

HDPE LDPE Properties

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Vol. 8 #2, August 1979

Question No. 4

What are the fundamental resin properties of HDPE and LDPE which relate to a resin's ability to orient in the transverse direction in the blown film process? Some resins of identical melt index and density, at identical extrusion conditions (i.e., die gap, blow up ratio, drawdown ratio, etc.) show a marked difference in their ability to orient in the transverse direction. What other resin properties would explain this curious phenomenon?

Answer to Question 4

Density, Molecular Weight Distribution (MWD) and chain branching in a resin contribute to its ability to orient in the transverse direction (TD).

The Melt Index of two resins could be identical whereas balanced properties between machine and transverse direction may vary.

From observation, a blown film of SCLAIR low density polyethylene differs in TD orientation from a Union Carbide LDPE due to the difference in MWD and chain types.

Differences in TD Orientation may also be seen in high density polyethylene with resins having different weight distributions. Melt Strength is also an important factor in the degree of orientation.

- A.K. Rose, Sr.

See also:

- Blown film air cooling
- Blown film versus the cast film process
- Effects of molecular structure, rheology, morphology & orientation on blown film properties
- Extensional viscosity and melt strength and their role in film blowing
- Linear low density polyethylene
- Purging of extruders
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