Somos® ProtoCast™ AF 19120

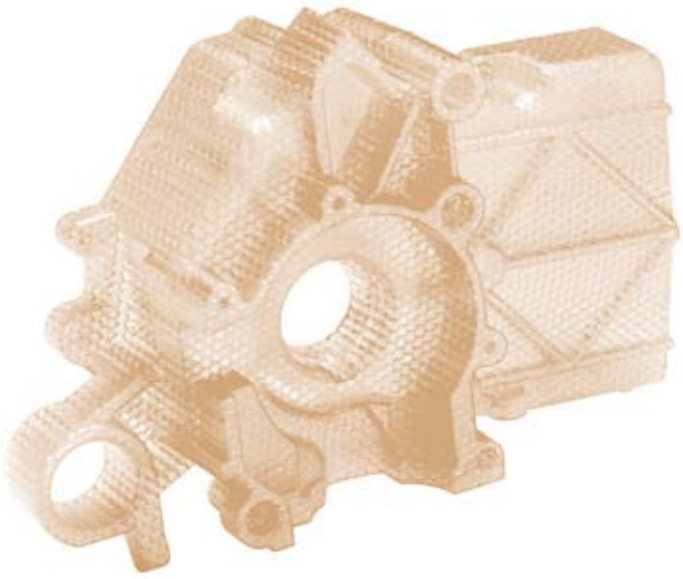
Antimony-Free Clear/Peach color Epoxy Resin for Stereolithography
For Solid State (355 nm) Laser Systems

Description

DSM Somos® ProtoCast AF 19120 is a breakthrough for the investment casting industry. It is an antimony-free liquid photopolymer specifically formulated for producing investment casting patterns.

Application

Ideal for use in foundry applications, ProtoCast AF 19120 is totally antimony free, which eliminates the risk of contamination in specialty alloys. Antimony is traditionally present in the photoinitiators that activate the stereolithography chemistry. No other metals are present in the photopolymer chemistry.



The absence of Antimony also allows stereolithography patterns to burn out more completely, resulting in significantly lower residual ash than is produced by burning out conventional stereolithography patterns. Studies have shown that the residual ash of ProtoCast AF 19120 is less than 0.015 % after burnout at 1500° F for two hours.

Physical Properties – Liquid

Appearance	Clear, peach color
Viscosity	~265 cps at 30°C
Density	~1.13 g/cm^3 at 25°C

Optical Properties at 355 nm

E_c	8.16 mJ/cm^2 *[critical exposure]*
D_p	5.21 mm (0.0055 inch) *[slope of cure-depth vs. ln(E) crve]*
E_{10}	55 mJ/cm^2 *[exposure that gives 0.254 mm (0.010 inch) thickness]*

DSM Somos®
1122 St. Charles Street
Elgin, IL 60120 USA
Tel: 800.223.7191 (in USA)
Tel: 847.697.0400 (outside USA)
Fax: 847.468.7785

DSM Desotech bv
3150 AB Hoek van Holland
The Netherlands
Tel: +31 1743.15391
Fax: +31 1743.15530

www.dsmsomos.com

Email:
Americas@dsmsomos.info
Europe@dsmsomos.info
Asia@dsmsomos.info

Mechanical Properties (Metric)

ASTM Method	Description	Somos® 19120 UV Postcure
D638M	Tensile Strength	51.7 - 54.9 MPa
	Tensile Modulus	2 ,420 - 2,540 MPA
	Elongation at Break	8 - 10 %
	Poisson's Ratio	0.41 - 0.43
D790M	Flexural Strength	85.4 - 87.2 MPa
	Flexural Modulus	2,400 - 2,460 MPa
D256A	Izod Impact-Notched	0.12 - 0.24 J/cm
D2240	Hardness (Shore D)	84 - 86
D570-98	Water Absorption	0.81 - 0.82 %

N/A: Not Available

Thermal & Electrical Properties (Metric)

ASTM Method	Description	Somos® 19120 UV Postcure
E831-00	C.T.E. -40°C – 0°C	72.0 - 74.0 µm/m-°C
	C.T.E. 0°C – 50°C	82.5 - 98.3 µm/m-°C
	C.T.E. 50°C – 100°C	127.2 - 168.2 µm/m-°C
	C.T.E. 100°C – 150°C	130.5 - 150.9 µm/m-°C
D150-98	Dielectric Constant 60Hz	3.4 - 3.5
	Dielectric Constant 1KHz	3.4 - 3.5
	Dielectric Constant 1MHz	3.2 - 3.3
D149-97a	Dielectric Strength	14.1 - 14.9 kV/mm
E1545-00	Tg	50 - 53 °C
D648-98c	HDT@ 0.46 MPa	56 - 58 °C
	HDT @ 1.82 MPa	50 - 51 °C

N/A: Not Available

Mechanical Properties (Imperial)

ASTM Method	Description	Somos® 19120 UV Postcure
D638M	Tensile Strength	7.5 - 7.9 ksi
	Tensile Modulus	351 - 368 ksi
	Elongation at Break	8 - 10 %
	Poisson's Ratio	0.41 - 0.43
D790M	Flexural Strength	12.4 - 12.6 ksi
	Flexural Modulus	348 - 357 ksi
D256A	Izod Impact-Notched	0.22 - 0.45 ft-lb/in
D2240	Hardness (Shore D)	84 - 86
D570-98	Water Absorption	0.81 - 0.82 %

N/A: Not Available

Thermal & Electrical Properties (Imperial)

ASTM Method	Description	Somos® 19120 UV Postcure
E831-00	C.T. E. -40°F – 32°F	40.0 - 41.1 µin/in-°F
	C.T. E. 32°F – 122°F	45.8 - 54.6 µin/in-°F
	C.T. E. 122°F – 212°F	70.7 - 93.4 µin/in-°F
	C.T. E. 212°F – 302°F	72.5 - 83.8 µin/in-°F
D150-98	Dielectric Constant 60Hz	3.4 - 3.5
	Dielectric Constant 1KHz	3.4 -3.5
	Dielectric Constant 1MHz	3.2 - 3.3
D149-97a	Dielectric Strength	357.4 - 377.4 V/mil
E1545-00	Tg (TMA)	122 - 127 °F
D648-98c	HDT@ 66 psi	133 - 137 °F
	HDT @ 264 psi	122 - 123 °F

N/A: Not Available