

# ProtoGen™ 18120

a **DSM** Product

## Product Description

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

## Applications

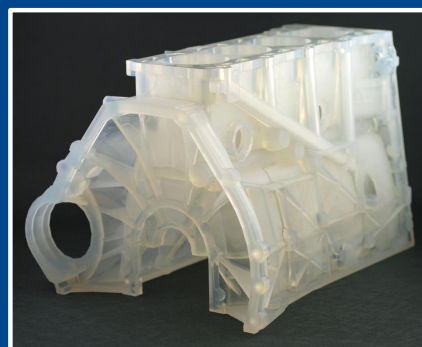
This high-temperature resistant, ABS-like photopolymer is used in solid imaging processes, like stereolithography, to build three-dimensional parts. Somos ProtoGen 18120 provides considerable processing latitude and is ideal for the medical, electronic, aerospace and automotive markets that demand accurate 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]



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## Key Product Benefits:

- Humidity & Temperature Tolerant
- High Dimensional Stability
- Fast Processing Speeds

(continued)

For technical service, please visit: <http://www.dsmsomos.com>

Rev Date: 10/09

# ProtoGen™ 18120

## Technical Data: Mechanical Properties

		ProtoGen™ 18120 UV Postcure at HOC -2		ProtoGen™ 18120 UV Postcure at HOC +3*		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	not recorded	not recorded	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	not recorded	not recorded	87 – 88	87 - 88
D256A	Izod Impact-Notched	0.14 – 0.26 J/cm	0.26 – 0.49 ft-lb/in	not recorded	not recorded	0.13 – 0.25 J/cm	0.24 – 0.47 ft-lb/in
D570-98	Water Absorption	0.77%	0.77%	not recorded	not recorded	0.75%	0.75%

## Technical Data: Thermal/Electrical Properties

		ProtoGen™ 18120 UV Postcure at HOC -2		ProtoGen™ 18120 UV & Thermal Postcure	
E831-05	C.T.E. -40°C - 0°C (-40°F – 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°C - 50°C (32°F – 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°C - 100°C (122°F – 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°C - 150°C (212°F – 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 1KHz	3.3 – 3.4	3.3 – 3.4	3.4 – 3.5	3.4 – 3.5
D150-98	Dielectric Constant 1MHz	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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