Technical Data Sheet

Alathon M4612

High Density Polyethylene

Product Description

Alathon M4612 is a copolymer that provides outstanding stress crack resistance and low temperature impact strength. Typical applications include food containers, seat hinges, tube headers and parts requiring high ESCR.

Regulatory Status

For regulatory compliance information, see Alathon M4612 Product Stewardship Bulletin (PSB) and Safety Data Sheet (SDS).

Status

Commercial

Availability

North America

Application

Containers; Tube Headers

Market

Rigid Packaging

Processing Method

Injection Molding

Attribute

High ESCR (Environmental Stress Cracking Resistance)

Typical Properties

<table>
<thead>
<tr>
<th>Physical</th>
<th>Nominal Value</th>
<th>English Units</th>
<th>Nominal Value</th>
<th>SI Units</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melt Flow Rate, (190 °C/2.16 kg)</td>
<td>1.2</td>
<td>g/10 min</td>
<td>1.2</td>
<td>g/10 min</td>
<td>ASTM D1238</td>
</tr>
<tr>
<td>Density, (23 °C)</td>
<td>0.946</td>
<td>g/cm³</td>
<td>0.946</td>
<td>g/cm³</td>
<td>ASTM D1505</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>37-39</td>
<td>lb/ft³</td>
<td>593-625</td>
<td>kg/m³</td>
<td>ASTM D1895</td>
</tr>
<tr>
<td>Spiral Flow</td>
<td>7.7</td>
<td>in</td>
<td>19.6</td>
<td>cm</td>
<td>LYB Method</td>
</tr>
</tbody>
</table>

Mechanical

- Flexural Modulus
  - (1% Secant) 135000 psi, 931 MPa, ASTM D790
  - (2% Secant) 112000 psi, 772 MPa, ASTM D790
- Flexural Young's Modulus 146000 psi, 1010 MPa, ASTM D790
- Tensile Modulus, (1% Secant) 92200 psi, 636 MPa, ASTM D638
- Tensile Young's Modulus 117000 psi, 807 MPa, ASTM D638
- Tensile Stress at Break, (23 °C) 3470 psi, 23.9 MPa, ASTM D638
- Tensile Stress at Yield, (23 °C) 3350 psi, 23.1 MPa, ASTM D638
- Tensile Elongation at Break, (23 °C) 550 %, 550 %, ASTM D638
- Tensile Elongation at Yield, (23 °C) 12 %, 12 %, ASTM D638

Impact

- Notched Izod Impact Strength, (23 °C) 1.4 ft-lb/in, 74.7 J/m, ASTM D256
- Unnotched Impact Strength, (-18 °C) No Break, No Break, ASTM D4812

Hardness

- Shore Hardness, (Shore D, max) 69, 69, ASTM D2240

Thermal

- Vicat Softening Temperature 255 °F, 124 °C, ASTM D1525
- Low Temperature Brittleness, F∞ <-105 °F, <-76 °C, ASTM D746
- Deflection Temperature Under Load, (66 psi, Unannealed) 144 °F, 62 °C, ASTM D648
- Melting Temperature 261.9 °F, 127.7 °C, ASTM D3418
Notes

Conditions of Tensile Stress and Elongation values are: 50 mm/min, Type IV specimen.

Conditions of Flexural Modulus values are: 0.5 inches/min or 12.5 mm/min.

Conditions of Tensile Modulus values are: 50 mm/min, Type I Specimen.

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Spiral Flow measures the number of inches of flow produced when molten resin is injected into a long, spiral channel (0.0625" insert), at a constant injection pressure of 1000 psi with a melt temperature of 440 °F.

Deflection Temperature Under Load and Low Temperature Britteness data are for control and development work and are not intended for use in design or predicting performance at elevated or sub-ambient temperatures. These are typical property values not to be construed as specification limits.

Processing Techniques

Specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.

Company Information

For further information regarding the LyondellBasell company, please visit http://www.lyb.com/.

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