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BAMBERGER POLYMERS TECH TIPS

Rotational Molding

Basics

Rotational molding is a plastic molding/casting process that produces seamless, hollow, single or double walled parts. Done by heating a powdered resin in a hollow mold while being slowly rotated. The molten material is then cooled until the resin solidifies and a part is formed. Once cooled, the part is removed from the mold.

The basic concepts were used as far back as the production of ceramics by the Egyptians. Then by the Swiss hundreds of years ago to make hollow chocolate eggs. An R.J Powell patent mentioned the common ratio between major and minor axis of rotation for Plaster of Paris in the 1920's.

Since the time of the Egyptians, the process has continued to be refined, however some of the major components still exist today.

ROTO MOLDING PROCESS

- The process begins by loading a homogenous powder into the mold, normally a precisely measured 35 mesh powder. The measured amount of powder helps determine the actual wall thickness of the part and is done manually or automated. The mold is typically cast aluminum or a fabricated steel sheet. Molds are either coated with release, or in some cases a mold release spray can be used prior to loading the powder.
- Heating/ Baking: While in its slow speed and ratio-controlled rotation, the heating from an external source is applied. The achieved internal temperature of heating is critical. Degradation or molding defects can result if the temperature is too cold or too hot. As well as low performance of material and properties.
- Cooling: Natural or forced convection, water, or air. Time is critical to produce acceptable quality parts.
- Demolding: Taking apart the mold and removing the part. In summary "Roto" Molding is used in parts with intricate contours, single or double walls, foamed parts. Large tanks, Kayaks, displays, Mannequins, traffic barriers, and totes, shelters sheds among many other applications.



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