

## Product Data

# Somos<sup>®</sup> ProtoGen 18120

### Description

DSM's Somos<sup>®</sup> ProtoGen 18120 is a liquid, ABS-like photopolymer that produces accurate parts ideal for general purpose applications. Somos<sup>®</sup> ProtoGen resins are the first stereolithography resins to demonstrate different material properties based on machine exposure control. Based on Somos<sup>®</sup> Oxetane<sup>™</sup> chemistry, Somos<sup>®</sup> ProtoGen 18120 offers superior chemical resistance, a wide processing latitude and excellent tolerance to a broad range of temperature and humidity, both during and after the build.

### Applications

This high-temperature resistant, ABS-like photopolymer is used in solid imaging processes, such as stereolithography, to built three-dimensional parts. Somos<sup>®</sup> ProtoGen 18120 provides considerable processing latitude and is ideal for the medical, electronic, aerospace and automotive markets that demand accurate RTV patterns, durable concept models, highly accurate and humidity & temperature resistant parts.

#### TECHNICAL DATA - LIQUID PROPERTIES

Appearance	Translucent
Viscosity	~300 cps @ 30°C
Density	~1.16 g/cm <sup>3</sup> @ 25°C

#### TECHNICAL DATA - OPTICAL PROPERTIES

E <sub>c</sub>	6.73 mJ/cm <sup>2</sup>	[critical exposure]
D <sub>p</sub>	4.57 mils	[slope of cure-depth vs. ln (E) curve]
E <sub>10</sub>	57.0 mJ/cm <sup>2</sup>	[exposure that gives 0.254 mm (.010 inch) thickness]

TECHNICAL DATA							
Mechanical Properties		Somos <sup>®</sup> ProtoGen 18120 UV Postcure at HOC -2		Somos <sup>®</sup> ProtoGen 18120 UV Postcure at HOC +3		Somos <sup>®</sup> ProtoGen 18120 UV & Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial	Metric	Imperial
D638M	Tensile Strength	51.7 - 54.9 MPa	7.5 - 8.0 ksi	56.9 - 57.1 MPa	8.2 - 8.3 ksi	68.8 - 69.2 MPa	9.9 - 10.0 ksi
D638M	Tensile Modulus	2,620 - 2,740 MPa	381 - 397 ksi	2,540 - 2,620 MPa	370 - 380 ksi	2,910 - 2,990 MPa	422 - 433 ksi
D638M	Elongation at Break	6 - 12%	6 - 12%	8 - 12%	8 - 12%	7 - 8%	7 - 8%
D638M	Poisson's Ratio	0.43 - 0.45	0.43 - 0.45	N/A	N/A	0.43	0.43
D790M	Flexural Strength	81.8 - 83.8 MPa	11.9 - 12.2 ksi	83.8 - 86.7 MPa	12.2 - 12.6 ksi	88.5 - 91.5 MPa	13.2 ksi
D790M	Flexural Modulus	2,360 - 2,480 MPa	343 - 359 ksi	2,400 - 2,450 MPa	350 - 355 ksi	2,330 - 2,490 MPa	361 ksi
D2240	Hardness (Shore D)	84 - 85	85 - 87	N/A	N/A	87 - 88	87 - 88
D256A	Izod Impact (Notched)	0.14 - 0.26 J/m	0.26 - 0.49 ft-lb/in	N/A	N/A	0.13 - 0.25 J/m	0.24 - 0.47 ft-lb/in
D570-98	Water Absorption	0.77%	0.77%	N/A	N/A	0.75%	0.75%

TECHNICAL DATA					
Thermal/ Electrical Properties		Somos <sup>®</sup> ProtoGen 18120 UV Postcure at HOC -2		Somos <sup>®</sup> ProtoGen 18120 UV & Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 - 0°C (-40 - 32°F)	65.1 - 68.1 µm/m°C	36.2 - 37.8 µin/in°F	63.7 - 71.8 µm/m°C	35.4 - 39.9 µin/in°F
E831-05	C.T.E. 0 - 50°C (32 - 122°F)	84.7 - 95.3 µm/m°C	47.1 - 52.9 µin/in°F	75.0 - 107.5 µm/m°C	41.7 - 59.7 µin/in°F
E831-05	C.T.E. 50 - 100°C (122 - 212°F)	93.8 - 116.9 µm/m°C	52.1 - 64.9 µin/in°F	99.4 - 111.0 µm/m°C	55.2 - 61.7 µin/in°F
E831-05	C.T.E. 100 - 150°C (212 - 302°F)	147.0 - 155.4 µm/m°C	81.7 - 86.3 µin/in°F	143.4 - 173.3 µm/m°C	79.7 - 96.3 µin/in°F
D150-98	Dielectric Constant 60 Hz	3.4 - 3.5	3.4 - 3.5	3.5 - 3.6	3.5 - 3.6
D150-98	Dielectric Constant 1 KHz	3.3 - 3.4	3.3 - 3.4	3.4 - 3.5	3.4 - 3.5
D150-98	Dielectric Constant 1 MHz	3.1 - 3.2	3.1 - 3.2	3.2 - 3.3	3.2 - 3.3
D149-97A	Dielectric Strength	14.4 - 15.3 kV/mm	365 - 387 V/mil	15.2 - 15.7 kV/mm	386 - 398 V/mil
E1545-00	Tg	71 - 86°C	160 - 187°F	76 - 94°C	169 - 201°F
D648	HDT @ 0.46 MPa (66 psi)	55 - 58°C	132 - 136°F	95 - 97°C	203 - 207°F
D648	HDT @ 1.81 MPa (264 psi)	48 - 50°C	118 - 123°F	79 - 82°C	175 - 180°F

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