




DSM Somos[®]

The Part We Play

November, 2007

*Expanding the world of **clear,**
colorless prototypes...*

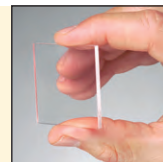


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Contest 2008

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Unlimited. **DSM**

DSM Somos® Introduces WaterShed® XC

Clear, colorless stereolithography resins are growing in popularity, not only because they produce parts that resemble engineered plastics when polished, but also because they offer a high degree of functionality. These attractive general purpose materials not only make a great choice for lens and packaging applications, but also as master patterns for silicone molds, form & fit models, functional models, investment casting patterns, and more.

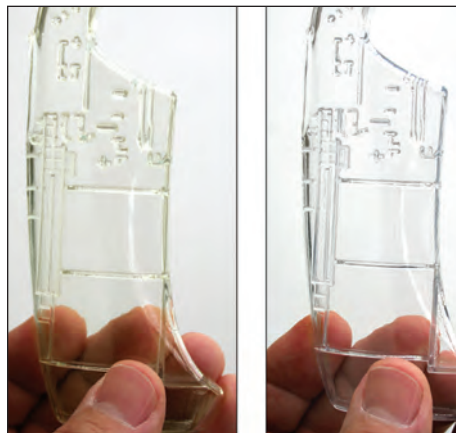
Building on its patented clear resin technology, DSM Somos has recently introduced two exciting new clear SL resins to its product lineup: WaterShed® XC—a near colorless version of the best-selling ABS-like WaterShed® 11120 material, and WaterClear® Ultra—now the clearest SL resin available on the market today.

WaterShed® XC 11122

“WaterShed XC delivers the exceptional functionality and versatility of the original WaterShed 11120, but produces parts that look more like true, clear engineered plastic,” says DSM Somos Product Manager Brian Bauman.

Rapid prototyping service bureaus agree. “The original WaterShed performs like ABS but looks more like glass with a slight green tint,” says Mike Primavera, President of New York based Dynacept (www.dynacept.com). “WaterShed XC maintains all the great performance properties, but without the color. This makes it highly suited for parts such as lenses or clear covers for automotive, medical and consumer product applications. We see it as a huge improvement.”

Jason Morgan of Texas based Harvest Technologies (www.harvest-tech.com) says, “WaterShed XC offers a substantial improvement over WaterShed 11120 in terms of aesthetics. Without any degradation of the mechanical properties, you lose the green hue and gain the ability to produce practically crystal-clear parts. Being able to produce functional ABS-like SL parts with that level of optical clarity is a significant advancement.”



