

# WaterShed™ 11122XC

Durable, strong, semi-transparent, water-resistant resin for stereolithography  
For Solid State (355 nm) Laser Systems

## Description

DSM Somos® 11122XC is a low viscosity liquid photopolymer that produces strong, tough, water-resistant parts. Parts created with Somos® 11122XC have a light green tinge, similar in color to plate glass.

## Application

Somos® 11122XC offers many properties that mimic traditional engineering plastics including ABS and PBT. This makes the material ideal for many applications in the automotive, medical and consumer electronics markets and include:

- Water flow analysis
- RTV patterns
- Durable concept models
- Wind tunnel testing
- Quickcast patterns



## Physical Properties – Liquid

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

## Optical Properties at 355 nm

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

### DSM Somos®

2 Penn's Way, Suite 401  
New Castle, DE 19720, USA  
Tel: +1 302.326.8100  
Fax: +1 302.326.8121

DSM Desotech bv  
3150 AB Hoek van Holland  
The Netherlands  
Tel: +31 1743.15391  
Fax: +31 1743.15530

[www.dsmsomos.com](http://www.dsmsomos.com)

### Email:

[Americas@dsmsomos.info](mailto:Americas@dsmsomos.info)  
[Europe@dsmsomos.info](mailto:Europe@dsmsomos.info)  
[Asia@dsmsomos.info](mailto:Asia@dsmsomos.info)

# Mechanical Properties (Metric)

ASTM Method	Description	WaterShed™ 11122XC	ABS* (transparent)	Polybutylene Terephthalate*
D638M	Tensile Strength	47.1 - 53.6 MPa	45.7 MPa	55 MPa
	Elongation at Break	11 - 20 %	41.6 %	20 %
	Elongation at Yield	3.3 - 3.5 %	N/A	3.5 - 9 %
	Modulus of Elasticity	2,650 - 2880 MPa	2,000 MPa	2,700 MPa
D790M	Flexural Strength	63.1 - 74.16 MPa	73.5 MPa	80 MPa
	Flexural Modulus	2,040 - 2370 MPa	2,300 MPa	2,500 MPa
D256A	Izod Impact-Notched	0.2 - 0.3 J/cm	1.6 J/cm	1.2 J/cm
D542	Index of Refraction	1.512 - 1.515	1.52	N/A
D2240	Hardness (Shore D)	N/A	N/A	98 - 120 (Rockwell R)
D1004	Graves Tear	150,288 N/m	N/A	N/A
D570-98	Water Absorption	0.35 %	0.20 - 0.45 %	0.16 %

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

N/A: Not Available

# Thermal & Electrical Properties (Metric)

ASTM Method	Description	WaterShed™ 11122XC	ABS* (transparent)	Polybutylene Terephthalate*
E831-00	C.T.E. -40°C – 0°C	66 - 67 x 10 <sup>-6</sup> °C <sup>-1</sup>	60 - 130 x 10 <sup>-6</sup> °C <sup>-1</sup> (no temp range given)	50 - 145 x 10 <sup>-6</sup> °C <sup>-1</sup> (no temp range given)
	C.T.E. 0°C – 50°C	90 - 96 x 10 <sup>-6</sup> °C <sup>-1</sup>		
	C.T.E. 50°C – 100°C	170 - 189 x 10 <sup>-6</sup> °C <sup>-1</sup>		
	C.T.E. 100°C – 150°C	185 - 189 x 10 <sup>-6</sup> °C <sup>-1</sup>		
D150-98	Dielectric Constant 60Hz	3.9 - 4.1	3.7	2.9 - 4.0 (no frequency specified)
	Dielectric Constant 1KHz	3.7 - 3.9		
	Dielectric Constant 1MHz	3.4 - 3.5	3.7	
D149-97a	Dielectric Strength	15.4 - 16.3 kV/mm	13.8 - 19.7 kV/mm	14.7 - 30 kV/mm
E1545-00	T <sub>g</sub>	39 - 46 °C		41 °C
D648-98c	HDT @ 0.46 MPa	45.9 - 54.5 °C	94 - 207 °C	150 °C
	HDT @ 1.81 MPa	49.0 - 49.7 °C	86.4 - 194 °C	61.3 °C

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N/A: Not Available

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# Mechanical Properties (Imperial)

ASTM Method	Description	WaterShed™ 11122XC	ABS* (transparent)	Polybutylene Terephthalate*
D638M	Tensile Strength	6831 - 7774 psi	6,628 psi	7977 psi
	Elongation at Break	11 - 20 %	41.6 %	20 %
	Elongation at Yield	3.3 - 3.5 %	N/A	3.5 - 9 %
	Modulus of Elasticity	384 - 418 kpsi	290,000 psi	391,602 psi
D790M	Flexural Strength	9,152 - 10,756 psi	10,660 psi	11,603 psi
	Flexural Modulus	296 - 344 kpsi	344,000 psi	362,594 psi
D256A	Izod Impact-Notched	0.4 - 0.6 ft lb/in	1.5 - 2.0 ft lb/in	0.56 ft lb/in
D542	Index of Refraction	1.513 - 1.515	1.52	N/A
D2240	Hardness (Shore D)	N/A	N/A	98 - 120 (Rockwell R)
D1004	Graves Tear	833 - 858 lbf/in	N/A	N/A
D570-98	Water Absorption	0.35 %	0.2 - 0.45 %	0.16 %

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N/A: Not Available

# Thermal & Electrical Properties (Imperial)

ASTM Method	Description	WaterShed™ 11122XC	ABS* (transparent)	Polybutylene Terephthalate*
E831-00	C.T.E. -40°C – 0°C	66 - 67 × 10 <sup>-6</sup> °C <sup>-1</sup>	60 - 130 × 10 <sup>-6</sup> °C <sup>-1</sup> <i>(no temp range given)</i>	50 - 145 × 10 <sup>-6</sup> °C <sup>-1</sup> <i>(no temp range given)</i>
	C.T.E. 0°C – 50°C	90 - 96 × 10 <sup>-6</sup> °C <sup>-1</sup>		
	C.T.E. 50°C – 100°C	170 - 189 × 10 <sup>-6</sup> °C <sup>-1</sup>		
	C.T.E. 100°C – 150°C	185 - 189 × 10 <sup>-6</sup> °C <sup>-1</sup>		
D150-98	Dielectric Constant 60Hz	3.9 - 4.1	3.7	2.9 - 4.0 <i>(no frequency specified)</i>
	Dielectric Constant 1KHz	3.7 - 3.9		
	Dielectric Constant 1MHz	3.4 - 3.5	3.7	
D149-97a	Dielectric Strength	390 - 413 V/mil	350 - 500 V/mil	373 - 762 V/mil
E1545-00	T <sub>g</sub>	102 - 109 °F		106 °F
D648-98c	HDT @ 0.46 MPa	115 - 130 °F	201 - 405 °F	302 °F
	HDT @ 1.81 MPa	120 °F	187 - 381 °F	142.3 °F

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