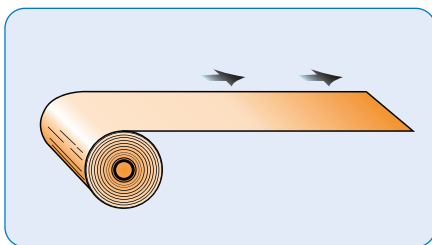


Aclar® Films Thermoforming Guideline

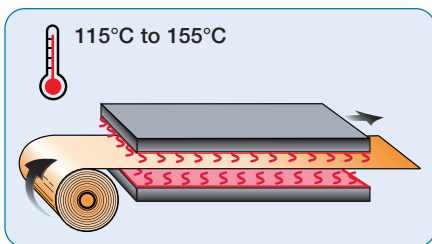


Aclar film is a high barrier thermoformable plastic material available in a wide range of finished laminate structures. It is produced by Honeywell-authorized converter partners. Although the thermoforming properties of the Aclar laminate are essentially defined by the substrate material to which it is laminated, there are recommended guidelines to follow to produce a high quality Aclar blister. To optimize your barrier performance and ensure the best blister forming, also reference our *Tooling Design Best Practices for Aclar® Films* available at www.aclar.com.



Film Unwind

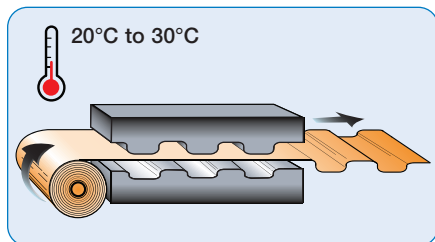
Verify the Aclar side of your laminate roll and then place correctly on the unwind station. This is typically with the Aclar side to the outside of the finished blister except when symmetrical Aclar laminates are in use. Note that certain applications can call for the Aclar side to be on the inside of the finished blister. Verify the requirements for your individual application.



Preheating

The high melt-strength of Aclar film requires preheating to higher temperatures to soften the laminate to reduce the force required to stretch the laminate. (Note: melt-strength indicates the amount of force required to stretch the laminate into the desired shape.)

- 115°C to 155°C is the typical preheat temperature range for Aclar/PVC laminates. Preheat temperature will vary based on the laminate substrate material, the total laminate thickness, the line speed, and the source of the laminate.
- When contact heating and preheater lengths equivalent to 3 index lengths or more are used, equipment should be set up utilizing temperatures in the lower range of the typical preheat temperatures.
- If gap heating and/or short heating platens are used, the upper range of the typical preheat temperatures should be utilized.

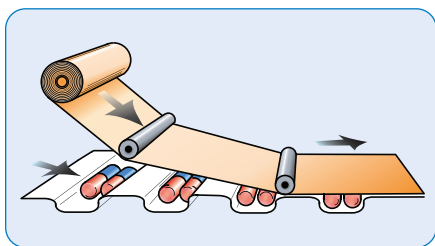


Forming¹

To achieve fully formed blister cavities, avoid cooling the laminate before forming and ensure you have sufficient force to form the parts.

- Operate with a mold temperature of 20°C to 30°C. Be aware that the chiller temperature set-point may be different than the actual temperature of the mold.
- Typically, 6-7 bars of forming pressure are recommended for most Aclar® grades. Thicker grades of Aclar may require higher forming pressure.
- For cavities deeper than 6mm or with a deep draw ratio greater than 3:1, use plug assist in combination with air pressure to improve thickness distribution and barrier performance.
- Typical plug assist forming cycle steps are:

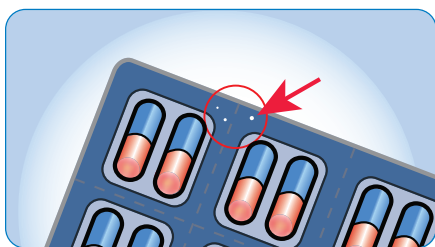
1) Film index	4) Apply air pressure as soon as the plug reaches its full depth
2) Mold closes	5) Withdraw plug and stop air pressure
3) Plug form to 2/3 cavity depth	6) Open mold



Sealing

Lid stock is typically sealed to the non-Aclar side of the laminate. When the lid stock is sealed to the Aclar side, compatible lid stocks designed for this purpose must be used.

- If you seal against the PVC side of the laminate (Aclar outside), please use your standard PVC films sealing station set-up.
- If you seal against the Aclar side of the laminate (Aclar inside), proper lid stock heat seal lacquers are necessary. Check with your lid stock supplier for available products for “Aclar-In” sealing or use universal sealing lid stock material.
- For paper-aluminum lid stock, we recommend setting your equipment to slightly higher than standard temperatures.



Proofing/Inspection

View the blister from the sealed side with a strong back light to check for pin holes and cracks in the lid foil. If pin holes or cracks are present, they will greatly reduce the barrier performance of the package. Polarized film may also be used to check for stress in the blisters and the seal area. Reference www.aclar.com for our *Instructions for Using Polarized Film* or contact us for a complimentary polarized film sample and to better understand how to minimize stress in your process.

The guidelines listed in this document are not designed to be used as specifications. Optimal conditions will vary by machine, mold design, line speed, blister layout, laminate substrate, lid stock material, etc.

1. Rotary forming machines do not allow adequate forming of Aclar laminates

For additional information or to contact us, please visit: www.aclar.com



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