WaterShed® 11120 (left) and WaterShed®XC 11122
Photo courtesy of Dynacept

WaterClear® Ultra 10122

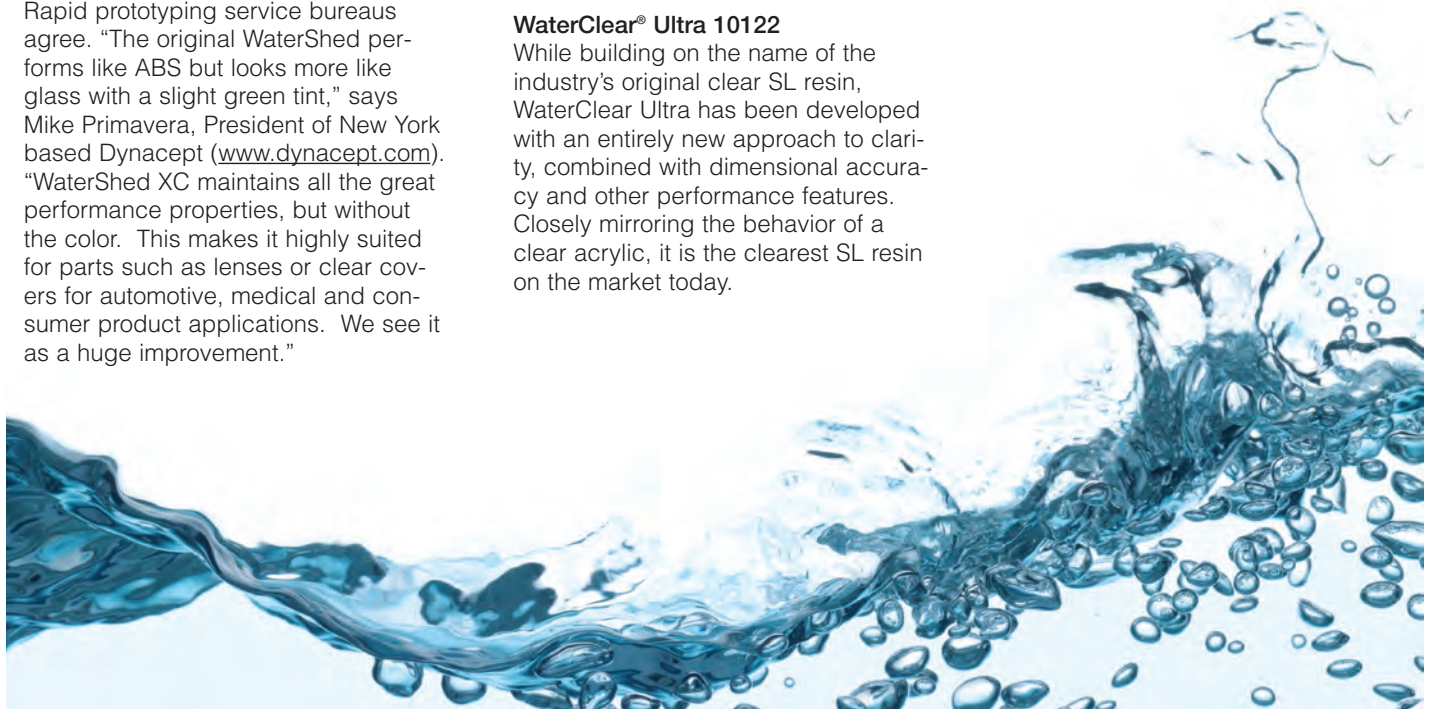
While building on the name of the industry's original clear SL resin, WaterClear Ultra has been developed with an entirely new approach to clarity, combined with dimensional accuracy and other performance features. Closely mirroring the behavior of a clear acrylic, it is the clearest SL resin on the market today.

Shawn Zindroski, President of rapid prototyping service bureau Morpheus Prototypes LLC (www.morpheusrp.com) states, “the clarity and sidewall quality of WaterClear Ultra is phenomenal. In the past, headlight inner lenses needed to be made out of milled acrylic, but with the extreme transparency of WaterClear Ultra we can now make them via the stereolithography process. This reduces turnaround time for my clients and opens the door for more clear part applications.”

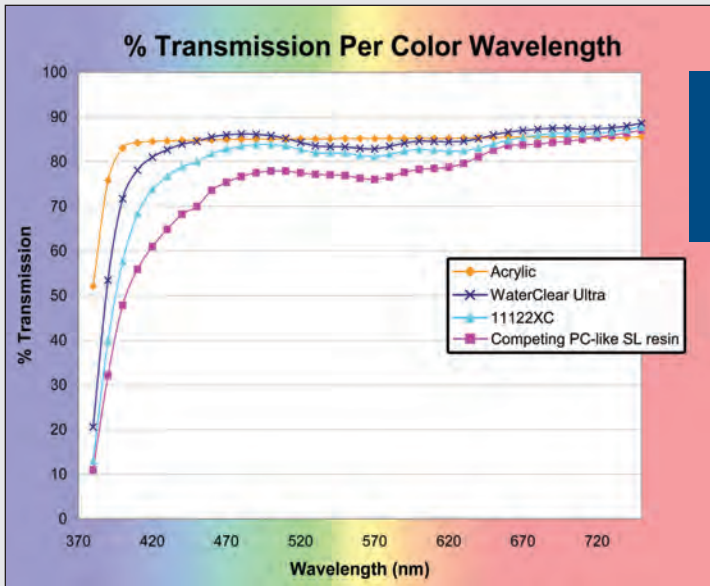
Martin Columbo, Rapid Prototyping Manager of Accelerated Technologies Inc. (www.atirapid.com) states, “WaterClear Ultra parts are so clear, they can be used right off the machine in many cases— saving finishing time and cost for my customers.”

Making a Clear Choice

Interested in choosing a clear, colorless resin for your next project? Keep in mind that other performance attributes beyond just clarity are important considerations. Visit www.dsmsomos.com today for more information on how to choose the best clear resin for your application.



11122 & WaterClear® Ultra 10122



So, how do you measure “colorless”?

