

# Somos® 8120 Epoxy Photopolymer

Flexible, Accurate, High-Speed, High-Impact-Strength Epoxy Resin for Stereolithography  
For Solid State (355 nm) Laser Systems

## Description

DSM Somos® 8120 is a high-speed liquid photopolymer that produces flexible, high-impact-strength, accurate parts using stereolithography machines. It has a wide processing latitude and excellent tolerance to a wide temperature and humidity range during and after build. This material is especially useful in functional applications where flexibility and impact-strength are critical requirements (e.g., plastic bottles, packaging, automobile panels, electronic enclosures, medical products, and snap-fit parts).

## Application

Somos® 8120 Photopolymer is used in the solid imaging process to build three-dimensional parts. It is for use with a layer thickness 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 monomethylether (TPM) or 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** ~600 cps at 30°C  
**Density** ~1.11 g/cm³ at 25°C

## Optical Properties at 355 nm

Initial values for determining working curve for a Solid State laser operating at 355 nm.

$E_c$  6.75 mJ/cm²  
[critical exposure]  
 $D_p$  0.155 mm (0.0061 inch)  
[slope of cure-depth vs.  $\ln(E)$  curve]  
 $E_5$  15 mJ/cm²  
[exposure that gives 0.127 mm (.005 inch) thickness]  
 $E_{10}$  35 mJ/cm²  
[exposure that gives 0.254 mm (.010 inch) thickness]

## Physical Properties

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

ASTM Test	Description	Somos® 8120 UV		Polyethylene*
D638M	Tensile Strength	3,800 psi	26 MPa	13 - 28 MPa
	Elongation at Break	27 %	27 %	100 - 965 %
	Young's Modulus	40,000 - 102,000 psi	276 - 703 MPa	262 - 517 MPa
D790M	Flexural Strength	3,800 psi	26 MPa	N/A**
	Flexural Modulus	100,000 psi	690 MPa	276 - 724 MPa
D2240	Hardness (Shore D)	76	76	44 - 50
D256A	Izod Impact - Notched	1.1 ft-lb/in	59 J/m	53 J/m - No break
D648	Deflection Temperature	129 °F	54 °C	55 - 56 °C
D1004	Graves Tear	46 lbf	205 Newton	N/A**

\*Low and medium density polyethylene linear copolymer (Reference: Modern Plastics Encyclopedia, 1998).

\*\*N/A: Not Available