

Die Casting Explained

A Basic Overview

Metal Technologies

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Die casting is a metal casting process in which molten metal is forced into a steel mold under high pressure into a mold cavity. The steel molds, known as dies, are fabricated to produce castings with intricate shapes in a manner that insures both accuracy and repeatability.

The die casting process consists of 5 basic steps

Clamping

The first step in die casting is clamping. The dies are cleaned and lubricated to aid in step two, injection. Once the dies have been properly cleaned and lubricated, the die halves are closed and clamped together with high pressure.

Injection

The molten metal is transferred from a furnace into a ladle. The ladle then pours the molten metal into shot chamber where it is ready to be injected into the clamped die. The molten metal is then forced into the die using extremely high pressure. The high pressure then holds the metal in the die until it has time to solidify.

Cooling

The third step in the process is cooling. After the molten metal is injected into the die, it must have time to solidify and cool. During this time the die cannot be unclamped. Once the metal has completely cooled it takes on its final shape of the casting.

Ejection

Once the cooling process has finished, the die halves can be unclamped and an ejection mechanism pushes the solidified casting out of the die.

Trimming

The final step in the die casting process is trimming. While the metal is cooling, the excess metal in the sprue and runner must be removed along with any flash that has transpired. This extra material is then trimmed away from the final casting. The trimmed sprue, runners, and flash can then be recycled and reused in the die casting process.

Die Casting Machine

