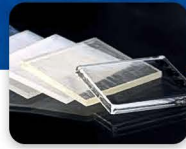


BAMBERGER POLYMERS TECH TIPS

DECEMBER 2023

Transparencies in Thermoplastics



Many factors play into the transparency, clarity, or opacity of thermoplastic materials, some of which can give a polymer its own unique identity and, on a larger scale, can directly impact properties that include haze, gloss, refraction, and light transmission.

Let's look at a few key terms that are common optical indicators in thermoplastics.

Transparent Material: This material has physical properties that allow light to pass through without a large scattering of light, ultimately allowing you to see clearly through the material.

Translucent Material: The physical properties of this material allow light to pass through, but in different scattered directions, resulting in a blurred or diffused effect.

Opaque Material: Opaque materials do not let any light pass through them, making objects behind them invisible.

Factors That Can Influence Thermoplastic Opacity:

Fillers and additives

Part thickness

Clarifiers and nucleating agents

Introduction of color (masterbatch)

Common Thermoplastics with High Transparency

Acrylic

PET

PETG

Polycarbonate

Polystyrene

Common Thermoplastics with Lower Transparency

ABS

PA6

PA/66

POM

PPS

PTFE

Measuring Polymer Opacities

Measuring opacity in polymers can be performed in various ways. For example, mathematical calculations or equations can quantify the presence of light passing through an object. There are also devices like spectrophotometers that can deliver light transmission data more rapidly in addition to others that can functionally produce haze and tint value measurements, all of which can provide further insight and support opacity investigative efforts.