

Somos[®] 9110 Epoxy Photopolymer

**Robust, Accurate, Functional Epoxy Resin for Stereolithography
For He-Cd (325 nm) Laser Systems**

Description

DSM Somos[®] 9110 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[®] 9110 exhibit superior fatigue properties, strong memory retention and high quality up-facing and down-facing surfaces. Somos[®] 9110 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[®] 9110 Photopolymer is used in the solid imaging process to build three-dimensional parts.



Physical Properties – Liquid

Appearance	Transparent amber
Viscosity	~230 cps at 30°C
Density	~1.13 g/cm ³ at 25°C

Optical Properties at 325 nm

E_c	8.0 mJ/cm ² <small>[critical exposure]</small>
D_p	0.13 mm (0.0052 inch) <small>[slope of cure-depth vs. ln(E) curve]</small>
E_{10}	55 mJ/cm ² <small>[exposure that gives 0.254 mm (0.010 inch) thickness]</small>

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Physical Properties (Metric)

The numbers reported below are only approximate values. The actual values may vary with build conditions.

ASTM Test	Description	Somos® 9110 UV	Polypropylene*
D638M	Tensile Strength at Yield	31 MPa	31 - 37.2 MPa
	Elongation at Yield **	15 - 21 %	7 - 13 %
	Young's Modulus	1,590 MPa	1,138 - 1,551 MPa
D790M	Flexural Strength	44 MPa	41 - 55 MPa
	Flexural Modulus	1,450 MPa	1,172 - 1,724 MPa
D2240	Hardness (Shore D)	83	N/A
D256A	Izod Impact - notched	55 J/m	21 - 75 J/m
D648	Deflection Temperature	50 °C	107 -121 °C

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

N/A: Not Available

** The material did not exhibit an elongation at yield before break.

Physical Properties (Imperial)

The numbers reported below are only approximate values. The actual values may vary with build conditions.

ASTM Test	Description	Somos® 9110 UV	Polypropylene*
D638M	Tensile Strength at Yield	4,500 psi	4,500 - 5,400 psi
	Elongation at Yield	15 -21 %	7 - 13 %
	Young's Modulus	231,000 psi	165,000 - 225,000 psi
D790M	Flexural Strength	6,400 psi	6,000 - 8,000 psi
	Flexural Modulus	210,000 psi	170,000 - 250,000 psi
D2240	Hardness (Shore D)	83	N/A
D256A	Izod Impact - notched	1.03 ft-lb/in	0.4 - 1.4 ft-lb/in
D648	Deflection Temperature	122 °F	225 - 250 °F

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

N/A: Not Available

** The material did not exhibit an elongation at yield before break.