



Shrink Wrapping With Film Made From K-Resin® SB Copolymers

INTRODUCTION. Shrink film made from K-Resin styrene-butadiene copolymer is suitable for packaging goods with a wide variety of shapes and sizes. It is particularly suited for items requiring a low shrink force. The film's sparkle, high gloss and clarity offers packagers a new option for enhanced part appearance.

Shrink wrapping techniques used for other olefin and PVC shrink films are generally suitable for K-Resin copolymers. This report is designed to give guidelines to those selling and those using film made from K-Resin copolymers. All recommendations are based on trials conducted on commercial size shrink film packaging lines.

SEALING. It is suggested the following procedure be followed when first setting up to heat seal K-Resin copolymer film using either an "L" sealer or higher speed (more automated) equipment.

- 1) Platform should be adjusted so item to be packaged is about one-half below and one-half above the sealing bar.

- 2) Reduce sealing wire or bar temperature to a minimum and adjust dwell time to 1-2 seconds after sealing.
- 3) Gradually increase sealing temperature, making trial seals at each setting, until an acceptable seal is made.
- 4) Decrease dwell time until an acceptable dwell time is achieved while still making satisfactory seals.
- 5) If problems are encountered, see the attached trouble shooting guide.

SHRINKING. The following procedure is suggested for initial set-up of the shrink tunnel.

- 1) Set tunnel temperature at about 325 to 350°F (163-177°C).
- 2) Set air velocity (if adjustable) to near maximum.
- 3) Set belt velocity to about mid-range.
- 4) Make trial packages and adjust the above three parameters to effect an acceptable package using the attached trouble shooting guide.

TROUBLE SHOOTING GUIDE

| Sealing Problems | Possible Causes | Suggested Solutions |
|------------------|--|---|
| Weak seals | <ol style="list-style-type: none"> 1. Dwell time too short 2. Seal temperature too low 3. Seal temperature too high 4. Wire or Teflon coated fiberglass dirty 5. Teflon coated fiberglass burned through 6. Uneven clamping pressure 7. Tension on seal area during sealing cycle | <ol style="list-style-type: none"> 1. Increase dwell time 2. Increase seal temperature 3. Decrease seal temperature 4. Clean wire or Teflon coated fiberglass 5. Replace Teflon coated fiberglass 6. Adjust to achieve even clamping pressure 7. Reduce unroll tension and/or make a slightly larger bag |

TROUBLE SHOOTING GUIDE

| Sealing Problems | Possible Causes | Suggested Solutions |
|---|---|---|
| Build-up of char on sealing wire and package sticks to wire | 1. Seal temperature too high | 1. Reduce seal temperature |
| Off center seal | 1. Platform too high 2. Platform too low | 1. Lower platform 2. Raise platform |
| Wrinkles at seal | 1. Film bunched at seal | 1. Smooth film in sealing area prior to making seal |
| Build-up of polymer on pressure pad | 1. Seal temperature too low | 1. Increase seal temperature |

| Shrink Problems | Possible Causes | Suggested Solutions |
|---|--|---|
| Ballooning (some ballooning may be desired to decrease "dog ears", see below) | 1. Vent holes too small 2. Vent holes too few 3. Vent holes not in proper position | 1. Make larger vent holes 2. Increase number of vent holes 3. Change location of vent holes. Vent holes near trailing edge of part as it proceeds through tunnel may be desirable |
| Wrinkles (puckers) | 1. Insufficient residence time in tunnel 2. Tunnel temperature too low 3. Air velocity too low 4. Non-uniform shrink | 1. Reduce conveyor velocity 2. Increase tunnel temperature 3. Increase air velocity 4. Adjust size and number of vent holes to allow film contact with package just before package exits tunnel |
| Burn holes | 1. Conveyor velocity too low 2. Tunnel temperature too high 3. Air velocity too high | 1. Increase conveyor velocity 2. Decrease tunnel temperature 3. Decrease air velocity |
| "Dog Ears" (incomplete shrinking) | 1. Too much film around package 2. Tunnel temperature too low 3. Vent holes too large 4. Vent holes not properly positioned 5. Conveyor velocity too high 6. Air flow too high or too low | 1. Use less film around package 2. Increase tunnel temperature 3. Decrease size of vent holes 4. Adjust position of vent holes. Size and position of holes should allow film to "balloon" and then shrink 5. Decrease conveyor velocity 6. Adjust air flow |
