ABOUT US

INEOS Melamines is a proven leader in the field of Melamine resins. Our roots go back to Melamine resin production facilities founded at the Cassella site in Frankfurt, Germany in 1935 and at the Monsanto site in Springfield, USA in 1946.

With our MAPRENAL® and RESIMENE® Melamine resins we are an innovative partner for the coatings industry wherever crosslinking solutions are needed. Our resins are used in challenging coatings applications including the automotive industry, coil and can coating and other specialized areas where high performance is desired.

INEOS Melamines produces a comprehensive range of Melamine resins and additives. We have a proven track record of delivering product quality, innovative solutions and value to our customers. Beside the coatings industry we also serve a number of other global markets including paper, textile, tire and wood.

For more information, please visit our business on our website www.ineosmelamines.com.

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Version: May 2017
**MAPRENAL® RESIMENE® AMINO CROSSLINKER RESINS**

**MAPRENAL & RESIMENE FOR WATERBORNE PAINTS**

### A) Melamine Formaldehyde (MF) Resins

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF 988 / 80 B</td>
<td>BF 892 / 68 B</td>
<td>68 / 77</td>
<td>3000 – 6500</td>
<td>Z1 – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
<tr>
<td>BF 891 / 77 SNB</td>
<td>MF 984 / 80 B</td>
<td>80 / 80</td>
<td>650 – 1850</td>
<td>Z – Y</td>
<td>&lt; 0,10</td>
<td>&gt; 66 / &gt; 150</td>
</tr>
</tbody>
</table>

### A-1) Methylated Melamine Resins

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF 821</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
<tr>
<td>MF 618</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
<tr>
<td>MF 915</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
<tr>
<td>MF 927 / 70 iB</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
<tr>
<td>MF 929 / 70 iB</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
</tbody>
</table>

### A-2) Coetherified Melamine Resins

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resimene CE 7103*</td>
<td></td>
<td></td>
<td>1200 – 4000</td>
<td>W – Z2</td>
<td>&lt; 0,50</td>
<td>29 / 84</td>
</tr>
<tr>
<td>Resimene CE 4514*</td>
<td></td>
<td></td>
<td>1200 – 4000</td>
<td>W – Z2</td>
<td>&lt; 0,50</td>
<td>29 / 84</td>
</tr>
<tr>
<td>Resimene CE 735*</td>
<td></td>
<td></td>
<td>1200 – 4000</td>
<td>W – Z2</td>
<td>&lt; 0,50</td>
<td>29 / 84</td>
</tr>
<tr>
<td>Resimene CE 747*</td>
<td></td>
<td></td>
<td>1200 – 4000</td>
<td>W – Z2</td>
<td>&lt; 0,50</td>
<td>29 / 84</td>
</tr>
</tbody>
</table>

### A-3) Iso-Butylated Melamine Resin

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resimene BF 891*</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
</tbody>
</table>

### A-5) Methylated Melamine Resins modified with Polystyrene Allyl Alcohol (SAA)

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resimene 6550*</td>
<td></td>
<td></td>
<td>1200 – 4000</td>
<td>W – Z2</td>
<td>&lt; 0,50</td>
<td>29 / 84</td>
</tr>
</tbody>
</table>

### B) n-Butylated Benzoquinone Resins

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resimene CE 6550*</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
</tbody>
</table>

### B-1) n-Butylated Benzoguanamine Resins

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resimene CE 1103*</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
</tbody>
</table>

### B-2) Benzoguanamine Resins

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ether N</th>
<th>Viscosity</th>
<th>Formaldehyde</th>
<th>Water Solubility</th>
<th>Stability</th>
<th>Refractivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resimene CE 1103*</td>
<td></td>
<td></td>
<td>1250 – 5425</td>
<td>Z – Z3</td>
<td>&lt; 0,10</td>
<td>110 / 230</td>
</tr>
</tbody>
</table>

**MAPRENAL & RESIMENE FOR WATERBORNE PAINTS**

**Recommended**

- Polarity: high
- Alcohol: high
- Free Formaldehyde reference (FF)
- Water Solubility (WS)
- Ethanol Solubility (ET)
- Water Solubility (W)
- Ethanol Solubility (E)

**Abbreviations**

- **B & nB = n-Butanol, n-Butyl**
- **Me = Methanol, Methyl**
- **d = Developmental Product**
- **iB = iso-Butanol, iso-Butyl**

**Water Solubility**

- Watersoluble Maprenal and Resimene

**Formulation Stability**

- Stability: High, Medium, Very High

**Resistivity**

- Resistivity: Low, Medium, High

**Corrosion / Humidity Resistance**

- Resistance: High, Medium, Low

**Exterior Durability**

- Durability: High, Medium, Low

**Recoat Adhesion**

- Adhesion: High, Medium, Low

**Viscosity**

- Viscosity: High, Medium, Low

**Solvent Resistance**

- Resistance: High, Medium, Low

**Hardness**

- Hardness: High, Medium, Low

**Water Solubility**

- Solubility: High, Medium, Low

**Formulation Stability**

- Stability: High, Medium, Low

**Refractivity**

- Refractivity: High, Medium, Low

**References**

- Polarity: High: 0.25; Medium: 0.4; Low: 0.5
- Alcohol: High: 0.4; Medium: 0.25; Low: 0.2
- Free Formaldehyde: Reference (FF)
- Water Solubility: Reference (WS)
- Ethanol Solubility: Reference (ET)
- Water Solubility: Reference (W)
- Ethanol Solubility: Reference (E)

**Abbreviations**

- **B & nB = n-Butanol, n-Butyl**
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- Ethanol Solubility: Reference (ET)
- Water Solubility: Reference (W)
- Ethanol Solubility: Reference (E)

**Abbreviations**

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