

## Troubleshooting Guide for Film Blowing

Problem	Possible Causes	Possible Solutions
<b>1. Bubble instability</b>	Inconsistent melt feed to die, dirty die, worn screw and/or barrel, air currents, or misalignment	<ul style="list-style-type: none"> <li>• Adjust temperature profile</li> <li>• Pull and clean the die</li> <li>• Use purge material</li> <li>• Check for the presence of pelletized material in last zones</li> <li>• Replace screw and/or barrel</li> <li>• Eliminate air drafts/reduce air output</li> <li>• Align nip rolls to die</li> </ul>
<b>2. Bubble bouncing</b>	Not enough cooling, line speed too slow	<ul style="list-style-type: none"> <li>• Increase air velocity to air ring or decrease air temperature</li> <li>• Increase line speed</li> </ul>
<b>3. Bubble dancing</b>	Too much cooling, line speed too fast	<ul style="list-style-type: none"> <li>• Reduce air velocity or increase air temperature</li> <li>• Decrease line speed</li> </ul>
<b>4. Applesauce</b>	Insufficient mixing, extrusion temperature too high or low, die gap too wide, excessive regrind	<ul style="list-style-type: none"> <li>• Increase back pressure by increasing screen mesh</li> <li>• Optimize die and adaptor temperatures</li> <li>• Decrease die gap</li> <li>• Decrease output rate</li> <li>• Change the amount of regrind being added to virgin material</li> </ul>
<b>5. Gauge variations</b>	Inconsistent melt fed to the die, dirty die, misaligned die or air ring, dirty air ring, surging of the extruder, die heat variation, or nip rollers	<ul style="list-style-type: none"> <li>• Check temperature settings and adjust temperature profile</li> <li>• Clean die and/or die lips</li> <li>• Center and align die to nip and ring with die</li> <li>• Examine for lodged polymer</li> <li>• Change the air filter</li> <li>• Check temperature controllers</li> <li>• Check drive speed of the extruder</li> <li>• Check for burnt out heater bands</li> <li>• Check that the nip roller drives are running smoothly and not surging</li> </ul>
<b>6. Wrinkles</b>	Non-uniform bubble, die and nip rolls not level, bubble not stable, misalignment between nip rolls and die, or improper winder tension	<ul style="list-style-type: none"> <li>• Adjust die opening to obtain a symmetrical bubble</li> <li>• Verify consistency of die temperature</li> <li>• Clean air ring</li> <li>• Level die and nip rolls</li> <li>• Adjust air ring to stabilize bubble</li> <li>• Nip rolls must be parallel with each other</li> <li>• Adjust winder tension</li> </ul>
<b>7. Blocking</b>	Excessive tension in winder, low level of antiblock additive, film collapsing too hot, excessive surface treatment, or excessive nip roll pressures	<ul style="list-style-type: none"> <li>• Adjust winder tension</li> <li>• Increase concentration of antiblock</li> <li>• Lower frost line height, melt temperature or output</li> <li>• Reduce treatment level</li> <li>• Reduce pressure</li> </ul>

<b>8. Die lines</b>	Dirty die, scratched die lips, insufficient blending of molten polymer, or inadequate purging	<ul style="list-style-type: none"> <li>• Clean die and/or lips</li> <li>• Increase adaptor and die temperatures and screen mesh</li> <li>• Increase mixing by adjusting barrel and die temperatures</li> <li>• Increase back pressure</li> <li>• Increase purging time between resin changes</li> </ul>
<b>9. Low gloss/high haze</b>	Poor quality resin, improper melt temperature, inadequate cooling of the film, or poor mixing	<ul style="list-style-type: none"> <li>• Check specifications of the resin</li> <li>• Increase melt temperature gradually</li> <li>• Check or modify cooling system</li> <li>• Increase mixing in the extruder</li> </ul>
<b>10. Melt fracture</b>	Inadequate die gap, extrusion temperature, or excessive friction at die lips	<ul style="list-style-type: none"> <li>• Increase die gap</li> <li>• Increase melt temperature</li> <li>• Reduce output</li> <li>• Add processing aid to reduce COF</li> </ul>
<b>11. Splitty film</b>	Low or high blow-up ratio, die lines, high frost line, contamination, extrusion temperature too high or too low, insufficient cooling, or poor resin choice	<ul style="list-style-type: none"> <li>• Optimize blow-up ratio</li> <li>• Clean die lips</li> <li>• Lower the frost line</li> <li>• Clean die lips, then reduce melt temperature</li> <li>• Gradually adjust melt temperature</li> <li>• Increase bubble cooling rate</li> <li>• Check for resin suitability</li> </ul>
<b>12. Poor clarity</b>	Extrusion temperature too high or too low, low blow-up ratio, poor mixing, inadequate frost line height, inadequate film cooling, poor resin quality	<ul style="list-style-type: none"> <li>• Adjust extrusion temperatures</li> <li>• Increase blow-up ratio</li> <li>• Increase mixing in extruder</li> <li>• Check the cooling system</li> <li>• Check resin specifications</li> </ul>
<b>13. Uneven film width</b>	Air leakage from the bubble, bubble pumping or breathing, tension varies or is too high	<ul style="list-style-type: none"> <li>• Repair or replace the nip roller</li> <li>• Check for leakage in the inflation system</li> <li>• Check for control valve problems if using an IBC system</li> <li>• Decrease the air velocity of the air ring</li> <li>• Reduce tension as roll size increases</li> </ul>
<b>14. Gels</b>	Contamination, excessive regrind, defective heaters, dirty screw and/or barrel, poor resin quality, poor mixing, or dirty screen pack	<ul style="list-style-type: none"> <li>• Drop ratio of regrind material to virgin material</li> <li>• Check and recalibrate heaters</li> <li>• Purge and clean system</li> <li>• Check resin homogeneity and gel/speck level</li> <li>• Check screw design</li> <li>• Change out screen pack</li> </ul>
<b>15. Streaks</b>	Dirty die pin, rough roller surfaces, rough bubble guides and collapsing frames	<ul style="list-style-type: none"> <li>• Clean pin/add additive to die plate</li> <li>• Rework rollers to ensure smoothness</li> <li>• Repair or replace to ensure smoothness</li> </ul>

**16. Poor heat seal**

Overtreatment, resin oxidation,  
or gauge variations

- Adjust to proper level of treatment
- Reduce melt temperature
- Check die uniformity
- Check for bubble instability
- Check for air ring leaks
- Check for possible surging

**17. Poor printability**

Insufficient treatment

- Increase treat energy
- Decrease gap between film and treatment system
- Use lower slip concentration