

Product Data

# Somos<sup>®</sup> ProtoGen 18420

## Description

DSM's Somos<sup>®</sup> ProtoGen 18420 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™ chemistry, Somos<sup>®</sup> ProtoGen 18420 offers superior chemical resistance, a wide processing latitude and excellent tolerance to a broad range of temperatures and humidity, both during and after the build.

## Applications

This high-temperature resistant, ABS-like photopolymer is used in solid imaging processes, like stereolithography, to build three-dimensional parts. Somos<sup>®</sup> ProtoGen 18420 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	White
Viscosity	~350 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>	4.34 mils	[slope of cure-depth vs. ln (E) curve]
E <sub>10</sub>	67.6 mJ/cm <sup>2</sup>	[exposure that gives 0.254 mm (.010 inch) thickness]

TECHNICAL DATA							
Mechanical Properties		Somos® ProtoGen 18420 UV Postcure at HOC -2		Somos® ProtoGen 18420 UV Postcure at HOC +3		Somos® ProtoGen 18420 UV & Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial	Metric	Imperial
D638M	Tensile Strength	42.2 - 43.8 MPa	6.1 - 6.4 ksi	56.9 - 57.1 MPa	8.2 - 8.3 ksi	66.1 - 68.1 MPa	9.6 - 9.9 ksi
D638M	Tensile Modulus	2,180 - 2,310 MPa	316 - 336 ksi	2,540 - 2,620 MPa	370 - 380 ksi	2,880 - 2,960 MPa	417 - 430 ksi
D638M	Elongation at Break	8 - 16%	8 - 16%	8 - 12%	8 - 12%	6 - 9%	6 - 9%
D638M	Poisson's Ratio	0.43 - 0.45	0.43 - 0.45	N/A	N/A	0.40 - 0.42	0.40 - 0.42
D790M	Flexural Strength	66.7 - 70.5 MPa	9.7 - 10.2 ksi	83.8 - 86.7 MPa	12.2 - 12.6 ksi	84.9 - 87.7 MPa	12.3 - 12.7 ksi
D790M	Flexural Modulus	1,990 - 2,130 MPa	289 - 309 ksi	2,400 - 2,450 MPa	350 - 355 ksi	2,280 - 2,340 MPa	331 - 339 ksi
D2240	Hardness (Shore D)	86 - 88	86 - 88	N/A	N/A	86 - 87	86 - 87
D256A	Izod Impact (Notched)	0.20 - 0.22 J/m	0.37 - 0.41 ft-lb/in	N/A	N/A	0.15 - 0.18 J/m	0.28 - 0.34 ft-lb/in
D570-98	Water Absorption	0.68%	0.68%	N/A	N/A	0.61%	0.61%

TECHNICAL DATA					
Thermal/Electrical Properties		Somos® ProtoGen 18420 UV Postcure at HOC -2		Somos® ProtoGen 18420 UV & Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 - 0°C (-40 - 32°F)	74.6 - 75.5 µm/m°C	35.3 - 37.1 µin/in°F	67.3 - 68.2 µm/m°C	37.4 - 37.9 µin/in°F
E831-05	C.T.E. 0 - 50°C (32 - 122°F)	101.2 - 110.3 µm/m°C	48.8 - 51.7 µin/in°F	82.2 - 86.4 µm/m°C	45.7 - 48.0 µin/in°F
E831-05	C.T.E. 50 - 100°C (122 - 212°F)	114.4 - 135.8 µm/m°C	91.3 - 95.5 µin/in°F	110.4 - 116.0 µm/m°C	61.3 - 64.4 µin/in°F
E831-05	C.T.E. 100 - 150°C (212 - 302°F)	129.5 - 138.1 µm/m°C	83.3 - 92.9 µin/in°F	152.7 - 163.2 µm/m°C	84.8 - 90.7 µin/in°F
D150-98	Dielectric Constant 60 Hz	3.5 - 3.6	3.5 - 3.6	3.1 - 3.3	3.1 - 3.3
D150-98	Dielectric Constant 1 KHz	3.4 - 3.5	3.4 - 3.5	3.1 - 3.2	3.1 - 3.2
D150-98	Dielectric Constant 1 MHz	3.1 - 3.3	3.1 - 3.3	2.9 - 3.0	2.9 - 3.0
D149-97A	Dielectric Strength	13.2 - 14.2 kV/mm	334 - 359 V/mil	13.8 - 14.1 kV/mm	350 - 357 V/mil
E1545-00	Tg	57 - 59°C	135 - 138°F	78 - 96°C	172 - 205°F
D648	HDT @ 0.46 MPa (66 psi)	53 - 56°C	127 - 133°F	93 - 98°C	199 - 208°F
D648	HDT @ 1.81 MPa (264 psi)	46 - 47°C	114 - 116°F	74 - 78°C	166 - 173°F

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