

## Product Data

# Somos<sup>®</sup> ProtoGen 18920

### Description

DSM's Somos<sup>®</sup> ProtoGen 18920 is a liquid photopolymer that produces accurate, ABS-like 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 18920 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 build three-dimensional parts. Somos<sup>®</sup> ProtoGen 18920 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 humidity & temperature resistant parts.

#### TECHNICAL DATA - LIQUID PROPERTIES

Appearance	Grey
Viscosity	~350 cps @ 30°C
Density	~1.16 g/cm <sup>3</sup> @ 25°C

#### TECHNICAL DATA - OPTICAL PROPERTIES

E <sub>c</sub>	7.0 mJ/cm <sup>2</sup>	[critical exposure]
D <sub>p</sub>	4.20 mils	[slope of cure-depth vs. ln (E) curve]
E <sub>10</sub>	76 mJ/cm <sup>2</sup>	[exposure that gives 0.254 mm (.010 inch) thickness]

TECHNICAL DATA							
Mechanical Properties		Somos <sup>®</sup> ProtoGen 18920 UV Postcure at HOC -2		Somos <sup>®</sup> ProtoGen 18920 UV Postcure at HOC +3		Somos <sup>®</sup> ProtoGen 18920 UV & Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial	Metric	Imperial
D638M	Tensile Strength	46.6 - 47.8 MPa	6.8 - 6.9 ksi	56.1 - 56.9 MPa	8.1 - 8.3 ksi	69.2 - 69.6 MPa	10.0 - 10.1 ksi
D638M	Tensile Modulus	2,103 - 2,317 MPa	305.0 - 336.0 ksi	2,577 - 2,623 MPa	373.7 - 380.4 ksi	2,544 - 2,916 MPa	369.0 - 423.0 ksi
D638M	Elongation at Break	13 - 19%	13 - 19%	5 - 12%	5 - 12%	4 - 9%	4 - 9%
D790M	Flexural Strength	73.0 - 75.0 MPa	10.6 - 10.9 ksi	85.0 - 87.0 MPa	12.3 - 12.6 ksi	92.1 - 98.1 MPa	13.4 - 14.2 ksi
D790M	Flexural Modulus	2,126 - 2,314 MPa	308.3 - 335.6 ksi	2,442 - 2,518 MPa	354.2 - 365.2 ksi	2,504 - 2,696 MPa	363.1 - 391.0 ksi
D2240	Hardness (Shore D)	85 - 86	85 - 86	86 - 87	86 - 87	86 - 88	86 - 88
D256A	Izod Impact (Notched)	0.18 - 0.28 J/m	0.26 - 0.52 ft-lb/in	0.22 - 0.26 J/m	0.41 - 0.49 ft-lb/in	0.20 - 0.24 J/m	0.37 - 0.45 ft-lb/in
D570-98	Water Absorption	0.78%	0.78%	0.74%	0.74%	0.38%	0.38%

TECHNICAL DATA					
Thermal/ Electrical Properties		Somos <sup>®</sup> ProtoGen 18920 UV Postcure at HOC -2		Somos <sup>®</sup> ProtoGen 18920 UV & Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 - 0°C (-40 - 32°F)	69.4 µm/m°C	38.6 µin/in°F	64.7 µm/m°C	35.9 µin/in°F
E831-05	C.T.E. 0 - 50°C (32 - 122°F)	74.0 µm/m°C	41.1 µin/in°F	74.2 µm/m°C	41.2 µin/in°F
E831-05	C.T.E. 50 - 100°C (122 - 212°F)	106.0 µm/m°C	58.9 µin/in°F	79.2 µm/m°C	44.0 µin/in°F
E831-05	C.T.E. 100 - 150°C (212 - 302°F)	130.3 µm/m°C	72.4 µin/in°F	138.8 µm/m°C	77.1 µin/in°F
D150-98	Dielectric Constant 60 Hz	3.53	3.53	3.28	3.28
D150-98	Dielectric Constant 1 KHz	3.44	3.44	3.23	3.23
D150-98	Dielectric Constant 1 MHz	3.21	3.21	3.04	3.04
D149-97A	Dielectric Strength	15.4 - 15.9 kV/mm	391 - 403 V/mil	14.3 - 15.2 kV/mm	364 - 386 V/mil
E1545-00	Tg	6.90°C	156°F	97.5°C	208°F
D648	HDT @ 0.46 MPa (66 psi)	58.7°C	137°F	96.5°C	205°F
D648	HDT @ 1.81 MPa (264 psi)	51.0°C	123°F	78.6°C	175°F

**DSM Functional Materials**  
**Somos<sup>®</sup> Materials Group**

**in North America**

1122 St. Charles Street  
Elgin, Illinois 60120  
USA  
Phone: +1.847.697.0400

**Applied Rapid Technologies**

1130 International Pkwy  
Fredericksburg, VA 22406  
Tel: 540-286-2266  
Fax: 540-286-5252  
www.artcorp.com

**in Europe**

Slachthuisweg 30  
3150 XN Hoek van Holland  
The Netherlands  
Phone: +31.174.315.391

Visit us online at [www.dsmsomos.com](http://www.dsmsomos.com)

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