



Remedies for High Density Polyethylene (HDPE) film production faults

Problem	Possible Cause	Remedy
Low Output	Extruder screw speed too slow	Increase screw speed
	Melt temperature too low	Increase temperature
	Die too small	Increase size of die
	Die gap too narrow	Widen die gap
	Worn screw, slippage	Replace screw
Surging	Polymer not completely melted at screw end (Uneven back pressure)	Increase temperature at end of barrel
	Excessive back pressure	Use screw with deeper flights
	Worn nip-rolls	Check nip-roll and repair
Poor Drawdown (Bubble breaks at thin gauge)	Melt temperature too low	Increase temperature
	Lack of back pressure	Use extra screen packs & use better mixing screws
	Contamination of polymer	Change batch of polymer
	Attempting extrusion below minimum thickness	Change to higher MFI polymer grade
Wandering	Freeze line too high	Reduce freeze line by decreasing melt temperature or increasing cooling air or improving cooling ring design
	Uneven pressure from nip rolls	Adjust nip rolls
	No bubble support	Use guide rolls or guide cage
	Incorrect cooling air velocity	Reduce air flow Change cooling ring lip angle Alter cooling ring design
Snatching (Grabbing)	Incorrect design of collapsing frames	Improve frame design by reducing contact area with bubble, using rollers rather than boards
	Film too hot	Increase film cooling
Bubble instability (Variation in bubble size or snaking of bubble)	Blow ratio too high	Decrease blow ratio by using larger die for same lay flat width
	Freeze line too high	Decrease freeze line by decreasing melt temperature or increasing cooling air
	Cooling air impinges on bubble; air velocity too high	Change cooling air ring design to give parallel air flow
	Draughts near machine	Eliminate draughts
	Extruding LLDPE	Blend in 10-20% LDPE

Poor thickness uniformity	Uneven temperature in die	Check heater bands, controller and thermocouples
	Poor head and die design	Check die dimensions
	Worn die	Check die for ovality and wear
	Blow ratio too high	Reduce blow ratio by using larger die
	Air flow uneven	Check uniformity of air ring aperture Clean cooling ring fan and air pipes
	Surging from extruder	See "Surging" above
Telescoping rolls	Insufficient winding tension, especially film too slippery	Increase tension Reduce slip level
	Excessive winding tension	Decrease tension
Furry edges of film roll	Blunt slitting blades	Replace or sharpen slitting blades
Film blocking	Film too hot at nip rolls	Increase nip roll height < br /> Decrease extrusion rate Increase cooling capacity (Lower freeze line) Decrease melt temperature Inflate secondary bubbles after nip rolls
	Excessive nip roll pressure	Reduce nip roll pressure
	Excessive wind-up tension	Reduce wind-up tension
	Excessive 'C' treatment	Reduce treatment level
	Not sufficient slip and antiblocking additive	Use polymer with higher additive levels Add extra antiblock masterbatch
Wrinkles in film	Bubble instability	See "Bubble Instability" above
	Poor thickness uniformity	See "Poor thickness uniformity" above
	Rollers of takeup system not aligned	Check rollers for alignment and parallelism
	Nip rolls not vertically in line with die	Check using plumbline
	Uneven pressure or uneven wear on nip rolls	Align nip rolls Replace nip rolls
	Rollers on collapsing frame not rotating	Check that rollers are rotating
	Winder tension too high or too low	Adjust winder tension
	Tape or dirt on idler rollers	Clean rollers
Poor optical properties	Inadequate melt homogenisation	Increase screw cooling Use mixing screw
	Die gap too wide	Use narrow die gap
	Sharkskin/surface melt fracture (with LLDPE)	Lower output rate Increase melt temperature Use wider die gap Add processing aid Use polymer with higher MFI
Poor roll flatness (thick bands)	Uneven thickness of film	See "Poor thickness uniformity" Use rotating air ring Use rotating or oscillating die