



ZCast™ Direct Metal Casting Frequently Asked Questions

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What is the ZCast process?

The ZCast process involves directly casting metals in molds printed on Z Corporation's line of 3D Printers. We are offering the ability to directly print the mold cavity or mold inserts. Traditionally, these molds need to be created by first producing a pattern (or pattern set) which would then be used to create the molds. In the case of sand casting, a set of patterns is used to create the impressions in the sand. In the case of investment casting, wax patterns are needed to then create a ceramic mold. With the ZCast process, we are offering the option to skip the pattern step.

What are the advantages of the ZCast process?

The production of prototype castings using conventional methods often can take several weeks and be prohibitively expensive. These constraints often limit the number or preclude the production of metal prototypes during the development process. The ZCast process can offer the opportunity to significantly reduce the time required to obtain metal castings while also reducing the cost. Specific time and cost savings will depend on the size and complexity of the desired part, but can be substantial for many customer needs. For many parts, castings can be produced in as little as 1-2 days. The ZCast process also provides the freedom to produce more complex castings that previously were difficult to produce using conventional tooling methods. We recommend that the customer talk directly to Z Corp. and its partners to evaluate how this process may help them.

What are the new molds made of? Are they ceramic?

ZCast powder is a plaster-ceramic composite suitable for casting low temperature metals.

What metals can be cast?

ZCast 500 is a powder of set that allows casting of aluminum and other lower temperature metals like zinc and magnesium. Longer term, the goal will be to allow printing with materials that more closely mimic the properties of foundry sand and thus allow casting in ferrous metals.

Will this capability be available on all Z Corp. machines?

The material is available for all of Z Corporation's current systems, the ZPrinter 301, Z406 and Z810.

Will the printers need to be modified to work for this application?




The Z810 Printer requires an upgraded material feeder that has been designed for ZCast powder. Z406 printers would need to have a field upgrade performed by a trained technician in order to work most effectively with ZCast powders. The ZPrinter 310 can be used unmodified. Consult your Z Corporation sales representative for details on upgrade pricing.

What is the tolerance and surface finish that can be achieved with the ZCast process?

Customer parts produced have yield results that mimic traditional sand casting finishes and tolerances.

Can I machine the castings produced?

Yes. The cast metal part will have similar metallurgical characteristics as metal parts made using conventional casting methods.

Part	Mold Creation using the ZCast process	Mold Creation using traditional processes
<p>Valve Body</p>  <p>Dim: 8.3 x 6 x 3 inches</p>	<p><u>ZCast Mold Print Time</u></p> <p>Time: 3 hours 58 minutes</p> <p>Cost: \$400</p>	<p><u>Tool production</u></p> <p>Time: 3 weeks</p> <p>Cost: \$12,700</p>
<p>Worm Gear</p>  <p>Dim: 5.8 x 4.8 x 4.5 inches</p>	<p><u>ZCast Mold Print Time</u></p> <p>Time: 6 hours 30 minutes</p> <p>Cost: \$380</p>	<p><u>Tool production</u></p> <p>Time: 3 weeks</p> <p>Cost: \$3600</p>
<p>Small Manifold</p>  <p>Dim: 7.1 x 4.4 x 2.5 inches</p>	<p><u>ZCast Mold Print Time</u></p> <p>Time: 3 hours 32 minutes</p> <p>Cost: \$375</p>	<p><u>Tool production</u></p> <p>Time: 3 weeks</p> <p>Cost: \$3200</p>

Estimates of traditional process provided by Griffin Industries. Cost and turnaround reflect those provided by a typical third party tooling shop.