



## Product Data Sheet

# Somos<sup>®</sup> WaterClear Ultra 10122

### Description

DSM's Somos<sup>®</sup> WaterClear Ultra 10122 is a next generation optically clear resin with ABS-like properties and good temperature resistance. It produces colorless, functional, accurate parts that simulate an acrylic appearance. Based on the Oxetane Advantage<sup>™</sup>, the parts also have improved water-resistance over the original Somos<sup>®</sup> WaterClear 10120 resin. Somos<sup>®</sup> WaterClear Ultra is a fast, low viscosity, general-purpose resin.

### Applications

This high-temperature resistant, ABS-like photopolymer is used in solid imaging processes, like stereolithography, to build three-dimensional parts. Somos<sup>®</sup> WaterClear Ultra is ideal for applications requiring optical clarity, such as automotive lenses, bottles, fluid flow analysis, packaging prototypes, light pipes and more. Somos<sup>®</sup> WaterClear Ultra can also be used for concept, functional models and master patterns.

#### TECHNICAL DATA - LIQUID PROPERTIES

Appearance	Optically clear, colorless
Viscosity	~165 cps @ 30°C
Density	~1.13 g/cm <sup>3</sup> @ 25°C

#### TECHNICAL DATA - OPTICAL PROPERTIES

E <sub>c</sub>	10.0 mJ/cm <sup>2</sup>	[critical exposure]
D <sub>p</sub>	6.50 mils	[slope of cure-depth vs. ln (E) curve]
E <sub>10</sub>	47 mJ/cm <sup>2</sup>	[exposure that gives 0.254 mm (.010 inch) thickness]

TECHNICAL DATA					
Mechanical Properties		Somos® WaterClear Ultra 10122 UV Postcure		Acrylic	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
D638M	Tensile Strength at Break	55 - 56 MPa	7.9 - 8.1 ksi	47 - 79 MPa	6.8 - 11.5 ksi
D638M	Tensile Modulus	2,860 - 2,900 MPa	414 - 421 ksi	2,200 - 3,800 MPa	319 - 551 ksi
D638M	Elongation at Break	6 - 9%	6 - 9%	1 - 30%	1 - 30%
D638M	Elongation at Yield	4%	4%	4%	4%
D638M	Poisson's Ratio	0.40 - 0.42	0.40 - 0.42	0.37 - 0.45	0.37 - 0.45
D790M	Flexural Strength	82 - 85 MPa	11.8 - 12.4 ksi	88 - 138 MPa	12.8 - 20.0 ksi
D790M	Flexural Modulus	2,410 - 2,570 MPa	349 - 373 ksi	3,000 - 3,500 MPa	435 - 508 ksi
D256A	Izod Impact (Notched)	0.24 - 0.26 J/m	0.44 - 0.48 ft-lb/in	0.15 J/m	0.3 ft-lb/in
D542	Index of Refraction	1.52	1.52	1.50	1.50
D2240	Hardness (Shore D)	86 - 87	86 - 87	63 - 97	63 - 97
D570-98	Water Absorption	1.1%	1.1%	0.3 - 2.0%	0.3 - 2.0%

TECHNICAL DATA					
Thermal/Electrical Properties		Somos® WaterClear Ultra 10122 UV Postcure		Acrylic	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 - 0°C (-40 - 32°F)	63.6 - 66.8 µm/m°C	35.3 - 37.1 µin/in°F	N/A	N/A
E831-05	C.T.E. 0 - 50°C (32 - 122°F)	87.8 - 93.0 µm/m°C	48.8 - 51.7 µin/in°F		
E831-05	C.T.E. 50 - 100°C (122 - 212°F)	164.3 - 171.9 µm/m°C	91.3 - 95.5 µin/in°F		
E831-05	C.T.E. 100 - 150°C (212 - 302°F)	149.9 - 167.1 µm/m°C	83.3 - 92.9 µin/in°F		
D150-98	Dielectric Constant 60 Hz	3.0 - 3.2	3.0 - 3.2	4.0	4.0
D150-98	Dielectric Constant 1 KHz	3.3 - 3.6	3.3 - 3.6	3.5	3.5
D150-98	Dielectric Constant 1 MHz	3.0 - 3.2	3.0 - 3.2	3.0	3.0
D149-97A	Dielectric Strength	14.5 - 15.5 kV/mm	367 - 393 V/mil	18 - 60 kV/mm	456 - 1,520 V/mil
E1545-00	Tg	42 - 46°C	108 - 115°F	100 - 105°C	212 - 221°F
D648	HDT @ 0.46 MPa (66 psi)	46 - 47°C	115 - 116°F	80 - 103°C	176 - 217°F
D648	HDT @ 1.81 MPa (264 psi)	42 - 43°C	108 - 110°F	80 - 103°C	176 - 217°F
D648	Thermal Postcure: HDT @ 0.46 MPa (66 psi)	59 - 61°C	139 - 142°F	N/A	N/A
D648	Thermal Postcure: HDT @ 1.81 MPa (264 psi)	49 - 50°C	120 - 122°F	N/A	N/A

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