



DIE CASTING:

What do I need to have a part made?

Six Steps to Determine the Optimal Material and Process

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The most important part of the die casting process is determining early on what are the best materials and processes to employ. There are six key steps one should take in order to make this assessment.

1. DEFINE YOUR OBJECTIVES.

Think about what you need your product to perform, and be concise. The more details provided the better. Consider what areas you're looking to improve on as well, including reducing tooling needs, lowering material costs, etc.

2. REVIEW PRODUCT LIMITATIONS.

Think about the environment in which your product will reside and operate. Consider what external or process-driven actions might corrode or wear down your die casting. In addition, think carefully about the economics of die casting and whether alternative processes might be better.

3. DEVELOP A PRELIMINARY DESIGN EMPLOYING PRODUCT LIMITATIONS.

Follow all guidelines related to structural criteria, bearing applications, fastening and joining, finish machining,

and surface treatment related to the environment in which your product will be employed. Ensure each of those criteria are thoughtfully assessed when developing an initial design. Try to get a good understanding of things that are critical to the function of your part and those things that can be changed to reduce costs and make your part easier to produce.

4. WORK WITH A DIE CASTER EARLY ON

The die caster should already be involved with your project by the time the preliminary design has begun. Sometimes, it is necessary to involve the die caster even earlier.

5. VERIFY THE DESIGN

At this stage, it may be helpful to verify the design through finite element analysis (FEA) or by creating a prototype and testing it. The designer should review all relevant prototyping strategies to define the process most applicable to the given project. This stage also helps clarify properties that are and are not considered during the prototyping process.

6. TEST

The product development process is only complete once production samples have been thoroughly evaluated and tested. All properties employed should be analyzed to determine which ones were and were not adequately reviewed.

Following these six steps will allow you to differentiate what materials and design processes best suit your application. A more successful design can be constructed by thoroughly assessing what you need your product to do and what external/environmental factors will affect it. Working with a die caster early on to develop the preliminary design will help you move forward with the die casting process having full confidence in your end product.