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Injection Molding Start-Up for LLDPE

Equistar Petrothene® LLDPE injection molding resins can be used in many commercially available injection molding machines and in a wide variety of products. However, molding conditions may differ for each part or machine. The following shows suggested start-up conditions when processing LLDPE injection molding resins. The molder should adjust settings to optimize the process in their machine with their parts. These conditions are not to be construed as absolute processing limits.

Barrel Temperatures

The recommended process temperature start-up settings shown are for a reciprocating screw injection molding machine. An increasing heat profile across the barrel may not be the most appropriate profile for all parts. In some cases, a reverse, hump, or flat profile may be necessary. Some adjustments may be required to obtain the optimum process and part quality.

Melt Temperature Settings

The indicated melt temperature range reflects the recommended temperatures to minimize material degradation and to achieve the best molded part quality.

Mold Temperature

The mold temperature shown in the table has been shown to work well with LLDPE. You can increase the temperature of the mold higher to reduce stresses in the part and increase surface gloss.

Fill Rate, Pressure and Cycle Time Conditions

Fill rate and pressure are critical parameters for molding quality parts. See Table for suggested injection and back pressure start-up conditions.

Back Pressure

Back pressure should be kept in the 50 – 150 psi range except when additional mixing is required or residence times are already excessive. Also highlighted is the fill rate along with the average machine cycle times. The cycle times shown are based on a part's average thickness.

Suggested Start-Up Conditions for LLDPE Injection Resins

Barrel Temperatures	°F (°C)
Rear	350 (177)
Center	375 (190)
Front	400 (204)
Nozzle	400 (204)
Melt Temperature Range	400-425 (204 - 218)
Mold Temperature Range	45-75 (7-24)

Fill Rate and Screw Position

Fill Rate	Medium-Fast
Cushion, inches	Minimum but present
Decompression Range, in.	0.25 - 0.50

Pressure

Injection Pressure, psi	Maximum (w/o flash)
Hold Pressure, psi	Minimum (75-80% of Injection pressure)
Back Pressure, psi	50 - 150

Average Cycle Time, sec. Based on Average Part Thickness, in.

10	0.020
15	0.040
25	0.070
30	0.090

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