



## Product Data Sheet

# Somos<sup>®</sup> WaterClear 10110

### Description

DSM's Somos<sup>®</sup> WaterClear 10110 is a high-speed, liquid photopolymer that produces strong, robust, and durable parts with optical clarity using stereolithography machines. This material requires a minimal post-cure by UV fluorescent light. Prolonged exposure to UV light will create a yellow tinge to the parts.

### Applications

Somos<sup>®</sup> WaterClear 10110 photopolymer is used in the solid imaging process to build three-dimensional parts. This material is especially useful in applications requiring optical clarity such as fluid flow analysis, stress analysis and light pipes. Other applications include those that require a strong and durable product without the brittleness normally associated with a rigid stereolithography resin.

#### TECHNICAL DATA - LIQUID PROPERTIES

Appearance	Optically clear, colorless
Viscosity	~130 cps @ 30°C
Density	~1.12 g/cm <sup>3</sup> @ 25°C

#### TECHNICAL DATA - OPTICAL PROPERTIES

E <sub>c</sub>	9.0 mJ/cm <sup>2</sup>	[critical exposure]
D <sub>p</sub>	5.75 mils	[slope of cure-depth vs. ln (E) curve]
E <sub>10</sub>	51 mJ/cm <sup>2</sup>	[exposure that gives 0.254 mm (.010 inch) thickness]

TECHNICAL DATA							
Mechanical Properties		Somos® WaterClear 10110 UV Postcure		ABS (Transparent)		Polybutylene (Optical Grade)	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial	Metric	Imperial
D638M	Tensile Strength at Break	43.4 MPa	6.3 ksi	45.7 MPa	6.6 ksi	62.5 MPa	9.1 ksi
D638M	Elongation at Break	37%	37%	41.6%	41.6%	110%	110%
D638M	Elongation at Yield	4.2%	4.2%	N/A	N/A	6%	6%
D638M	Modulus of Elasticity	2,040 MPa	296 ksi	2,000 MPa	290 ksi	2,300 MPa	334 ksi
D790M	Flexural Strength	57.7 MPa	8.4 ksi	73.5 MPa	10.1 ksi	94.2 MPa	13.7 ksi
D790M	Flexural Modulus	1,720 MPa	250 ksi	2,300 MPa	334 ksi	2,300 MPa	334 ksi
D256A	Izod Impact (Notched)	0.45 J/m	0.85 ft-lb/in	1.6 J/m	1.5 - 2.0 ft-lb/in	7.1 J/m	13 ft-lb/in
D542	Index of Refraction	1.51	1.51	1.52	1.52	1.59	1.59
D2240	Hardness (Shore D)	83	83	N/A	N/A	N/A	N/A
D1004-09	Graves Tear	343 kg	758 lb	N/A	N/A	N/A	N/A
D570-98	Water Absorption	0.98%	0.98%	0.20 - 0.45%	0.20 - 0.45%	0.17%	0.17%

TECHNICAL DATA							
Thermal/Electrical Properties		Somos® WaterClear 10110 UV Postcure		ABS (Transparent)		Polybutylene (Optical Grade)	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 - 0°C (-40 - 32°F)	75.9 µm/m°C	42 µin/in°F	60 - 130 µm/m°C	37 µin/in°F	66 µm/m°C	37 µin/in°F
E831-05	C.T.E. 0 - 50°C (32 - 122°F)	109.2 µm/m°C	61 µin/in°F				
E831-05	C.T.E. 50 - 100°C (122 - 212°F)	156 µm/m°C	87 µin/in°F				
E831-05	C.T.E. 100 - 150°C (212 - 302°F)	180 µm/m°C	100 µin/in°F				
D150-98	Dielectric Constant 60 Hz	3.9	3.9	3.7	3.7	3.1	3.1
D150-98	Dielectric Constant 1 KHz	3.8	3.8	N/A	N/A	N/A	N/A
D150-98	Dielectric Constant 1 MHz	3.5	3.5	3.7	3.7	3	3
D149-97A	Dielectric Strength	15.3 kV/mm	389 V/mil	13.8 - 19.7 kV/mm	350 - 500 V/mil	26.4 kV/mm	671 V/mil
E1545-00	Tg	41°C	106°F	N/A	N/A	150°C	302°F
D648	HDT @ 0.46 MPa (66 psi)	51.2°C	124°F	94 - 207°C	201 - 405°F	130°C	266°F
D648	HDT @ 1.81 MPa (264 psi)	44.9°C	113°F	86.4 - 194°C	187 - 381°F	130°C	266°F



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