

ProtoGen™ 18420

a **DSM** Product

Product Description

DSM Somos® ProtoGen™ 18420 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 18420 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 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 ³ @ 25° C

Technical Data: Optical Properties

E _c	6.73 mJ/cm ²	[critical exposure]
D _p	4.34 mils	[slope of cure-depth vs. ln(E) curve]
E ₁₀	67.6 mJ/cm ²	[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>

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Technical Data: Mechanical Properties

ASTM Method	Property Description	ProtoGen™ 18420 UV Postcure at HOC -2		ProtoGen™ 18420 UV Postcure at HOC +3*		ProtoGen™ 18420 UV & Thermal Postcure	
		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	2,540-2,620MPa	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 %	5 - 9%
D638M	Poisson's Ratio	0.43 - 0.45	0.43 - 0.45	not recorded	not recorded	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	2,400-2,450MPa	350 - 355 ksi	2,280 - 2,340 MPa	331 - 339 ksi
D2240	Hardness (Shore D)	86 - 88	87 - 88	not recorded	not recorded	86 - 87	86 - 87
D256A	Izod Impact-Notched	0.20 - 0.22 J/cm	0.37 - 0.41 ft-lb/in	not recorded	not recorded	0.015 J/cm	0.17 - 0.39 ft-lb/in
D570-98	Water Absorption	0.68%	0.68%	not recorded	not recorded	0.61%	0.61%

Technical Data: Thermal/Electrical Properties

ASTM Method	Property Description	ProtoGen™ 18420 UV Postcure at HOC -2		ProtoGen™ 18420 UV & Thermal Postcure	
		Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 °C - 0 °C (-40°F – 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 °C - 50 °C (32°F – 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 °C - 100 °C (122°F – 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 °C - 150 °C (212°F – 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 1KHz	3.4 - 3.5	3.4 - 3.5	3.1 - 3.2	3.1 - 3.2
D150-98	Dielectric Constant 1MHz	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

*The data in this column was collected from internal testing

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