# Starting Formulation

**SF 2010**  
**Flat Black Enamel**  
**EPON™ Resin 1007F / Beetle 227-8**

## Features
- Stable flat black enamel
- Exceptional package stability

### Formula

<table>
<thead>
<tr>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part A - Grind Charge (Ball Mill)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pigments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raven 22 Powder</td>
<td>Columbian Chemicals Co.</td>
<td>11.7</td>
<td>0.78</td>
</tr>
<tr>
<td>Celite 281</td>
<td>Manville Filtration &amp; Minerals</td>
<td>125.2</td>
<td>6.51</td>
</tr>
<tr>
<td>EPON Resin 1007F solution</td>
<td>Hexion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPON Resin 1007-JX-55</td>
<td>Hexion</td>
<td>265.3</td>
<td>30.15</td>
</tr>
<tr>
<td>Ethyl 3-ethoxy propionate</td>
<td>Eastman Chemical Products, Inc.</td>
<td>100.6</td>
<td>12.85</td>
</tr>
<tr>
<td>Xylene</td>
<td></td>
<td>92.1</td>
<td>12.85</td>
</tr>
<tr>
<td>Total Part A</td>
<td></td>
<td>594.9</td>
<td>63.14</td>
</tr>
</tbody>
</table>

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<tr>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Part B - Letdown (In Mill)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urea Resin and Solvents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beetle 227-8</td>
<td>Cytec Industries</td>
<td>120.3</td>
<td>14.49</td>
</tr>
<tr>
<td>Propylene glycol methyl ether acetate</td>
<td></td>
<td>76.5</td>
<td>9.52</td>
</tr>
<tr>
<td>Xylene</td>
<td></td>
<td>79.1</td>
<td>11.04</td>
</tr>
<tr>
<td>Total Part B</td>
<td></td>
<td>275.9</td>
<td>35.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part C - Silicone Oil Addition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dow-Corning 200 Fluid Solution (1.0% nonvolatile in Ethyl 3-ethoxy propionate/toluene; 1/1 by weight)</td>
<td></td>
<td>13.5</td>
<td>1.81</td>
</tr>
<tr>
<td>Total Part C</td>
<td></td>
<td>13.5</td>
<td>1.81</td>
</tr>
</tbody>
</table>

| Total Part A & B & C              |                             | 884.3  | 100.00  |

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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>594.9</td>
<td>63.14</td>
</tr>
<tr>
<td>Part B</td>
<td>275.9</td>
<td>35.05</td>
</tr>
<tr>
<td>Part C</td>
<td>13.5</td>
<td>1.81</td>
</tr>
<tr>
<td>Part A + B + C</td>
<td>884.3</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Charge the pigments, EPON Resin 1007F and solvents to a steel ball mill, and grind the mixture for at least 16 hours to a North Standard fineness of 7-8. Let down in the mill with the Beetle 227-8 and remaining solvents. The silicone oil addition should be made in a separate mixing tank to avoid contamination of the mill.

Typical Handling Properties

The finished paint formulation should have a viscosity suitable for spray application with no additional letdown. Should a lower viscosity be desired, thin with a 1/1 by weight blend of ethyl 3-ethoxy propionate/xylene.

This coating system should be baked for 20 minutes at 385 °F.

Typical Formulation Properties

Table 1 / Formulation Properties

<table>
<thead>
<tr>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPON Resin 1007F/Beetle 227-8 ratio (solids)</td>
<td>By weight 70/30</td>
</tr>
<tr>
<td>Nonvolatile content by weight</td>
<td>% 39.0</td>
</tr>
<tr>
<td>Weight per gallon</td>
<td>lb/gal 8.8</td>
</tr>
<tr>
<td>Pigment : Binder Weight Ratio</td>
<td>0.4/0.6</td>
</tr>
<tr>
<td>Pigment volume concentration (PVC)</td>
<td>% 25.7</td>
</tr>
<tr>
<td>Volatile Organic Compound (VOC)</td>
<td>lb/gal 5.39 g/L 647</td>
</tr>
<tr>
<td>Gloss, 60 degrees</td>
<td>12</td>
</tr>
</tbody>
</table>

General Information

These are starting formulations and are not proven in the user’s particular application but are simply meant to demonstrate the efficacy of the products and to assist in the development of the user’s own formulation. It is the user’s responsibility to fully-test and qualify the formulation, along with the ingredients, methods, applications or equipment identified herein (“Information”), by the user’s knowledgeable formulator or scientist, and to determine the appropriate use conditions and legal restrictions, prior to use of any Information.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them. Questions and requests for information on Hexion Inc. (“Hexion”) products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

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