

WaterClear® Ultra 10122

a DSM Product

Product Description

DSM Somos 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 acrylic appearance. Based on the Oxetane Advantage™, the parts also have improved water-resistance over the original WaterClear 10120 resin. WaterClear Ultra is a fast, low viscosity, general-purpose resin.

Applications

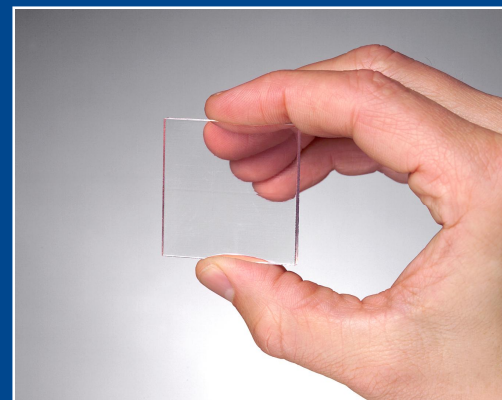
This high-temperature resistant, ABS-like photopolymer is used in solid imaging processes, like stereolithography, to build three-dimensional parts. WaterClear Ultra is ideal for applications requiring optical clarity, such as automotive lenses, bottles, fluid flow analysis, packaging prototypes, light pipes and more. 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 ³ @ 25° C

Technical Data: Optical Properties

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



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Key Product Benefits:

- High clarity
- Water-resistant
- Extremely accurate

(continued)

For technical service, please visit: <http://www.dsmsomos.com>

Rev Date 10/09

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Technical Data: Mechanical Properties

		WaterClear® Ultra 10122 UV Postcure		Acrylic	
		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
D2240	Hardness (Shore D)	86 - 87	86 - 87	63 - 97	63 - 97
D256A	Izod Impact (Notched)	0.24 - 0.26 J/cm	0.44 - 0.48 ft-lb/in	0.15 J/cm	0.3 ft-lb/in
D570-98	Water Absorption	1.1%	1.1%	0.3 - 2.0 %	0.3 - 2.0 %
D542	Index of Refraction	1.515	1.515	1.498	1.498

Technical Data: Thermal/Electrical Properties

		WaterClear® Ultra 10122 UV Postcure		Acrylic	
		Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40°C - 0°C (-40°F - 32°F)	63.6 - 66.8 µm/m°C	35.3 - 37.1 µin/in°F	Not recorded	Not recorded
E831-05	C.T.E. 0°C - 50°C (32°F - 122°F)	87.8 - 93.0 µm/m°C	48.8 - 51.7 µin/in°F	Not recorded	Not recorded
E831-05	C.T.E. 50°C - 100°C (122°F - 212°F)	164.3 - 171.9 µm/m°C	91.3 - 95.5 µin/in°F	Not recorded	Not recorded
E831-05	C.T.E. 100°C - 150°C (212°F - 302°F)	149.9 - 167.1 µm/m°C	83.3 - 92.9 µin/in°F	Not recorded	Not recorded
D150-98	Dielectric Constant 60 Hz	3.0 - 3.2	3.0 - 3.2	4.0	4.0
D150-98	Dielectric Constant 1KHz	3.3 - 3.6	3.3 - 3.6	3.5	3.5
D150-98	Dielectric Constant 1MHz	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 - 1520 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 @ 1.82 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	Not recorded	Not recorded
D648	Thermal postcure: HDT @ 1.81 MPa (264 psi)	49 - 50°C	120 - 122°F	Not recorded	Not recorded

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