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CANON COMMUNICATIONS LLC**Material Thoughts**

November 1, 2005

[Print this article](#)**Resins/compounds****Tempering compounds strengthens prototypes**

A newly patented tempering process promises the strongest rapid prototypes (RP) in the industry. Available in three systems, RP Tempering, Proto-Plasma Rx, and Hybrid-Temp Rx (which combines the first two), the technology uses software to integrate spherical voids within RP parts, which are then filled by a patented RP Tempering compound. Filling the spheres, the compound undergoes a chemical reaction, which the technology's creator describes as being on a nanofusion scale. Under this process, nanostrands, or branches, link out, strengthening the part to a level where the creator says screw bosses on a RP part can last 100 repetitions, ribs are strengthened, snaps and latches can last 25 repetitions, and large RP parts without packaging meet UPS and FedEx drop-test specifications 93% of the time. In addition, impact strength is reportedly increased 13 times, torque goes up 300%, and flex modulus is controlled.

Proto-Plasma Rx uses a secondary chemical compound to coat the interior and exterior of the RP part. The compound is applied in a spray or film format, drying in minutes and leaving a layer thickness of .003 to .010 inch. The film, which is applied via a vacuum process, is said to feel and react like a synthetic latex and is available in clear, blue, red, black, yellow, or white coloring. This process is said to strengthen screw bosses for 100 repetitions and snap-and-latch features for 50 repetitions. RP parts that apply Proto-Plasma Rx can meet UPS and FedEx drop tests without packaging 57% of the time.

Hybrid-Temp Rx, which combines the first two processes, creates RP parts with screw bosses that have a life cycle of 200 repetitions, snaps and latches that can be used 100 times, and they meet UPS and FedEx drop-test requirements 99% of the time.

Manufacturing by Design, which created the technology, will offer it through licensed service bureaus. The company integrates the spherical voids into the design within an hour, and then the part can be prototyped by anyone. Following fabrication, RP parts can be sent to Manufacturing by Design, which applies the compound, and after 2 hours of drying, can ship back a finished part the same day. Manufacturing by Design Inc., Indianapolis, IN, USA; +1 317-507-9030; [www.rptempering.com](http://www.rptempering.com)

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