

WaterShed™ 11120

**Strong, transparent, water-resistant resin for stereolithography
For Solid State (355 nm) Laser Systems**

Description

DSM Somos® 11120 is a low viscosity liquid photopolymer that produces strong, tough, water-resistant parts when exposed to light from stereolithography machines. This material offers many properties that mimic tradition engineering plastics including ABS and PBT. This makes the material ideal for many applications in the automotive, medical and consumer electronics markets.

Application

Somos® 11120 Photopolymer is used in the solid imaging process to build three-dimensional parts. It is for use with a layer thickness of approximately 0.064 mm to 0.15 mm (0.0025 inch to 0.006 inch). After part formation via UV laser exposure, rinsing with a solvent such as tripropylene glycol monomethylether (TPM), propylene carbonate, or 2-propanol (isopropyl alcohol, IPA) removes the excess resin. Parts created with Somos® 11120 have a light green tinge, similar in color to plate class. Although the parts are clear, they are not without color.

Physical Properties – Liquid

Appearance	Optically clear
Viscosity	~260 cps at 30°C
Density	~1.12 g/cm ³ at 25°C

Optical Properties at 355 nm

E _c	~11.5 mJ/cm ² <small>[critical exposure]</small>
D _p	0.16 mm (~.0065 inch) <small>[slope of cure-depth vs. ln(E) curve]</small>
E ₁₀	54 mJ/cm ² <small>[exposure that gives 0.254 mm (.010 inch) thickness]</small>

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Mechanical Properties (Metric)

ASTM Method	Description	WaterShed™ I I I 20	ABS* (transparent)	Polycarbonate* (optical grade)	Nylon 66*
D638M	Tensile Strength	47.1 MPa	45.7 MPa	62.5 MPa	63.6 MPa
	Elongation at Break	20 %	41.6 %	110 %	82.8 %
	Elongation at Yield	3.4 %	N/A	6 %	10.7 %
	Modulus of Elasticity	2,650 MPa	2,000 MPa	2,300 MPa	2,100 MPa
D790M	Flexural Strength	63.1 MPa	73.5 MPa	94.2 MPa	88.4 MPa
	Flexural Modulus	2,040 MPa	2,300 MPa	2,300 MPa	2,400 MPa
D256A	Izod Impact-Notched	0.298 J/cm	1.6 J/cm	7.1 J/cm	1.5 J/cm
D542	Index of Refraction	1.51	1.52	1.59	NA
D2240	Hardness (Shore D)	81	N/A	N/A	N/A
D1004	Graves Tear	N/A	N/A	N/A	N/A
D570-98	Water Absorption	0.34 %	0.20 – 0.45 %	0.17 %	2.3 %

* <http://www.matweb.com>

N/A: Not Available

Thermal & Electrical Properties (Metric)

ASTM Method	Description	WaterShed™ I I I 20	ABS* (transparent)	Polycarbonate* (optical grade)	Nylon 66*
E831-00	C.T.E. -40°C – 0°C	67 x10 ⁻⁶ °C ⁻¹			
	C.T.E. 0°C – 50°C	90 x10 ⁻⁶ °C ⁻¹			
	C.T.E. 50°C – 100°C	174 x10 ⁻⁶ °C ⁻¹	60 – 130 x10 ⁻⁶ °C ⁻¹ (no temp range given)	66 x10 ⁻⁶ °C ⁻¹ (no temp range given)	80 x10 ⁻⁶ °C ⁻¹ (no temp range given)
	C.T.E. 100°C – 150°C	185 x10 ⁻⁶ °C ⁻¹			
D150-98	Dielectric Constant 60Hz	N/A	3.7	3.1	
	Dielectric Constant 1KHz	N/A			
	Dielectric Constant 1MHz	N/A	3.7	3	3.5 – 3.8
D149-97a	Dielectric Strength	N/A	13.8 – 19.7 kV/mm	26.4 kV/mm	95.7 kV/mm
E1545-00	Tg	43 °C		150 °C	
D648-98c	HDT @ 0.46 MPa	49 °C	94 – 207 °C	130 °C	210 °C
	HDT @ 1.81 MPa	46 °C	86.4 – 194 °C	130 °C	80.5 °C

* <http://www.matweb.com>

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