

## DSM Somos® ProtoTherm™ 12120 Water-resistant resin for stereolithography, UV Postcure

Category : Polymer , Rapid Prototyping Polymer

### Material Notes:

Description DSM Somos® 12120 is a liquid photopolymer that produces strong, high temperature tolerant, water-resistant parts. Parts created with Somos® 12120 have a cherry-red appearance which turns to an orange-red color after thermal treatment. Application Somos® 12120 differentiates itself from other high temperature stereolithography materials by increasing in tensile strength and maintaining decent elongation at break after thermal treatment. This makes the material ideal for many applications in the automotive and aerospace markets where strong parts that can resist high temperatures are needed. Information Provided by DSM Desotech Inc.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_DSM-Somos-ProtoTherm-12120-Water-resistant-resin-for-stereolithography-UV-Postcure.php](http://www.lookpolymers.com/polymer_DSM-Somos-ProtoTherm-12120-Water-resistant-resin-for-stereolithography-UV-Postcure.php)

Physical Properties	Metric	English	Comments
Density	1.15 g/cc	0.0415 lb/in <sup>3</sup>	
	@Temperature 25.0 °C	@Temperature 77.0 °F	
Water Absorption	0.37 %	0.37 %	ASTM D570-98
Viscosity	550 cP	550 cP	
	@Temperature 30.0 °C	@Temperature 86.0 °F	

Mechanical Properties	Metric	English	Comments
Hardness, Shore D	85.3	85.3	ASTM D2240
Tensile Strength, Yield	70.2 MPa	10200 psi	ASTM D638M
Elongation at Break	4.0 %	4.0 %	ASTM D638M
Modulus of Elasticity	3.52 GPa	511 ksi	ASTM D638M
Flexural Strength	109 MPa	15800 psi	ASTM D790M
Flexural Modulus	3.32 GPa	482 ksi	ASTM D790M

Thermal Properties	Metric	English	Comments
CTE, linear	58.1 µm/m-°C	32.3 µin/in-°F	ASTM E831-00
	@Temperature -40.0 - 0.000 °C	@Temperature -40.0 - 32.0 °F	
	80.7 µm/m-°C	44.8 µin/in-°F	ASTM E831-00
	@Temperature 0.000 - 50.0 °C	@Temperature 32.0 - 122 °F	

Thermal Properties	Metric	English	Comments
	111.4 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	61.89 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ASTM E831-00
	@Temperature 50.0 - 100 $^\circ\text{C}$	@Temperature 122 - 212 $^\circ\text{F}$	
	136.1 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	75.61 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ASTM E831-00
	@Temperature 100 - 150 $^\circ\text{C}$	@Temperature 212 - 302 $^\circ\text{F}$	
Deflection Temperature at 0.46 MPa (66 psi)	56.5 $^\circ\text{C}$	134 $^\circ\text{F}$	ASTM D648-98c
Deflection Temperature at 1.8 MPa (264 psi)	51.9 $^\circ\text{C}$	125 $^\circ\text{F}$	ASTM D648-98c
Glass Transition Temp, Tg	74.0 $^\circ\text{C}$	165 $^\circ\text{F}$	ASTM E1545-00

Electrical Properties	Metric	English	Comments
Dielectric Constant	3.81	3.81	ASTM D150-98
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	4.04	4.04	ASTM D150-98
	@Frequency 1000 Hz	@Frequency 1000 Hz	
	4.14	4.14	ASTM D150-98
	@Frequency 60.0 Hz	@Frequency 60.0 Hz	
Dielectric Strength	15.5 kV/mm	394 kV/in	ASTM D149-97a

Descriptive Properties	Value	Comments
Appearance	Liquid	
Dp (mm)	0.152	Slope of cure-depth vs. ln(E) curve
E10 (mJ/cm <sup>2</sup> )	63	Exposure that gives 0.254mm thickness
Ec (mJ/cm <sup>2</sup> )	11.8	Critical exposure

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