

## DSM Somos® WaterClear® Ultra 10122 Optically Clear, Colorless, Rigid, Stereolithography Resin

Category : Polymer , Rapid Prototyping Polymer

### Material Notes:

Description DSM Somos® WaterClear Ultra 10122 is a next generation optically clear resin with ABS like properties and good temperature resistance. It produces colorless, functional, accurate parts that simulate acrylic in appearance. Based on the Oxetane Advantage™, the parts also have improved water resistance over the original WaterClear 10120 resin. WaterClear Ultra is a fast, low viscosity, general-purpose resin. Application Ideal for applications requiring optical clarity such as: Automotive lenses Bottles Fluid flow analysis Packaging prototypes Light pipes Information Provided by DSM Desotech Inc.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_DSM-Somos-WaterClear-Ultra-10122-Optically-Clear-Colorless-Rigid-Stereolithography-Resin.php](http://www.lookpolymers.com/polymer_DSM-Somos-WaterClear-Ultra-10122-Optically-Clear-Colorless-Rigid-Stereolithography-Resin.php)

| Physical Properties | Metric               | English                   | Comments     |
|---------------------|----------------------|---------------------------|--------------|
| Density             | 1.13 g/cc            | 0.0408 lb/in <sup>3</sup> |              |
|                     | @Temperature 25.0 °C | @Temperature 77.0 °F      |              |
| Water Absorption    | 1.1 %                | 1.1 %                     | ASTM D570-98 |
| Viscosity           | 165 cP               | 165 cP                    |              |
|                     | @Temperature 30.0 °C | @Temperature 86.0 °F      |              |

| Mechanical Properties   | Metric             | English                | Comments   |
|-------------------------|--------------------|------------------------|------------|
| Hardness, Shore D       | 86 - 87            | 86 - 87                | ASTM D2240 |
| Tensile Strength, Yield | 55.0 - 56.0 MPa    | 7980 - 8120 psi        | ASTM D638M |
| Elongation at Break     | 6.0 - 9.0 %        | 6.0 - 9.0 %            | ASTM D638M |
| Elongation at Yield     | 4.0 %              | 4.0 %                  | ASTM D638M |
| Tensile Modulus         | 2.86 - 2.90 GPa    | 415 - 421 ksi          | ASTM D638M |
| Flexural Strength       | 82.0 - 85.0 MPa    | 11900 - 12300 psi      | ASTM D790M |
| Flexural Modulus        | 2.41 - 2.57 GPa    | 350 - 373 ksi          | ASTM D790M |
| Poissons Ratio          | 0.40 - 0.42        | 0.40 - 0.42            | ASTM D638M |
| Izod Impact, Notched    | 0.240 - 0.260 J/cm | 0.450 - 0.487 ft-lb/in | ASTM D256A |

| Thermal Properties | Metric               | English               | Comments     |
|--------------------|----------------------|-----------------------|--------------|
| CTE, linear        | 63.6 - 66.8 µm/m-°C  | 35.3 - 37.1 µin/in-°F |              |
|                    | @Temperature -40.0 - | @Temperature -40.0 -  | ASTM E831-00 |

| Thermal Properties                          | 0.000 °C<br>Metric           | 32.0 °F<br>English         | Comments                        |
|---|------------------------------|----------------------------|---------------------------------|
|   | 87.8 - 93.0 µm/m-°C          | 48.8 - 51.7 µin/in-°F      |                                 |
|   | @Temperature 0.000 - 50.0 °C | @Temperature 32.0 - 122 °F | ASTM E831-00                    |
|   | 149.9 - 167.1 µm/m-°C        | 83.28 - 92.83 µin/in-°F    |                                 |
|   | @Temperature 100 - 150 °C    | @Temperature 212 - 302 °F  | ASTM E831-00                    |
|   | 164.3 - 171.9 µm/m-°C        | 91.28 - 95.50 µin/in-°F    |                                 |
|   | @Temperature 50.0 - 100 °C   | @Temperature 122 - 212 °F  | ASTM E831-00                    |
| Deflection Temperature at 0.46 MPa (66 psi) | 46.0 - 47.0 °C               | 115 - 117 °F               | UV Postcure; ASTM D648-98c      |
|   | 59.0 - 61.0 °C               | 138 - 142 °F               | Thermal Postcure; ASTM D648-98c |
| Deflection Temperature at 1.8 MPa (264 psi) | 42.0 - 43.0 °C               | 108 - 109 °F               | UV Postcure; ASTM D648-98c      |
|   | 49.0 - 50.0 °C               | 120 - 122 °F               | Thermal Postcure; ASTM D648-98c |
| Glass Transition Temp, Tg                   | 42.0 - 46.0 °C               | 108 - 115 °F               | ASTM E1545-00                   |

| Optical Properties    | Metric | English | Comments                        |
|-----------------------|--------|---------|---------------------------------|
| Refractive Index      | 1.515  | 1.515   | ASTM D542                       |
| Transmission, Visible | 90 %   | 90 %    | clear; thickness not quantified |

| Electrical Properties | Metric                | English               | Comments      |
|-----------------------|-----------------------|-----------------------|---------------|
| Dielectric Constant   | 3.0 - 3.2             | 3.0 - 3.2             | ASTM D150-98  |
|                       | @Frequency 60.0 Hz    | @Frequency 60.0 Hz    |               |
|                       | 3.0 - 3.2             | 3.0 - 3.2             | ASTM D150-98  |
|                       | @Frequency 1.00e+6 Hz | @Frequency 1.00e+6 Hz |               |
|                       | 3.3 - 3.6             | 3.3 - 3.6             | ASTM D150-98  |
|                       | @Frequency 1000 Hz    | @Frequency 1000 Hz    |               |
| Dielectric Strength   | 14.5 - 15.5 kV/mm     | 368 - 394 kV/in       | ASTM D149-97a |

| Descriptive Properties | Value           | Comments                            |
|------------------------|-----------------|-------------------------------------|
| Appearance             | Optically Clear |                                     |
| Dp (mm)                | 0.16            | Slope of cure-depth vs. ln(E) curve |

| Descriptive Properties | Value | Comments  |
|------------------------|-------|---|
| Ec (mJ/cm2)            | 10    | that gives 0.254mm thickness<br>Critical exposure |

## Contact Songhan Plastic Technology Co.,Ltd.

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