

T.I.P. # 24

THERMOFORMING OF TRANSLUCENT SERIES 2500

A wide variety of these considerations need to be taken into account for effective thermoforming materials that are covered with pigmented film of only .002 inches; issues not previously apparent become painfully obvious defects, such as bright spots and cracks.

Below are a few possible trouble areas to be aware of when thermoforming and suggestions to how they may be resolved.

1. Exaggerated bright spots along the walls of deep draws, in corners and at isolated low spots of a shape.

Cause: The areas of excessive brightness have been over-stretched and are probably as little as 20% of their original thickness.

Solution A: It is important to allow the heated film to drape uniformly around the mold before beginning to apply vacuum. This spreads the film more evenly and reduces isolated film "thinning."

Solution B: The mold must allow the sheet to slide to some extent after contact. If the mold is cold or there is not a mold release agent, then sections of the sheet will "freeze" at the first points of contact causing the remaining sheet to be over-extended in order to achieve the final form. The resultant thin walls will cause excessive bright spots.

2. Vinyl that cracks during the forming process.

Cause A: When a film or acrylic cracks or crazes while forming, the problem may be too little heat, uneven heat, cold molds or too rapid of a forming rate.

Solution A: It is important to condition the acrylic or polycarbonate at the proper temperature and ensure the sheet is uniformly heated. Vinyl can withstand temperatures up to about 350°F, if brought to temperature slowly. Cracking problems can also be alleviated by slowing the vacuum/pressure rate so the film is stretched more slowly. Film can be stretched further when the stress is slow and uniform as opposed to instant and along isolated planes or points.



Cause B: Cracking can be caused by the elongation capabilities of the vinyl itself while in a heat stressed environment. Calendered films, and certain cast types, will commonly crack if heat forming is attempted.

Solution B: Use the proper grade for thermoforming. If other colors from the same film supplier and the same film type have been successful in producing the particular shape needed then the manufacturer can take care of the problem by customizing the vinyl. This is naturally the last option as volume requirements for custom work can be prohibitive.