Thickness Uniformity in Blown Film Extrusion

Thickness uniformity in blown film extrusion
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In the manufacture of blown film, the die is usually rotated and the appearance of the winding roll does not reflect the lack of gage uniformity of the winding film. Gage variation will, of course, cause problems in bag manufacture (heat sealing and wrinkles), in printing (tracking and wrinkles) and in-end use (low strength in the thin lanes).

If the operators will measure the thickness within one percent of the average value and plot the percentage error versus the angular position on the die, they will have a useful tool for judging corrective action, such as adjusting the centering of the mandrel, improving air uniformity, etc.

Such a plot is conveniently produced on a computer with a spreadsheet program. The plot is dimension-less and the appearance is not dependent on film thickness or bubble diameter. Appropriate action limits can be shown on the chart for process control purposes.

It is important to measure the film thickness accurately. This can be done with a micrometer if the film is folded, although more convenient tools are available. Multiple measurements to detect consistent patterns in the thickness are helpful.

— Kenneth Knox

See also:

- Basic film calculations
- Gage control for tubular film production
- Gauge control
- More on polymer filtration
- Process uniformity
- The effects of molecular structure, rheology, morphology and orientation on polyethylene blown film properties
- Winding strains

Return to Consultants' Corner