Solef® 9009
polyvinylidene fluoride

Solef® 9009 PVDF homopolymer has low/medium viscosity and is used in film extrusion and injection molding.

**General**

<table>
<thead>
<tr>
<th>Material Status</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial: Active</td>
<td>• Africa &amp; Middle East</td>
</tr>
<tr>
<td></td>
<td>• Asia Pacific</td>
</tr>
<tr>
<td></td>
<td>• Europe</td>
</tr>
<tr>
<td></td>
<td>• Latin America</td>
</tr>
<tr>
<td></td>
<td>• North America</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Features</th>
<th>Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homopolymer</td>
<td>Pellets</td>
</tr>
<tr>
<td>Medium-low Viscosity</td>
<td>Powder</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Processing Method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Film Extrusion</td>
<td>Injection Molding</td>
</tr>
</tbody>
</table>

**Physical**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density / Specific Gravity</td>
<td>1.75 to 1.80</td>
<td></td>
<td>ASTM D792</td>
</tr>
<tr>
<td>Melt Mass-Flow Rate (MFR)</td>
<td></td>
<td></td>
<td>ASTM D1238</td>
</tr>
<tr>
<td>230°C/2.16 kg</td>
<td>5.0 to 11</td>
<td>g/10 min</td>
<td></td>
</tr>
<tr>
<td>230°C/5.0 kg</td>
<td>15 to 30</td>
<td>g/10 min</td>
<td></td>
</tr>
<tr>
<td>Molding Shrinkage - Flow</td>
<td>2.0 to 3.0</td>
<td>%</td>
<td>ASTM D570</td>
</tr>
<tr>
<td>Water Absorption (24 hr, 23°C)</td>
<td>&lt; 0.040</td>
<td>%</td>
<td>ASTM D570</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Modulus (23°C, 2.00 mm)</td>
<td>1400 to 2200</td>
<td>MPa</td>
<td>ASTM D638</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>vs. Itself - Dynamic</td>
<td>0.15 to 0.35</td>
<td>ASTM D1894</td>
</tr>
<tr>
<td>vs. Itself - Static</td>
<td>0.20 to 0.40</td>
<td>ASTM D1894</td>
<td></td>
</tr>
<tr>
<td>Tensile Elongation (23°C, 2.00 mm)</td>
<td>5.0 to 10</td>
<td>%</td>
<td>ASTM D638</td>
</tr>
<tr>
<td>vs. Itself - Dynamic</td>
<td>0.15 to 0.35</td>
<td>ASTM D1894</td>
<td></td>
</tr>
<tr>
<td>vs. Itself - Static</td>
<td>0.20 to 0.40</td>
<td>ASTM D1894</td>
<td></td>
</tr>
<tr>
<td>Coefficient of Friction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taber Abrasion Resistance</td>
<td></td>
<td></td>
<td>ASTM D4060</td>
</tr>
<tr>
<td>1000 Cycles, 1000 g, CS-10 Wheel</td>
<td>5.00 to 10.0</td>
<td>mg</td>
<td>ASTM D4060</td>
</tr>
</tbody>
</table>

**Impact**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charpy Notched Impact Strength^a</td>
<td>60.0 to 120</td>
<td>J/m</td>
<td>ASTM D6110</td>
</tr>
<tr>
<td>23°C, 4.00 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hardness**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durometer Hardness (Shore D, 1 sec, 2.00 mm)</td>
<td>73 to 80</td>
<td></td>
<td>ASTM D2240</td>
</tr>
</tbody>
</table>

**Thermal**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Transition Temperature</td>
<td>-40.0 °C</td>
<td></td>
<td>ASTM D4065</td>
</tr>
<tr>
<td>Melting Temperature</td>
<td>162 to 168 °C</td>
<td></td>
<td>ASTM D3418</td>
</tr>
</tbody>
</table>
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<th>Thermal</th>
<th>Typical Value</th>
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<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Crystallization Temperature (DSC)</td>
<td>133 to 140</td>
<td>°C</td>
<td>ASTM D3418</td>
</tr>
<tr>
<td>Crystallization Heat</td>
<td>53.0 to 60.0</td>
<td>J/g</td>
<td>ASTM D3418</td>
</tr>
<tr>
<td>Heat of Fusion</td>
<td>53.0 to 60.0</td>
<td>J/g</td>
<td>ASTM D3418</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Resistivity</td>
<td>&gt; 1.0E+14</td>
<td>ohms</td>
<td>ASTM D257</td>
</tr>
<tr>
<td>Volume Resistivity</td>
<td>&gt; 1.0E+14</td>
<td>ohms·cm</td>
<td>ASTM D257</td>
</tr>
<tr>
<td>Dielectric Strength (23°C, 1.00 mm)</td>
<td>20 to 25</td>
<td>kV/mm</td>
<td>ASTM D149</td>
</tr>
<tr>
<td>Dielectric Constant (23°C, 1 kHz)</td>
<td>7.00 to 10.0</td>
<td>kV/mm</td>
<td>ASTM D150</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flame Rating (0.100 mm)</td>
<td>V-0</td>
<td></td>
<td>UL 94</td>
</tr>
<tr>
<td>Oxygen Index (3.00 mm)</td>
<td>44 %</td>
<td></td>
<td>ASTM D2863</td>
</tr>
</tbody>
</table>

Notes
Typical properties: these are not to be construed as specifications.
1 Type IV, 1.0 mm/min
2 Type IV, 50 mm/min
3 2 m/s

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