## Troubleshooting Guide for Film Blowing

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| **1. Bubble instability** | Inconsistent melt feed to die, dirty die, worn screw and/or barrel, air currents, or misalignment | • Adjust temperature profile  
• Pull and clean the die  
• Use purge material  
• Check for the presence of pelletized material in last zones  
• Replace screw and/or barrel  
• Eliminate air drafts/reduce air output  
• Align nip rolls to die |
| **2. Bubble bouncing** | Not enough cooling, line speed too slow | • Increase air velocity to air ring or decrease air temperature  
• Increase line speed |
| **3. Bubble dancing** | Too much cooling, line speed too fast | • Reduce air velocity or increase air temperature  
• Decrease line speed |
| **4. Applesauce** | Insufficient mixing, extrusion temperature too high or low, die gap too wide, excessive regrind | • Increase back pressure by increasing screen mesh  
• Optimize die and adaptor temperatures  
• Decrease die gap  
• Decrease output rate  
• Change the amount of regrind being added to virgin material |
| **5. Gauge variations** | 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 | • Check temperature settings and adjust temperature profile  
• Clean die and/or die lips  
• Center and align die to nip and ring with die  
• Examine for lodged polymer  
• Change the air filter  
• Check temperature controllers  
• Check drive speed of the extruder  
• Check for burnt out heater bands  
• Check that the nip roller drives are running smoothly and not surging |
| **6. Wrinkles** | Non-uniform bubble, die and nip rolls not level, bubble not stable, misalignment between nip rolls and die, or improper winder tension | • Adjust die opening to obtain a symmetrical bubble  
• Verify consistency of die temperature  
• Clean air ring  
• Level die and nip rolls  
• Adjust air ring to stabilize bubble  
• Nip rolls must be parallel with each other  
• Adjust winder tension |
| **7. Blocking** | Excessive tension in winder, low level of antiblock additive, film collapsing too hot, excessive surface treatment, or excessive nip roll pressures | • Adjust winder tension  
• Increase concentration of antiblock  
• Lower frost line height, melt temperature or output  
• Reduce treatment level  
• Reduce pressure |
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| 8. Die lines          | Dirty die, scratched die lips, insufficient blending of molten polymer, or inadequate purging | - Clean die and/or lips  
- Increase adaptor and die temperatures and screen mesh  
- Increase mixing by adjusting barrel and die temperatures  
- Increase back pressure  
- Increase purging time between resin changes |
| 9. Low gloss/high haze| Poor quality resin, improper melt temperature, inadequate cooling of the film, or poor mixing | - Check specifications of the resin  
- Increase melt temperature gradually  
- Check or modify cooling system  
- Increase mixing in the extruder |
| 10. Melt fracture      | Inadequate die gap, extrusion temperature, or excessive friction at die lips | - Increase die gap  
- Increase melt temperature  
- Reduce output  
- Add processing aid to reduce COF |
| 11. Splitty film      | 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 | - Optimize blow-up ratio  
- Clean die lips  
- Lower the frost line  
- Clean die lips, then reduce melt temperature  
- Gradually adjust melt temperature  
- Increase bubble cooling rate  
- Check for resin suitability |
| 12. Poor clarity      | Extrusion temperature too high or too low, low blow-up ratio, poor mixing, inadequate frost line height, inadequate film cooling, poor resin quality | - Adjust extrusion temperatures  
- Increase blow-up ratio  
- Increase mixing in extruder  
- Check the cooling system  
- Check resin specifications |
| 13. Uneven film width | Air leakage from the bubble, bubble pumping or breathing, tension varies or is too high | - Repair or replace the nip roller  
- Check for leakage in the inflation system  
- Check for control valve problems if using an IBC system  
- Decrease the air velocity of the air ring  
- Reduce tension as roll size increases |
| 14. Gels              | Contamination, excessive regrind, defective heaters, dirty screw and/or barrel, poor resin quality, poor mixing, or dirty screen pack | - Drop ratio of regrind material to virgin material  
- Check and recalibrate heaters  
- Purge and clean system  
- Check resin homogeneity and gel/speck level  
- Check screw design  
- Change out screen pack |
| 15. Streaks           | Dirty die pin, rough roller surfaces, rough bubble guides and collapsing frames | - Clean pin/add additive to die plate  
- Rework rollers to ensure smoothness  
- Repair or replace to ensure smoothness |
| **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 |