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SIEMENS

How do we turn what customers expect into innovations that do more than they imagined?



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Beyond Plastics: The Latest in RP&M Material Options

Current and upcoming material options push the envelope with flame retardancy, high temperature tolerance, and flexibility.

by Susan Smith | Published February 2, 2009



Z Corporation printers have full, 24-bit color capabilities using colored binder materials so they can produce millions of distinct colors. In addition, the company's introduction of HD3DP (high-definition 3D printing) capabilities makes it possible for users to produce models with complex geometries and small, detailed features.

Z Corporation

Currently Z Corporation provides the only color 3D printers produced for the manufacturing, GIS, and AEC markets. From Z Corporation comes a variety of powder-based filtration systems for different manufacturing needs. Their 3D printers operate like 2D desktop inkjet printers, with multiple print-heads to support full-color printing. Parts can be printed at the rate of 25mm (1 in.) vertical per hour.

Z Corporation printers have full, 24-bit color capabilities using colored binder materials (cyan, magenta, and yellow, just like a 2D printer), which allow them to produce millions of distinct colors. Users can also add annotation, engineering labels, and texture maps. In addition, the company's

introduction of HD3DP (high-definition 3D printing) capabilities makes it possible for users to produce models with complex geometries and small, detailed features.

High-performance composites for printing high-definition parts include investment casting material for parts that can be dipped in wax to produce investment casting patterns, and direct casting material for creating sand-casting molds for non-ferrous metals. Postprocessing such as sanding, drilling, painting, and electroplating can be added to Z Corporation models.

High-performance composites include Zp 131, a multipurpose material system that delivers strong parts, excellent resolution, and great color accuracy. It is perfect for fit and functional testing.

Zp 140 is a composite material that introduces an easy, safe, and green postprocessing option

for finishing monochrome 3D printed models — just a quick mist with tap water.

This pure water misting finishes monochrome parts to their finished strength with no additional process, is virtually cost free, and also provides bright whites said to be 180 percent whiter than before processing.

Casting Materials

For direct metal casting, Z Corporation's ZCast 501 Direct Metal Casting process makes it possible to produce cast metal parts from a CAD file by printing molds and cores directly from digital data. The process involves metal poured directly into the 3D printed molds. The direct casting material, a combination of foundry sand, plaster, and other additives together create strong molds with good surface finish, designed to withstand the heat involved in casting sand-casting molds for non-ferrous metals.

For investment casting, Zp 14 Investment Casting Material can fabricate parts that can be dipped in wax to produce investment casting patterns. Consisting of a mix of cellulose, specialty fibers, and other additives, this material is good for accuracy in parts, at the same time it maximizes the absorption of wax and minimizes residue during the burn-out process.

Elastomeric material consists of a mixture of cellulose, specialty fibers, and other additives combined for an accurate part that can absorb the elastomer, thereby giving the part its rubber-like qualities.

Finished Z Corporation parts cost \$ 10/cc in materials. According to company literature, a handheld part can be produced for about \$10 in material costs. Unusual in the business is that Z Corporation 3D printers recycle all unused material, which is an added benefit to the customer, as the customer only pays for the material actually used to produce a part.



Photo of an architect's model created by Ogle Models, a rapid manufacturing and

7. ProENGINEER Wildfire 4.0 Simplifies the Design Process
8. Altair's solidThinking Rolls Out V7.6 for 3D Design
9. A Clone's Made Better
10. HP z400: Another Wizard

