



## Blog

# What is Insert Molding for Plastic Components?

Jan 23, 2014

Insert Molding combines metal and plastics, or multiple combinations of materials and components into a single unit. The process makes use of engineering plastics for improved wear resistance, tensile strength and weight reduction as well as using metallic materials for strength and conductivity.



The metal inserts and bushings are for reinforcing the mechanical properties of the plastic or thermoplastic elastomer products. Insert molding reduces assembly and labor costs, reduces the size and weight of the part, improves component reliability, and delivers improved part strength and structure with enhanced design flexibility.

### Uses For Inserts

A variety of inserts can be molded into plastic components. These include a diversity of magnets, screws, studs, contacts, clips, pins, surface mount pads, rivets, threaded fasteners, bushings, tubes, etc. manufactured in materials such as brass, stainless steel, bronze, aluminum, copper, Monel™ and nickel/nickel alloy.

Insert molded components can be used in housings, instruments, knobs, devices and electrical components for a wide variety of applications in the medical, defense, aerospace, electronics/electrical, industrial and

## About The Process

The process itself is the same process used during injection molding. Solid pellets of raw material are melted and extruded into a mold - the plastic is then solidified - and then the press opens and the molded parts are ejected.

Insert molding uses the same materials as the injection molding process. For extreme, high heat - engineered thermoplastics are used. These materials withstand very high temperatures and the components can withstand very harsh environments because of the physical, electrical and chemical properties.

The insert is placed in the mold - either by hand, or by automation before the material is injected into the mold. Then, as the material flows into undercut features in the insert, the insert is anchored much more securely than if it were assembled to a previously molded component.

Some injection molding manufacturers utilize vertical/injection molding presses which use gravity to aid in the insert molding process by keeping the insert in position during mold closing.

Most vertical presses have a feature that utilizes multiple bottom mold halves to be used with one top. While one bottom half is molding with the top half, the other bottom is available to be loaded with the insert.

Since multiple bottom halves allow inserts to be loaded in one bottom while others are molding, press time is reduced.

## Important Considerations


The upfront costs for insert molding include the insert and tooling costs. Inserts need to be able to withstand the injection molding process because some pressures and temperatures can damage the inserts.

There are design solutions to help shield the insert while still providing the full benefits of insert molding as well as finalizing the design. All of this requires experience.

Developing the concept also requires a few basic considerations:

- Providing some means of holding the insert during the molding process
- Bosses or undercut features can provide additional retention strength in the molded part
- Working with a company that provides insert molds that can determine specifically which components or technologies can be combined into a single component.

Crescent Industries' a custom injection molder performs insert injection molding services. Our engineers can guide you through the steps of the insert molding process from designing a prototype, to building a build, to machining the inserts and production. Crescent offers precision Swiss screw machined solutions for inserts in various materials. To learn more about

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