When processing VERSIFY™ Plastomers and Elastomers in cast film applications, it is very important to always start with a clean extrusion system:

- Completely purge other polymers from the system prior to collecting good film
- Make sure all die surfaces are clean and free of buildup
- Change screen packs just prior to running or immediately after beginning extrusion, but prior to collecting film
- VERSIFY™ resins can be easily run following the extrusion of prime quality liner grade low density polyethylene (LDPE), highly stabilized linear low density polyethylene (LLDPE), or polypropylene

**Screw Types:** The use of a single flighted or high shear barrier screw is suggested with a length to diameter (L/D) ratio of 30. Low shear screws optimized for super high output may result in poor melt quality.

**Die Type:** High pressure dies with minimum residence time may give the best results.

### Technical Information

**Cast Film Processing Guide for VERSIFY™ Plastomers and Elastomers**

**Start with the following temperature profile and make adjustments as necessary:**

- For a five zone extruder: 380/440/440/410/410°F (195/225/225/210/210°C)
- Screen Changer / Transfer Pipes / Adapter: 420°F (215°C)
- Die: 440°F (225°C) if extruding VERSIFY™ Plastomers and Elastomers only. When coextruded with polypropylene homopolymer or copolymers, maintain die temperature at melt temperature settings of core resin, usually 460-480°F (240-250°C).

**Extruder settings may then be adjusted to obtain the following targeted values:**

- Target melt temperature: 420-440°F (215-225°C)
- Target heats for feed section of the extruder (Zones 1 & 2): Cooling or less than 10 percent heater load. Zone 2 may use more heating if needed to increase melt temperature.
- Target heats for metering section of the extruder (typically the last two zones on the barrel): minimum of 10-15 percent heater load; higher heater load okay if used to increase melt temperature.

**Temperature Measurement:** A variable depth thermocouple is suggested to accurately determine melt temperature. Variation in melt temperature across the flow channel can be minimized through adjustment of temperature profile.

**Screen Packs:** If pressures permit, a tight screen pack configuration such as 40/200/100/80/60/40 mesh is suggested to obtain optimum melt quality. If pressures are high, screens may be removed to reduce pressure and allow greater output rates.

**Blending:** If additives must be added, it is suggested to use additive concentrates made using a VERSIFY™ Plastomer as the carrier resin (e.g., 5 percent slip in VERSIFY™ resin). The addition of LDPE to improve processability is not necessary and is not suggested.

**VERSIFY™ Plastomers and Elastomers may be dry or melt blended with polypropylene homopolymers or copolymers to adjust film physical properties without losing the exceptional optics. For plastomers, 5-15 percent could be used as a starting point; for elastomers, 20-40 percent is suggested.**

**Casting:**

- It is suggested to use a three roll chill roll stack or single roll mat finish casting roll.
- Suggested temperatures for a three roll stack are 150/195/175°F (65/90/80°C)
- Suggested temperature for a single cast roll is 120°F (50°C)

**Gel Prevention:** Avoid creating future gel problems by making certain to NOT leave hot polymer in an idle extruder for any extended period of time. If the line goes down for any reason, keep all extruders purging at minimum rates to prevent polymer hang-up and degradation.
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The Dow Chemical Company

Table 1: Troubleshooting Suggestions for Cast Film

<table>
<thead>
<tr>
<th>To Resolve This Issue</th>
<th>Suggested Solution</th>
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| Large chunks of "unmelt" or unmixed polymer exiting the die | • Decrease feed zone temperatures  
• Increase metering zone temperatures  
• Eliminate any blend components |
| A large number of small- or medium-sized gels throughout the film | • Purge the system to eliminate contamination  
• Decrease extrusion & die temperatures  
• Eliminate any blend components  
• Increase output rates to reduce residence time |
| A constant stream of gels exiting the die at the same position | • Clean the die to remove contamination  
• Purge the die to remove contamination  
• Increase die temperatures and increase output rate in order to dislodge any foreign material caught in the die |
| Die lines | • Increase die temperature settings  
• Increase melt temperature by increasing extruder temperatures in the metering zones |
| Low pressure | • Add screen packs  
• Increase output rate |
| Pressure too high | • Decrease output rate  
• Reduce the number of screen packs  
• Increase melt temperature |
| High haze | • Increase melt temperature and die temperatures  
• Reduce output rate  
• Use a narrower die gap |

North America

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<tr>
<td>U.S. &amp; Canada</td>
<td>1 800 441 4369</td>
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<tr>
<td>Mexico</td>
<td>+ 1 800 441 4369</td>
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Latin America

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<td>+ 55 15 188 9000</td>
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<td>Colombia</td>
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<td>Mexico</td>
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Europe/Middle East

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<td>South Africa</td>
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Asia Pacific

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<tbody>
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<td>+ 603 7965 5392</td>
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