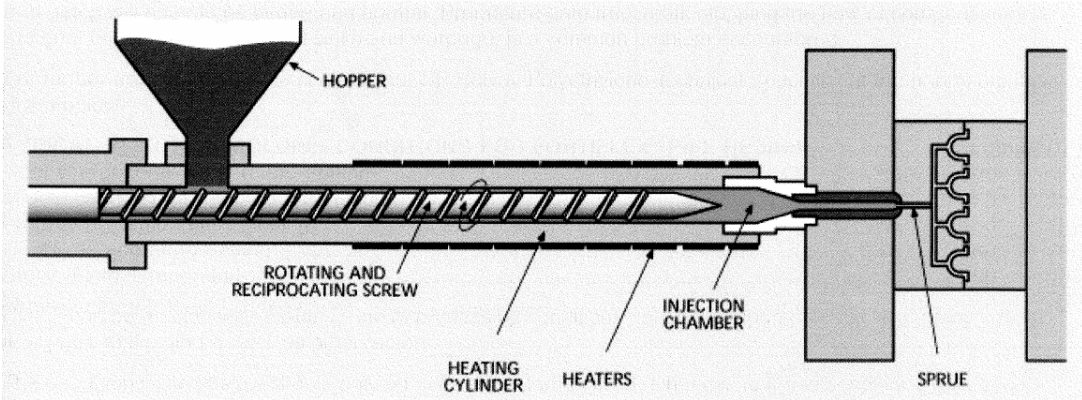
Injection Molding Conditions for Pipe Resins

Successfully injection molding parts from high molecular weight HDPE pipe grade resins is challenging as they do not flow in the same fashion as traditional injection molding grades. Since these resins are more viscous than the usual injection molding resins, nozzles, gates and runners will need to be larger than normal. Satisfactory part production will require the molder to optimize processing conditions, gate size and type, runner size and type and part design. The clamp force of the injection molding machine should also be taken into account.

The conditions given below should only be considered starting points. Changes to these conditions will need to be made if the parts produced show signs of warpage, short shots, swirling, flashing, flow lines or any other evidence of improper resin flow.

TYPICAL INJECTION MOLDING CONDITIONS FOR HMW PIPE RESINS:	**Settings (ºF)**
Rear Barrel Zone Temperature Setting	400 - 420
Middle Barrel Zone Temperature Setting	430 - 450
Front Barrel Zone Temperature Setting	460 - 480
Nozzle Temperature Setting	480 - 490
Stock (Melt) Temperature	450 - 500
Mold Temperature	70 - 100

Schematic cross-section of a typical screw injection machine with the screw shown in the retracted position.



Premature gate freeze-off, stopping the flow of compensatory material to the cavity is the common problem encountered. This generally requires that temperatures be increased and injection pressure and hold times be adjusted to prevent sinks and warpage.

For further assistance, please contact INEOS Olefins & Polymers Technical Service at 800-338-0489.

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