FILM EXTRUSION TROUBLESHOOTING GUIDE

Problem /Issue	Causes	Potential Solutions /Actions
Blocking	Insufficient bubble cooling	Optimise cooling air Reduce output rate
	Winding tension too high	Reduce winding tension
	Nip roller pressure too high	Reduce nip roller pressure
	Rolls exposed to excessive heat during storage or transport	Minimise heat exposure
	Antiblock level or type is not adequate	Increase level of antiblock Consider a different type of antiblock
	Formulation susceptible to blocking	Consider metallocene resins or higher density resins
Die lines or Die lip buildup	Melt temperature too high	Reduce extruder temperatures
	Die temperatures too high	Reduce die temperatures
	Insufficient process aid	Add process aid masterbatch
	Antiblock	Reduce level if possible. Check type of antiblock.
	Die lips scratched or dented	Repair or replace lip set
	Die lips misaligned	Ensure die lips are aligned and level
Gels or dark specks	Oxidation of resin during shutdown or startup	Cool extruder rapidly when shutting down (set temperatures to 100°C) Avoid long periods of heating while extruder idle Leave extruder full when shutting down Add antioxidant masterbatch when shutting down
	Extrusion temperatures not optimised	Optimise extrusion temperatures
	Extruder speed too slow or too fast for optimum extrusion	Alter formulation or equipment to achieve suitable extruder speeds
	Purging inadequate when changing formulations	Consider use of a purging compound
	Faulty thermocouple, or other fault in heating or cooling systems	Check heater controls, thermocouples, and cooling system
	Screenpack broken	Replace screenpack
	Screens too coarse	Use finer screen(s)
	Contamination	Eliminate sources of external contamination
	Moisture	Ensure resins are dry
	Buildup of oxidised material in equipment	Clean extruder screw and barrel. Clean die.
Incorrect COF /slip	Incorrect level of slip additive	Check dosing Consider type of slip additive
	Slip additive has not migrated to surface	Allow adequate time for additive to migrate Reduce winding tension
	Slip levels in each layer not optimised	Alter slip levels in each layer
	Slip additive absorbed by another layer	Consider non-migratory slip additive

Problem/Issue	Causes	Potential Solutions/Actions
Low output	Unstable bubble	Refer to "Unstable bubble" section
	Extruder motor load too high	Increase extrusion temperatures Consider higher melt index resin(s) Regear extruder motor
	Head pressure too high	Change screenpack Increase extrusion temperatures Consider higher melt index resin(s) Increase die size or die gap
Melt fracture	Melt temperature too low	Increase extruder and/or die temperatures
	Die gap too narrow	Change die insert to a larger gap
	Insufficient process aid	Add or increase process aid masterbatch
	Formulation not optimum	Add or increase level of LDPE Consider a different grade of LLDPE
	Output rate too high	Reduce output rate
Poor optical properties	Melt temperature too low	Increase extruder and/or die temperatures
	Frost line too high	Reduce frost line height
	Output rate not optimum	Increase or reduce output rate
	Melt fracture	Refer to "Melt fracture" section
	Die gap too wide	Change die insert to a narrower gap
	Excessive level of antiblock or other additives	Optimise additive levels
	Formulation not optimum	Consider lower density resins Consider higher melt index resins Add or increase level of LDPE
Poor shrink properties	Incorrect blow-up ratio	Adjust die size or film width
	Incorrect resin or formulation for application	Adjust level of LLDPE/HDPE or alter grade of LDPE
	Poor gauge control	Minimise variation by centering die and optimising chilled air flow
	Frostline height not correct	Adjust chilled air flow or output rate
	Bubble shape not correct	Adjust chilled air flow or output rate
	Die lip gap not optimum	Replace die lip set
Poor sealing	Faulty sealing equipment	Ensure sealing equipment is well maintained
	Sealing temperature or dwell time too low	Increase sealing temperature or dwell time
	Sealing temperature too high	Reduce sealing temperature
	Sealing pressure too low or too high	Adjust sealing pressure Consider different type of sealing jaw or wire
	Gauge incorrect	Ensure target gauge is achieved
	Gauge variation	Minimise variation by adjusting die gaps and optimising chilled air flow
	Incorrect formulation	Ensure no errors occur in feeding or blending resins
	Excessive corona treatment	Reduce corona treatment level
	Formulation not optimum for conditions	Adjust formulation (will depend on failure type)

Problem /Issue	Causes	Potential Solutions /Actions
Surging extruder	Feed throat cooling not working	Check cooling water flow
	Bridging or blockage in feed throat	Check feed throat
	Temperature profile not optimised	Optimise extruder temperatures
	Inconsistent resin blend	Ensure blenders are operating correctly
Unstable bubble	Cooling air flowrate not optimised	Adjust cooling air Ensure air ring type is suitable for formulation
	Melt strength too low	Reduce melt temperature Use material with lower MFI Add or increase level of LDPE
	Surging extruder	Refer to “Surging extruder” section
	High blow-up ratio	Increase die size
	Output rate too high	Reduce output rate