

Nanotechnology breakthrough for Rapid Tooling

NanoTool™ from DSM Somos® gives the high precision physical properties and surface qualities required for a wide range of Rapid Tooling and Rapid Prototyping applications generating significant savings in both lead times and costs.

Working together with the molding company, Pichot, leading French Service Bureau, Axis, has used NanoTool™ to make production tools for the injection molding of pill dispensers for the medical industry. Conventional metal tools would have taken 4-6 weeks to produce but by using stereolithography (SL), the complete process from CAD drawing to fitted injection molds took just eight working days. As a result, costs and time to market were substantially reduced. Axis also believes that tooling produced on SL systems offers a number of key technical advantages, as Technical Manager Ludovic Martin explains: "SL offers more opportunities than conventional routes to build complex geometries and tight tolerances. In the case of rapid tooling, this is significant for the design of the part as well as for the technical aspects of the mold. For example, with SL we can really optimise the design of the cooling channels allowing them, if necessary, to follow the contours of the part. This helps to optimise quality and productivity."

Over 1000 parts in both ABS and POM (Polyoxymethylene) have so far been produced and the mold is still working perfectly. Ludovic Martin considers SL rapid tooling with NanoTool™ to be the ideal system approach: "especially for applications where low series, small parts and precise tolerances are required."

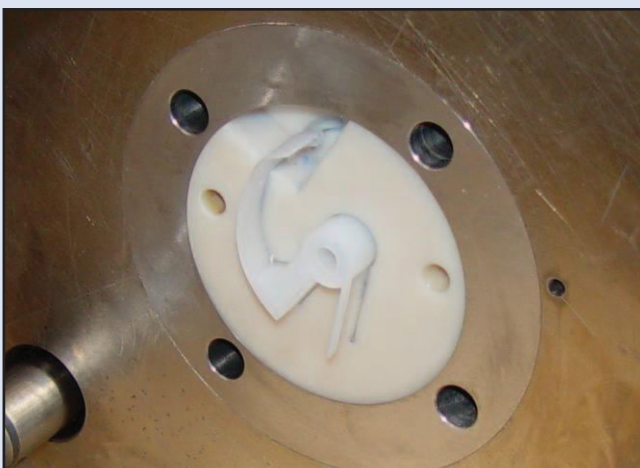
For Axis, the pill dispenser project with Pichot represented a milestone in their development of rapid tooling

expertise. Based on the success of this project Axis is already expanding the implementation of this new technology.

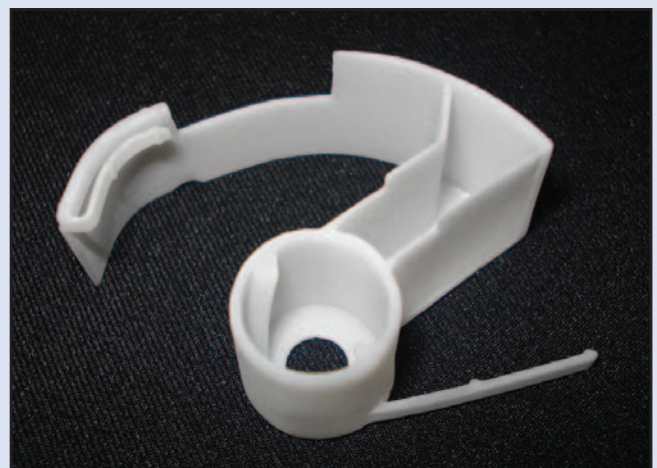
NanoTool™ provides perfect base for high quality metal coating of lighting systems

Axis also uses NanoTool™ for Rapid Prototyping applications. "NanoTool™ is the best material for higher temperature prototypes such as automotive lamp assemblies including a base for metal coating - a process developed together with Thierry Fleurence, Prototype Manager at Valeo Lighting Systems, Signal Lamp Europe Division in Sens," says Ludovic Martin. "The surface quality of the NanoTool™ parts we produce on our SLA 250 is so good that there are absolutely no visible build lines. For any one who knows RP processes, this is truly amazing. We also have SLS (Selective Laser Sintering) processes in-house but prefer NanoTool™ for complex shapes, particularly where accuracy, detail and surface quality are critical."

Axis keeps a wide range of Somos materials in-house. As well as NanoTool™ they also use the new high impact material DMX-SL™100. With these new materials Axis is able to offer a full service from design concept to finished part, selecting from a palette of the most advanced SL polymers.



NanoTool mould and moulding



Moulded pill dispenser



Prototype lamp in NanoTool™ before metal coating

About NanoTool™

NanoTool™ produces strong, stiff, high temperature resistant composite parts on conventional stereolithography machines. This third generation of Somos® ProtoComposite materials is heavily filled with non-crystalline nanoparticles allowing for faster processing. It exhibits superior sidewall quality, along with excellent detail resolution when compared to other composite stereolithography materials.

The smooth surface quality and high initial modulus of NanoTool™ make it an excellent resin for metal plating, a growing application which saves time and money as an alternative to fully metal prototypes. It's also ideal for creating strong, stiff parts that need to resist high temperatures, including wind tunnel models for aerospace and automotive applications. A third major application area is rapid tooling for injection molding.

About Axis

Based in Limoges, France, Axis is a young, family owned service bureau offering Rapid Prototyping, Rapid Tooling and Rapid Manufacturing services to its clients. The company was formed in 1997 and, two years later, moved into a custom built development and production facility with a workforce now totalling 18 people. Axis can produce SL prototypes up to 500mm cubed and offer a turnaround period of two to five working days. As well as Stereolithography, other services include Selective Laser Sintering, Vacuum Casting, FDM Deposit Modelling, Resin Injection Molding, milling and painting.

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Prototype lamp after metal coating

About DSM Somos®

DSM Somos (www.dsmsomos.com) is one of the world's leading material suppliers to the rapid prototyping industry, providing stereolithography liquids used for the creation of three-dimensional models and prototypes directly from digital data. Somos' patented ProtoFunctional® materials are used by a variety of industries, including automotive, aerospace, medical and telecommunications. Somos' corporate office is located at: 1122 St. Charles Street, Elgin, IL 60120 Tel. +1-847-697-0400, Americas@dsmsomos.info. For more information on DSM Somos® in Europe: Tel. +49-172-244-0180, Europe@dsmsomos.info

DSM Somos is an unincorporated subsidiary of DSM Desotech—a world leader in the development of UV-curable materials—and a member of the global DSM family. More information about these companies can be found at www.dsmdesotech.com and www.dsm.com.

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