Novel HDPE product for machine direction oriented (MDO) polyethylene films

ExxonMobil has developed its latest innovation in high-density polyethylene; ExxonMobil™ HD7165L for Machine Direction Oriented (MDO) PE film applications. Development of HD7165L has been driven by market demand from brand owners and processors seeking all-PE packaging, which has created a need for print webs made of blown MDO-PE films. Designed for recyclability, HD7165L enables the production of mono-material laminates to replace multi-material laminate structures, which can be difficult to recycle.

**Capabilities**

HD7165L enables converters to produce blown MDO-PE films with:

**HDPE-rich structures:**
- As much as 60-70% HDPE

**High-output rates:**
- As much as 400kg/hr or higher while bubble stability is maintained

**High MDO stretch ratios:**
- As much as 6:1 or 7:1

**Very high stiffness:**
- 1% secant modulus as high as >200 kpsi

**Excellent optical properties:**
- Haze as low as <10%
- Gloss as high as >60%

**Applications**

The platform is well suited for mono-material laminated packaging used for nuts, crackers, condiments, granola bars, potato chips, and more.

*Recyclable in communities with programs and facilities that collect and recycle plastic film.*
What some might view as solutions that will only happen in the future, ExxonMobil PE is making possible today – through our innovative and reliable products, collaborative approach, technology leadership and support, and our unmatched global supply and resources. Why wait for tomorrow to advance your business today? Contact your ExxonMobil PE representative and begin experiencing tomorrow’s performance today in your MDO-PE films.

<table>
<thead>
<tr>
<th>Property</th>
<th>Blown MDO film #1</th>
<th>Blown MDO film #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDPE resin</td>
<td>HD7165L</td>
<td>HD7165L</td>
</tr>
<tr>
<td>MDO stretch ratio</td>
<td>6:1</td>
<td>7:1</td>
</tr>
<tr>
<td>Output (kg/hr)</td>
<td>250</td>
<td>400</td>
</tr>
<tr>
<td>Avg. gauge (mil)</td>
<td>1.02</td>
<td>0.99</td>
</tr>
<tr>
<td>1% secant modulus-MD (kpsi)</td>
<td>208</td>
<td>245</td>
</tr>
<tr>
<td>Total haze (%)</td>
<td>8.6</td>
<td>7.5</td>
</tr>
<tr>
<td>45º gloss-MD (%)</td>
<td>67</td>
<td>74</td>
</tr>
<tr>
<td>Elmendorf tear-MD (g)</td>
<td>105</td>
<td>228</td>
</tr>
<tr>
<td>Puncture peak force (lbf)</td>
<td>10.7</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Data from tests performed by or on behalf of ExxonMobil

HD7165L-based MDO-HDPE film provides:
- Low neck in for MDO-PE films
- Gauge uniformity
- 1% secant modulus > 200,000 psi
- Total haze <10%; Gloss >60%

Why ExxonMobil PE? Why today?

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