

Glossary of Thermoset Molding Terms

Back Pressure – Hydraulic pressure used to preload the injection screw when it is plasticizing the next shot of material. Overcoming this pressure causes the screw to densify the material and generate frictional heat, which increases the material's stock temperature.

Blister – Domed surface areas on a molded part due to under cured material or entrapped volatiles. Their boundaries may be indefinitely outlined, somewhat resembling in shape a blister on human skin. When the blisters appear in the same areas on both sides of the part, they are "cure" blisters and are caused by the part not being completely cured. If they are very small and appear only on one side of the part or both sides but not in the same area, they are "skin" blisters and are caused by the mold temperature being too high or too low.

Breathe – A brief opening and closing of the mold to allow volatiles to escape. Typically, this is performed early in the molding cycle.

Cavity – The part of the mold which forms the outer surface of the molded part. Molds can be designed as single or multi-cavity.

Charge – The amount of material required to fill the cavities in compression molding; the amount required to fill the cavities plus runners and sprue in injection molding; or the amount required to fill the cavities, runners and cull in transfer molding.

Charging the mold – Either manually or automatically placing material in the cavities of a compression mold or the transfer cylinder of a transfer mold.

Cull – The disc of material that is left to cure in the transfer cylinder after the cavities have been filled.

Cure - The time required to crosslink a thermoset material while under heat and pressure.

Cycle - The total time it takes to mold a part. Therefore, it is the sum of the time needed to charge or fill the mold, close the mold, cure the part, open the mold and remove the part from the mold and close the mold again.

De-Gassing - See Breathe

Draft - The amount of taper needed on the sides of the cavity and force for easy removal of the part from the mold.

Draw - The direction that the part will be ejected from the mold.

Ejector Pin - A pin, or sleeve that pushes the part off the force or out of the cavity when the mold opens. It is attached to an ejection plate that can be actuated by the press's ejector rods or by auxiliary means such as mechanical sandwich bars, or hydraulic cylinders.

Family Mold - A multi-cavity mold wherein each of the cavities is designed to produce a different part, allowing for multiple, distinct components to be molded simultaneously in one cycle.

Fines - Particles of material that are smaller than the minimum screen size specified for that material. Therefore, for a material with a minimum screen size of 40 mesh (40 holes per inch), any material that passes through a 40-mesh screen would be considered fines.

Flash - The excess material that flows out of the mold cavity under pressure.

Force - The part of the mold that forms the inner surface or top surface of the molded part. It is also called a core.

Gate - A small opening or channel between the end of the runner and where the material enters the cavity in a transfer or injection mold.

Guide Pin - Pins in the mold which assure the proper alignment of the mold halves. They are also called leader pins.

Insert – An integral part of a molding consisting of a piece of metal or other material that is either molded into the part or pressed into it after it is molded.

Knock-Out Pin – See Ejector Pin

Land – The area around the molds parting line that provides a cutoff for flash.

Mold – This term generally refers to the whole assembly of elements that make up the piece of equipment in which the parts are formed. It consists of a base or frame, cavities, forces, ejection plate, heating elements and thermocouples.

Nozzle – The metal piece, which is either an integral part of the end cap on the injection barrel or screws into it and channels the plasticized material from the barrel into the sprue bushing in the mold. It should always have the same radius and a slightly smaller orifice than the sprue bushing.

Plasticity – A term used to describe how a material flows under heat and pressure.

Platen – The plates on a press to which the mold halves are bolted.

Plunger – In transfer molding it is the hydraulically activated part of the press which enters the transfer cylinder, compresses the charge and forces it to flow into the runners and cavities.

Preform – A compressed form of molding material that can be virtually any shape. The most common shape is a hockey puck.

Pressure Pads – Steel blocks outside the mold cavity that meet when the mold is closed to prevent excessive pressure on the land area of the mold. They are also called landing blocks.

Projected Area – The total open area of the cavities as measured at the parting line. Note: No consideration is given to the depth of the cavities.

Purging – With the injection barrel retracted from the mold, injecting the plasticized material into the air to measure the stock temperature or to clear the barrel when changing materials.

Runner – In an injection or transfer mold, the channels that connect the sprue or transfer cylinder to the gates and cavities.

Runner System – The sprue or cull, runners, and gates that channel the material from the nozzle of an injection press or the transfer cylinder of a transfer mold to the mold cavities.

Shot – See Charge

Sprue – The slug formed in the orifice of the sprue bushing, which connects the orifice of the injection barrel nozzle to the runners in the mold.

Stuffer – The piece of equipment that is typically mounted on top of the injection unit that forces BMC material into the feed throat and injection screw by either hydraulic pressure or rotating screws.

Transfer Cylinder – The chamber or well that holds the charge when transfer molding.

Vent – Shallow machined and polished channels from the edge of the cavities to the edge of the mold to allow volatiles to escape from the closed mold as the material fills the cavities.

All definitions found in this glossary are ones commonly used by PLENCO