

ROTATIONAL MOLDING PROCESS

Rotationally molded products include boat bumpers, mannequins, dolls, squeeze toys, play balls and protective systems in helmets.

Rotational molding of plastisols or powder compounds allows for flexibility in end product design, especially for hollow parts, double wall constructions and large sizes where the cost of conventional tooling would make end product cost prohibitive. Products can be rotationally molded, ranging from small syringe bulbs to 17 X 17 X 8-foot modules, storage tanks or shipping containers. Custom designed machinery and molds are required for very large objects.

The molding process involves four individual stages: loading the molds with raw material, rotating and fusing the part, cooling the part and demolding. In loading the molds, a predetermined amount of raw material is placed within the molds and the mold halves or sections are closed and locked. In the casting and fusing stage, the mold is rotated in two planes perpendicular to one another while being subjected to heat. As heat penetrates the mold, the plastisol is gelled, or powder compound fused, and is built up in an even distribution on the interior wall surfaces of the molds. After fusion is complete, the mold is cooled by water spray while rotating, then dried in an air blast. Then the rotation is stopped and the molded parts are removed.

Several basic types of rotational molding machines are available which utilize different approaches to heating and cooling the molds. The machinery can be continuous for large volume production of similar parts or it can be a batch type operation for lower volume production of dissimilar products. The heat source most commonly used is forced hot air. Sprayed molten salt, infrared heat and jacketed mold systems utilizing hot liquids are also available. Air and water are generally used throughout the industry to cool the molds.

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