

Storage Recommendations regarding storage conditions can be obtained by visiting our web site at [www.hexion.com](http://www.hexion.com)

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