To quantify the lack of color in WaterClear® Ultra and WaterShed® XC, a colorimeter was used to measure the amount of color and light able to pass through these materials. Percent light transmission values were then compared with other plastic samples, including WaterShed 11120, a competitive polycarbonate-like SL resin, and acrylic.

“In evaluating transmission data, the most important color values to consider are a* and b*, which measure the degree of either red-green or blue-yellow in the material,” says DSM Somos R&D Manager Dave Szum. “The closer these values are to zero, the more colorless the plastic.”

In colorimeter testing, both acrylic and WaterClear Ultra demonstrated extremely low values in both the red-green axis and the blue-yellow axis, indicating almost unnoticeable color (see Table 1). By contrast, both the original WaterShed 11120 material and

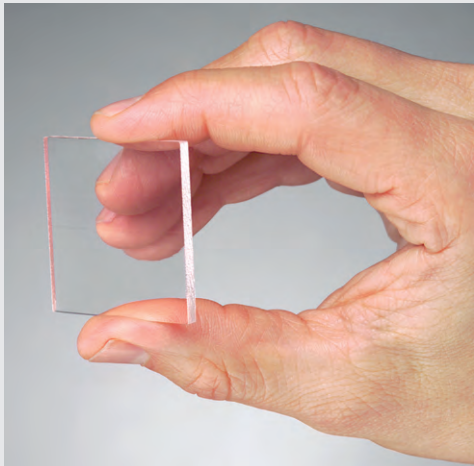
the competing polycarbonate-like SL resin demonstrated significantly higher a* and b* values, indicating color more easily noticed by the naked eye. Another way to measure the color differences in plastics, and perhaps even more significant than comparing absolute a* and b* values, is to observe Delta E* values—a single number that takes into account the overall color difference between a plastic and a standard (in this case, acrylic). The closer the DE* is to zero, the closer a plastic’s color is to the standard. In general, any DE* greater than 1 is noticeable by the human eye.

Using this valuation, WaterClear Ultra demonstrated a DE* of 0.596 (colorless) and WaterShed XC a DE* of 2.37 (near colorless), indicating that both resins are very similar to acrylic, with WaterClear Ultra being the most so. By contrast, the original WaterShed 11120 and the competing polycarbonate-like resin demonstrated much higher DE* values (7.16 and 6.51 respectively), indicating significantly larger color differences than clear, colorless acrylic.

To learn more about color testing in plastic visit: www.dsmsomos.com.

Table 1. Colorimeter transmission data for WaterShed® XC and WaterClear® Ultra, as compared to other plastic samples. At right: WaterClear Ultra sample.

	L* (lightness) axis 0 is black and 100 is white	a* (red-green) axis + values are red, (-) values are green and 0 is neutral	b* (blue-yellow) axis + values are yellow, (-) values are blue and 0 is neutral	DE*
Acrylic	93.9	-0.029	0.247	0
WaterClear Ultra	93.5	-0.124	-0.141	0.596
WaterShed XC	92.7	-1.15	1.92	2.37
Polycarbonate	91.0	-2.05	-0.511	3.63
WaterShed 11120	93.0	-2.26	6.99	7.16
PC-like SL resin	90.4	-1.62	5.47	6.51



The X-Factor Challenge: Somos® DMX-SL™ 100 Design Contest 2008

We're looking for your best designs using DMX-SL 100.

DMX-SL features a combination of stiffness and toughness previously unknown in stereolithography. Think you've got a design tough enough to be our winner?

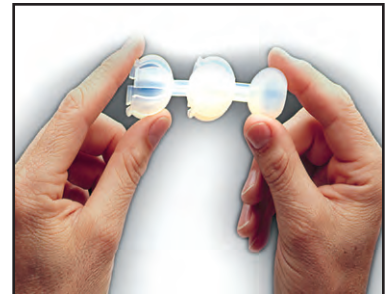
A grand prize will be awarded for each of the following categories:\

- Replacement of cast urethane or Laser Sintering part
- Creative use of DMX-SL while highlighting its durability.

Grand prizes include a choice of four items, including airfare and three nights for one at either the 2008 3DSUG Show or 2008 Rapid Show, a 32" LCD HD television, or a Garmin navigation system.



To enter (or for more information): visit www.dsmsomos.com and click on the "design contest" link to upload your STL files **by December 15, 2007**.



Kim Axiotis
Editor

The Part We Play is published by DSM Somos as an information resource for the rapid prototyping industry. Reader inquiries and suggestions for content are welcomed and should be directed to:

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