

SLA Parts Can Have 2,000 Injection-Molding-Like Textures Through A New Patent-Pending Process

Fredericksburg, VA and Akron, OH (August 28, 2000) - When Bruce E. LeMaster, owner and President of Applied Rapid Technologies (www.artcorp.com), needed to create prototype aftermarket rearview mirror assemblies with advanced electronic capabilities, he knew that DSM Somos® 9120 would provide the desired properties for his stereolithography (SLA) patterns.

“Our customers like the new DSM Somos® 9100 series of resins because we can create a ProtoFunctional™ part that can be tested before molding and we don’t have to worry about breakage,” said LeMaster. “Somos® 9100 is a stereolithography material with very good polypropylene-like properties resulting in a prototype that mimics the look and feel of a production part.” However, a special texturing design requirement from the mirror customer - different from the standard gloss, matte or orange peel options that are typically applied by airbrush - would prove to be a major test for the Somos® resins he uses.

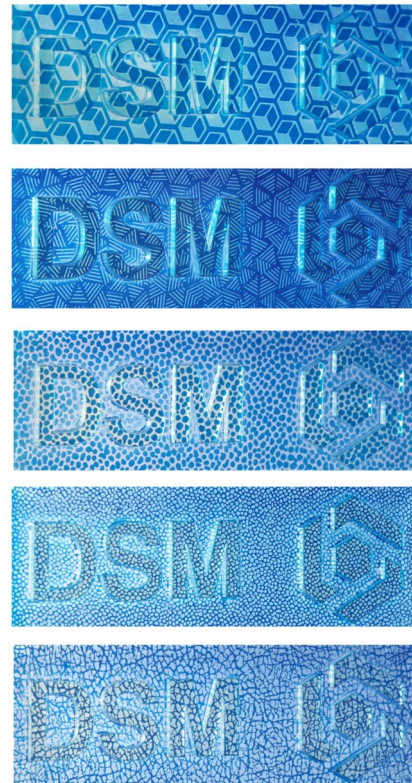
Whereas LeMaster and his client saw DSM Somos® 9120’s flexibility as a benefit, Lee Eisinger, President of Akron Metal Etching Company (www.textureame.com) and the inventor of a patent-pending SLA texturing process, Prototex™, saw it as a potential problem. “With all the advantages 9100 has for the prototype, there were possible direct disadvantages because the flexibility factor might have caused the part to reject the texture,” he said. However, Eisinger was able to successfully apply the requested Akron Metal Etching E204 pattern with a depth of 0.0015 to the three-part mirror assembly (rear, middle and bezel).

“Once Lee finished and the parts were returned, we made silicone rubber tooling and cast several polyurethane prototypes-which have an appearance (texture) just like injection molded parts,” said LeMaster.

With Akron Metal Etching’s breakthrough process, the number of SLA texture pattern options has grown from a basic three patterns to over 2,000 intricate and highly detailed designs, including text and logos. Akron Metal Etching’s texturing process involves applying a unique blue photopolymer film onto the surface of the SLA part in a layer thickness that varies from .0005 to .012 inches.

Once the pieces are dried, the texture is then applied through a number of methods, depending on the selected grain, configuration and thickness required. Further blending of seams and splices for uniformity and total coverage to deter any pattern anomaly is then completed. After they’ve been covered, the parts are exposed to UV light curing cycles. The film is then removed and the part is placed in a chemical bath, which etches away any unexposed polymer. The texture is actually built up in relief.

“Paramount to applying a texture,” Eisinger explained, “is knowing the actual pattern and depth desired before starting and then determining if the pattern will stick and stay on the surface.” He noted that this is a non-invasive process and the pattern can be removed during the experimentation process without destroying the parts.



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LeMaster and Eisinger have also recently collaborated on other texturing projects including an aftermarket cellular phone prototype made from DSM Somos® 7120.

“When you can present your ideas in the form of a model that appears to have just come off the production line, it shows your customers that you have a clear understanding of where the project is going and how to get there,” LeMaster said. “When our customers need their parts to look and act like production parts, we start with DSM Somos® resins. We switched to using DSM Somos® resins exclusively years ago for their faster build times, but also for the company’s customer service and engineering assistance. Now, with Somos resins, in conjunction with the Prototex™ proprietary method, we can also present our customers with a finished surface - complete with textures, grains or patterns-without having to build injection mold tooling.”

DSM Somos® resins range from the industry’s first flexible resins to the latest generation of heat-resistant, humidity-tolerant, high-accuracy epoxy resins suitable for investment casting and direct tooling applications.

DSM Somos® is part of DSM, a highly integrated group of companies with worldwide interests in life-science products, performance materials and chemicals. DSM recorded sales of EUR 6.3 billion last year and employs a total workforce of some 22,000, distributed in more than 200 operations throughout the world.

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