

Dr. Die Cast



Why Not Magnesium and Zinc?

One of the most frequent questions regarding both Magnesium and Zinc is raw material cost. For buyers it seems a reasonable and responsible question. It is up to us, the suppliers of high pressure magnesium and zinc die castings to educate our customers of the inherent advantages of these alloys. While it may seem obvious to us, it is not always common knowledge to our customers and the rest of the industry. So what are some of those advantages?

Dollars per pound or dollars per cubic inch? When die casting Mag or Zinc it is often possible to produce much thinner walls than commonly practiced in aluminum. By reducing wall sections you can reduce material costs while improving casting cycle rates. This may not be enough to produce a dollar for dollar material cost per part but this is only one part of the total program cost.

Die casting tooling maintenance and replacement costs: When looking at a high volume, long term program, the piece price is only one line in a long list of program costs. When the die cast tool maintenance and replacement is factored in, the overall cost of a magnesium or zinc die casting is reduced. This advantage alone could sell our customer on our material and process.

The rule of thumb for tool life for zinc to aluminum is 10:1. That is typically 1,000,000 shots for zinc. There are stories of zinc die casting dies that are decade's old and still producing quality castings!

The rule of thumb for tool life for magnesium to aluminum for a "thin-wall" die casting is similar to zinc 10:1. The exceptions to that are for very heavy walled castings that require lots of cross section for brute strength but where weight reduction is desired. Even then, the tool life exceeds that of aluminum die casting tooling.

Cosmetic Castings: Once in a while I get the question, "Can we chrome plate aluminum die castings"? The answer is "Yes, but..." You can but you won't like the price. Certainly there are plenty of "high-luster" chrome plated aluminum castings. And they are very expensive to produce. Zinc die castings are much easier and more economical to chrome plate or for that matter finish with a large variety of colors and textures. Just walk past the kitchen and bath plumbing displays at your local Home Depot, Lowes or Menards to see numerous examples of finished zinc die castings.

Near net shape: Another advantage for both materials is the ability to tool critical features to "near net shape". Examples such as cored-hole locations with improved accuracy and diameters with reduced draft that reduce or eliminate the need for secondary machining. While you could say similar things about aluminum die castings, the general tolerances for magnesium and zinc are generally more capable.

Know your product and your materials: As a sales engineer for a die casting company it is imperative that we understand all the advantages of our processes and materials.

Go create a market: One of my former mentors would visit assembly plants and pick out machined, stamped and welded parts that he felt could be produced more economically in die casting. Those ideas resulted in a product line of automotive power train castings that kept dozens of people employed for at least 20 years. I would challenge our sales departments to go hunting. Look for the product that needs to be a die casting but isn't currently and create it.



Who's Dr. Die Cast?

Robert P. McClintic
Die Casting Consultant

Bob McClintic & Associates
4411 W. Grand Blvd. NW
Walker, MI 49534

rmcclintic@ameritech.net
www.drdiecast.com
616.292.0454