

# 14120 White

**Durable, opaque, white, water-resistant resin for stereolithography  
For Solid State (355 nm) Laser Systems**

## Description

DSM Somos® 14120 is a low viscosity liquid photopolymer that produces strong, tough, water-resistant parts. Parts created with Somos® 14120 have a white, opaque appearance similar to production plastics.

## Application

Somos® 14120 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:

- Functional prototypes
- Water resistant applications
- Appearance models with minimal finishing
- Durable concept models
- High humidity environment applications
- RTV patterns



## Physical Properties – Liquid

Appearance	Opaque white
Viscosity	~240 cps at 30°C
Density	~1.10 g/cm <sup>3</sup> at 22°C

## Optical Properties at 355 nm

$E_c$	~13.0 mJ/cm <sup>2</sup> <small>[critical exposure]</small>
$D_p$	0.159 mm (~.00625 inch) <small>[slope of cure-depth vs. ln(E) curve]</small>
$E_{10}$	64 mJ/cm <sup>2</sup> <small>[exposure that gives 0.254 mm (.010 inch) thickness]</small>

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# Mechanical Properties (Metric)

ASTM Method	Description	White 14120	ABS* (transparent)	Polybutylene Terephthalate*
D638M	Tensile Strength	45.7 MPa	45.7 MPa	55 MPa
	Elongation at Break	7.9 %	41.6 %	20 %
	Elongation at Yield	3.5 %	N/A	3.5 – 9 %
	Modulus of Elasticity	2,460 MPa	2,000 MPa	2,700 MPa
	Poisson's Ratio	0.23	N/A	N/A
D790M	Flexural Strength	68.9 MPa	73.5 MPa	80 MPa
	Flexural Modulus	2,250 MPa	2,300 MPa	2,500 MPa
D256A	Izod Impact-Notched	23.5 J/m	160 J/m	120 J/m
D2240	Hardness (Shore D)	81	N/A	98 – 120 (Rockwell R)
D1004	Graves Tear	123,000 N/m	N/A	N/A
D570-98	Water Absorption	0.24 %	0.20 – 0.45 %	0.16 %

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

N/A: Not Available

# Thermal & Electrical Properties (Metric)

ASTM Method	Description	White 14120	ABS* (transparent)	Polybutylene Terephthalate*
E381-00	C.T.E. -40°C – 0°C	67 $\mu\text{m}/\text{m}\cdot\text{°C}$		
	C.T.E. 0°C – 50°C	93 $\mu\text{m}/\text{m}\cdot\text{°C}$		
	C.T.E. 50°C – 100°C	156 $\mu\text{m}/\text{m}\cdot\text{°C}$	60 – 130 $\mu\text{m}/\text{m}\cdot\text{°C}$ <i>(no temp range given)</i>	50 – 145 $\mu\text{m}/\text{m}\cdot\text{°C}$ <i>(no temp range given)</i>
	C.T.E. 100°C – 150°C	180 $\mu\text{m}/\text{m}\cdot\text{°C}$		
D150-98	Dielectric Constant 60 Hz	3.9	3.7	
	Dielectric Constant 1 KHz	3.8		2.9 – 4.0 <i>(no frequency specified)</i>
	Dielectric Constant 1 MHz	3.5	3.7	
D149-97a	Dielectric Strength	14.6	13.8 – 19.7 kV/mm	14.7 – 30 kV/mm
E1545-00	T <sub>g</sub>	44 °C		41 °C
D648-98c	HDT @ 0.46 MPa	53 °C	94 – 207 °C	150 °C
	HDT @ 1.82 MPa	48 °C	84 – 194 °C	61 °C

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

N/A: Not Available

# Mechanical Properties (Imperial)

ASTM Method	Description	White 14120	ABS* (transparent)	Polybutylene Terephthalate*
D638M	Tensile Strength	6,630 psi	6,628 psi	7,977 psi
	Elongation at Break	7.9 %	41.6 %	20 %
	Elongation at Yield	3.5 %	N/A	3.5 – 9 %
	Modulus of Elasticity	357,000 psi	290,000 psi	392,000 psi
	Poisson's Ratio	0.23	N/A	N/A
D790M	Flexural Strength	9,240 psi	10,660 psi	11,600 psi
	Flexural Modulus	310,000 psi	344,000 psi	362,594 psi
D256A	Izod Impact-Notched	0.44 ft lb/in	1.5 – 2.0 ft lb/in	0.56 ft lb/in
D2240	Hardness (Shore D)	81	N/A	98 – 120 (Rockwell R)
D1004	Graves Tear	700 lbf/in	N/A	N/A
D570-98	Water Absorption	0.24 %	0.20 – 0.45 %	0.16 %

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

N/A: Not Available

# Thermal & Electrical Properties (Imperial)

ASTM Method	Description	White 14120	ABS* (transparent)	Polybutylene Terephthalate*
E381-00	C.T.E. -40°F – 32°F	37 $\mu\text{in/in-}^\circ\text{F}$		
	C.T.E. 32°F – 122°F	52 $\mu\text{in/in-}^\circ\text{F}$		
	C.T.E. 122°F – 212°F	87 $\mu\text{in/in-}^\circ\text{F}$	33 – 72 $\mu\text{in/in-}^\circ\text{F}$ <i>(no temp range given)</i>	28 – 81 $\mu\text{in/in-}^\circ\text{F}$ <i>(no temp range given)</i>
	C.T.E. 212°F – 302°F	100 $\mu\text{in/in-}^\circ\text{F}$		
D150-98	Dielectric Constant 60 Hz	3.9	3.7	
	Dielectric Constant 1 KHz	3.8		2.9 – 4.0 <i>(no frequency specified)</i>
	Dielectric Constant 1 MHz	3.5	3.7	
D149-97a	Dielectric Strength	370 V/mil	350 – 500 V/mil	373 – 762 V/mil
E1545-00	T <sub>g</sub>	111 °F		106 °F
D648-98c	HDT @ 66 psi	127 °F	201 – 405 °F	302 °F
	HDT @ 264 psi	118 °F	187 – 381 °F	142 °F

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

N/A: Not Available