



**Where Today's Ideas Are Tomorrow's Products**

## **Injection Molding Glossary**

**A-Side**

It is the half of the mold that usually creates the exterior of a cosmetic part. It is also called the "cavity".

**Barrel**

The component of the injection-molding machine where the resin pellets are melted, compressed and injected into the mold's runner system.

**Blush**

A cosmetic imperfection that is created where the resin is injected into the part, usually visible as a blotchy discoloration on the finished part at the site of the gate.

**Boss**

A raised stud feature that is used to engage fasteners or support features of other parts.

**Bridge tool**

A temporary mold made for the purpose of making low-volume of production parts until a high-volume production mold is ready.

**B-Side**

It is the half of the mold where ejectors, side-action cams and other complex components are located. The B-side usually creates the inside of a cosmetic part. It is also called the "core".

**Cavity**

See "A-Side".

**Chamfer**

Also known as a "bevel," it is a flat truncated corner.

**Clamp force**

The force required to hold the mold shut so resin cannot escape during injection. The clamp force is measured in tons.

**Core**

See "B-Side".



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025

**Cycle time**

The time it takes to make one part including the closing of the mold, the injection of the resin, the solidification of the part, opening of the mold, and the ejection of the part.

**Direction of pull**

The direction the mold surfaces move when they are moving away from the part surfaces.

**Draft**

A taper applied to the faces of the part that prevent them from being parallel to the motion of the mold opening. Having draft on parts keeps the sides of the mold from scraping against the part as it is being ejected.

**Durometer**

A measurement of a material's hardness. The durometer is measured on a numeric scale ranging from lower (softer) to higher (harder).

**Edge gate**

An opening aligned with the parting line of the mold where resin flows into the cavity. Edge gates are typically placed on an outside edge of the part.

**Ejection**

The molded part is pushed from the mold using pins or other mechanisms.

**Ejector pins**

Pins installed in the B-side of the mold that push the part out of the mold when the part has cooled sufficiently.

**Elongation at break**

How much material can stretch or deform before breaking.

**Family mold**

A mold where more than one cavity is cut into the mold to allow for two or more different parts to be made simultaneously.



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025

**Fillet**

A curved face where a rib meets a wall. This helps improve the flow of material to minimize any mechanical stress the finished part. It also can minimize molding stress on the mold and reduce cracks in the mold.

**Flash**

Resin that leaks into a fine gap in the parting lines of the mold to create an undesired thin layer of plastic or liquid silicone rubber.

**Flow marks**

Visible indications on the finished part that show the flow of plastic within the mold prior to solidification.

**Gate**

The area of the mold where resin enters the mold cavity.

**GF**

Glass-filled. This refers to a resin with glass fibers mixed into it. Glass-filled resins are much stronger and more rigid than the corresponding unfilled resin, but are also more brittle.

**Hand Load**

A feature in a mold used to create undercuts in molded parts. Hand loads are manually removed from the mold during the part ejection.

**Injection**

The process of forcing molten resin into the mold to form the part.

**Insert**

A portion of the mold that is installed permanently after machining the mold base, or temporarily between mold cycles.

**Jetting**

Flow marks caused by the resin entering a mold at high speed. Jetting typically occurs near the gate.



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025

**Knit lines**

Knit lines are natural occurrences in the part where separated flows of cooling material meet and rejoin, sometimes resulting in incomplete bonds and/or a visible line.

**Line of Draw**

The direction in which the two mold halves will separate and allow the part to be ejected without any obstructions.

**Living hinge**

Very thin section of plastic used to connect two parts and keep them together while allowing them to open and close. They require careful design and gate placement. A typical application would be the top and bottom of a box.

**Metal safe**

A change to the part design that requires only the removal of metal from the mold to produce the desired geometry. This is important to consider when a part design is needed after the mold has been manufactured. This is because then the mold can be modified rather than welded or entirely re-machined. Metal safe is also known as "steel safe."

**Mold release spray**

A liquid applied to the mold as a spray to facilitate the ejection of parts from the B-side. It is typically used when the parts are difficult to eject because they are sticking to the mold.

**Multi-cavity mold**

A mold where more than one cavity is cut into the mold to allow for two or more of the same parts to be made simultaneously. The key difference between a family mold and multi-cavity mold is that the cavities of the family mold produce different parts, whereas the cavities of a multi-cavity mold produce the same part.

**Open-close Mold**

See straight-pull mold.



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025

**Packing**

The application of increasing pressure when injecting a part in order to force more plastic into the mold. This is often used to combat sink or fill problems, but also increases the likelihood of flash and may cause the part to stick in to the mold.

**Parting line**

The edge of a part where the mold halves separate.

**Press**

Synonym of injection-molding machine.

**Recess**

An indentation in the plastic part caused by the impact of the ejector pins.

**Resin**

The name for chemical compounds that, when injected, form a plastic part. It is injected in the form of pellets.

**Rib**

A thin, wall-like feature designed to add support to walls or bosses.

**Runner**

A channel that resin passes through from the sprue to the gate(s). Typically, runners are parallel to, and contained within, the parting surfaces of the mold.

**Screw**

A device in the barrel that compacts resin pellets to pressurize and melt them prior to the material being injected.

**Short shot**

A part that wasn't completely filled with resin, causing short or missing features.

**Shrink**

The change in part size as it cools during the molding process. This is anticipated based on material manufacturer recommendations and is to be built into the mold design before manufacturing.



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025

**Side-action**

A portion of the mold that is pushed into place as the mold closes. Typically, side-actions are used to resolve an undercut, or sometimes to allow an undrafted outside wall. As the mold opens, the side action pulls away from the part, allowing the part to be ejected.

**Sink**

Dimples or other distortion in the part surface as different areas of the part cool at different rates. These are most commonly caused by excessive material thickness.

**Splay**

Discolored, visible streaks in the part. This is typically caused by moisture in the resin.

**Sprue**

The first stage in the resin flowing into the mold. The sprue is perpendicular to the parting faces of the mold and brings resin to the runners, which are typically in the parting surfaces of the mold.

**Steel Safe**

See "Metal safe".

**Sticking**

When a part becomes lodged in one or the other half of the mold during the ejection process.

**Straight-pull mold**

A mold that uses only two halves to form a cavity that resin is injected into. Generally, this term refers to molds with no side-actions or other special features used to resolve undercuts.

**Texture**

A specific type of surface treatment applied to some or all faces of the part. This treatment can range from a smooth, polished finish to a highly contoured pattern that can obscure surface imperfections and create a better looking or better feeling part. Depending on part geometry, deeper textures can require more draft.



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025

**Tunnel gate**

A gate that is cut through the body of one side of the mold to create a gate. They do not require secondary operation of gate removal because the gate is sheared off automatically during ejection of the part.

**Undercut**

A portion of the part that shadows another portion of the part. This creates an interlock between the part and one or both of the mold halves. An undercut prevents the part from being ejected, and/or the mold from opening.

**Vent**

A very small opening in the mold cavity that allows air to escape from a mold while the resin is injected. Typically on the perimeter of the part at the parting line. They can also be made off ejector pins and sub-inserts.

**Warp**

The curving or bending of a part as it cools due to different portions of the part cool and shrink at different rates.

**Weld lines**

See Knit lines.



[www.tth.com](http://www.tth.com)

[sales@tth.com](mailto:sales@tth.com)

440-248-3025