

Preliminary Product Data:

Somos[®] 9120 Epoxy Photopolymer

Robust, Accurate, Functional Epoxy Resin for Stereolithography

Description

DSM Somos[®] 9120 is a liquid photopolymer that produces robust, functional and accurate parts using stereolithography machines. The material offers superior chemical resistance, a wide processing latitude and excellent tolerance to a broad temperature and humidity range during and after build. Parts created from Somos[®] 9120 exhibit superior fatigue properties, strong memory retention and high quality up-facing and down-facing surfaces. Somos[®] 9120 also offers a good balance of properties between rigidity and functionality. The resulting part properties are ideal for master patterns in rubber molding applications. This material is also useful in creating parts for applications where durability and robustness are critical requirements (e.g., automobile components, electronic housings, medical products, large panels and snap-fit parts).

Application

Somos[®] 9120 Photopolymer is used in the solid imaging process to build three-dimensional parts. It is for use with layer thicknesses of approximately 0.10 mm to 0.25 mm (0.004 inch to 0.010 inch). After part formation, via UV laser exposure, rinsing with a

solvent such as tripropylene glycol monomethyl ether (TPM) or propylene carbonate followed by a rinse in 2 - propanol (isopropyl alcohol, IPA) removes the excess resin. Then the part is post-cured by UV fluorescent light.

Physical Properties - Liquid

Appearance	Transparent Amber
Viscosity	~450 cps at 30° C
Density	~1.13 g/cm ³

Optical Properties at 355 nm

Initial values for determining working curve for a solid state laser operating at 355 nm.

E_c	10.9 mJ/cm ² <i>[critical exposure]</i>
D_p	0.14 mm (0.0056 inch) <i>[slope of cure-depth vs. ln (E) curve]</i>
E_5	27 mJ/cm ² <i>[exposure that gives 0.127 mm (0.005 inch) thickness]</i>
E_{10}	65 mJ/cm ² <i>[exposure that gives 0.254 mm (0.010 inch) thickness]</i>

Physical Properties

ASTM Test	Description	Somos [®] 9120 UV	Polypropylene*
D638M	Tensile Strength at Yield	4.0 - 6.5 Ksi 28 - 45 MPa	4.5 - 5.4 Ksi 31 - 37.2 MPa
	Elongation at Yield	7.0-9.0 %	8.0 - 13.0 %
	Young's Modulus	150 - 212 Ksi 1034 - 1462 MPa	165-225 Ksi 1138-1551 MPa
D790M	Flexural Strength	5.8 - 6.5 Ksi 40 - 45 MPa	6.0 - 8.0 Ksi 41 - 55 MPa
	Flexural Modulus	130 - 203 Ksi 896 - 1399 MPa	170 - 250 Ksi 1172 - 1724 MPa
D2240	Hardness	80-82 Shore D	N/A
D256A	Izod Impact - notched	0.9 - 1.1 ft-lb/in 48 - 59 J/m	0.4 - 1.4 ft-lb/in 21 - 75 J/m
D648	Deflection Temperature	122 - 142 °F 50 - 61 °C	225 - 250 °F 107 - 121 °C

*Unfilled polypropylene (Reference: Modern Plastics Encyclopedia, 1997)

N/A: Not Available

The ProtoFunctional™ Materials Company

DSM Somos[®]



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