Starting Formulation

SF 7004

Casting Compound for High Temperature Applications
EPON™ Resin 828 / EPIKURE™ Curing Agent 3223

Introduction
This formulation is for a casting compound that can be used in continuous service at temperatures between 150 and 177 °C.

Suggested Uses
- Injection and vacuum forming molds
- Curing molds for honeycomb structure

<table>
<thead>
<tr>
<th>Formula</th>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin Portion</td>
<td>EPON Resin 828</td>
<td>Hexion</td>
<td>50</td>
<td>5.15</td>
</tr>
<tr>
<td></td>
<td>Aluminum Powder #120</td>
<td>Reynolds Metals Co.</td>
<td>50</td>
<td>2.22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>7.37</td>
</tr>
</tbody>
</table>

| Converter Portion | Aromatic Amine Eutectic | 9.61 | 1.01 |
| | EPIKURE Curing Agent 3223 | Hexion | 0.75 | 0.092 |
| | | | 10.36 | 1.102 |

\(^1\)A 60/40 blend of para, para'-diaminodiphenylmethane and meta-phenylenediamine.

Compounding
Heat the EPON Resin 828 to 66 °C, add Aluminum Powder #120 and blend well. Add the converter portion and mix thoroughly with a mechanical mixer. Coat the mold with a high temperature release agent such as Dow DC-7 (Dow Chemical Co.) and preheat to 66 °C. Pour the resin while it is still warm and cure for 4 hours at 66 °C. At this time the casting can be removed from the mold if desired but do not allow it to cool below 57 °C. Return the casting to the oven and cure for 1 hour at 120 °C; then cure for an additional hour at 205 °C. Turn off the heat and let the mold gradually return to room temperature. Castings up to 2 inches thick have been made with no appreciable exotherm.

Typical Handling

Table 1 / Handling Properties at 66 °C

<table>
<thead>
<tr>
<th>Properties</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brookfield Viscosity</td>
<td>cP</td>
<td>1,200</td>
</tr>
<tr>
<td>#5 spindle at 20 rpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 spindle at 4 rpm</td>
<td>cP</td>
<td>50,000</td>
</tr>
<tr>
<td>Pot Life, 1-pound batch</td>
<td>min.</td>
<td>50</td>
</tr>
<tr>
<td>Density</td>
<td>lbs/gal</td>
<td>13.10</td>
</tr>
</tbody>
</table>

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Revision: |
Typical Cured State Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Deflection Temperature</td>
<td>°C</td>
<td>138</td>
</tr>
<tr>
<td>Tensile Strength, Ultimate</td>
<td>psi</td>
<td>9,900</td>
</tr>
<tr>
<td>Tensile Elongation</td>
<td>%</td>
<td>6.2</td>
</tr>
<tr>
<td>Flexural Strength, Ultimate</td>
<td>psi</td>
<td>17,900</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>ksi</td>
<td>801</td>
</tr>
<tr>
<td>Compressive Yield Strength</td>
<td>psi</td>
<td>18,300</td>
</tr>
<tr>
<td>Compressive Modulus</td>
<td>ksi</td>
<td>590</td>
</tr>
<tr>
<td>Izod Impact, notch</td>
<td>ft•lb/in.</td>
<td>0.37</td>
</tr>
<tr>
<td>Hardness</td>
<td>Rockwell M</td>
<td>81</td>
</tr>
</tbody>
</table>

1 Castings were cured for 4 hours at 66 °C followed by 1 hour at 120 °C and an additional hour at 204 °C.

Storage
Recommendations regarding storage conditions can be obtained by visiting our web site at www.hexion.com

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