

## 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

## DSM Functional Materials Somos® Materials Group

### in North America

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

### in Europe

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

### in China

476 Li Bing Road  
Zhangjiang Hi-Tech Park  
Pudong New Area  
Shanghai 201203, China  
Phone: +86.21.6141.8064

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

NOTICE : Somos® is a registered trademark of Royal DSM N.V. Somos® is an unincorporated subsidiary of DSM Desotech Inc. The information presented herein is based on generally accepted analytical and testing practices and is believed to be accurate. However, DSM Desotech expressly disclaims any product warranties which may be implied including warranties or merchantability and/or fitness for a particular purpose DSM Desotech's products are sold subject to DSM Desotech's standard terms and conditions of sale, copies of which are available upon request. Purchasers are responsible for determining the suitability of the product for its intended use and the appropriate manner of utilizing the product in purchaser's production processes and applications so as to insure safety, quality and effectiveness. Purchasers are further responsible for obtaining necessary patent rights to practice any invention in connection with the use of purchased product and any other product or process. DSM Desotech reserves the right to change specifications of their products without notice. © 2012 DSM IP ASSETS B.V. All rights reserved.



## About RPS

RPS has been in operation over ten years and our engineers collectively have decades of experience working with stereolithography and laser sintering equipment. With proven experience in 3D printing, engineering, electronics, computer-aided engineering and more, we understand the technology and can offer advice on how it can suit your specific application.

We manufacture the **NEO800** stereolithography system, designed, developed and built by RPS engineers. We are also an HP Channel Partner of HP's Multi-Jet Fusion technology and offer a range of materials and software through our partnership with market-leading suppliers ALM, DSM Somos® and Materialise.

    +44 (0) 1296 425665 | [support@rps.ltd](mailto:support@rps.ltd) | [www.rps.ltd](http://www.rps.ltd)

14 Bridgegate Business Park | Gatehouse Way | Aylesbury | Buckinghamshire | HP19 8XN | UK