

Feed Stability

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Feed stability

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When adjusting the barrel temperatures to improve feed stability, the goal is to maximize barrel friction and minimize screw friction. Maximum barrel friction typically occurs at a temperature of the polymer near the melting point. Therefore, if a barrel is too cold, then dry slippage will result in a low coefficient. If the temperature is too high, then the resin-to-barrel surface is lubricated by melted resin. At the melting point, the resin is most viscous (and sticky) for maximum friction factor. Some careful trial-and-error may be required to find the optimum temperature.

Also, melting on the barrel surface should occur as soon as possible, and any melting that occurs (or appears) on the screw should be delayed. This way, the averaged friction factor over the feed length is maximized for the barrel and minimized for the screw. Changing the resin feed temperature can be used to affect this.

A hollow screw for some cooling of the feed section can minimize the screw temperature and delay its buildup. This can be especially helpful for amorphous materials. It is most typically done in the first (about 5) flights.

- Steve Derezinski Eastman Kodak Co.

See also:

- [Extrusion feeding](#)
- [Heat transfer in extruders - an introduction](#)
- [Heating modes for extruder barrels](#)
- [On/off barrel cooling control](#)

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