Product Data Sheet

Somos® ProtoTherm 12110

Description

DSM's Somos® ProtoTherm 12110 is a liquid photopolymer that produces strong, high-temperature tolerant, water-resistant parts. Parts created with Somos® ProtoTherm 12110 have a cherry-red appearance which turns to an orange-red color after thermal treatment.

Applications

Somos® ProtoTherm 12110 differentiates itself from other high temperature stereolithography materials by increasing in tensile strength and maintaining decent elongation at break after thermal treatment. This makes the material ideal for many applications in the automotive and aerospace markets where strong parts that can resist high temperatures are needed.

TECHNICAL DATA - LIQUID PROPERTIES	
Appearance	Red
Viscosity	~410 cps @ 30°C
Density	~1.15 g/cm^3 @ 25°C

TECHNICAL DATA - OPTICAL PROPERTIES		
E_C	12.2 mJ/cm^2	[critical exposure]
D_P	5.5 mils	[slope of cure-depth vs. ln (E) curve]
E_{10}	75.4 mJ/cm^2	[exposure that gives 0.254 mm (.010 inch) thickness]

TECHNICAL DATA					
Mechanical Properties		**Somos® ProtoTherm 12110** UV Postcure		**Somos® ProtoTherm 12110** Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
D638M	Tensile Strength	57.6 MPa	8.4 ksi	65.5 MPa	9.5 ksi
D638M	Elongation at Break	5.0%	5.0%	3.8%	3.8%
D638M	Modulus of Elasticity	3,430 MPa	497.5 ksi	2,950 MPa	427.9 ksi
D790M	Flexural Strength	108 MPa	15.7 ksi	98 MPa	14.2 ksi
D790M	Flexural Modulus	3,350 MPa	485.9 ksi	2,730 MPa	396 ksi
D256A	Izod Impact (Notched)	0.12 J/cm	0.32 ft-lb/in	0.21 J/cm	0.29 ft-lb/in
D2240	Hardness (Shore D)	84.5	84.5	86.4	86.4
D570-98	Water Absorption	0.28%	0.28%	0.25%	0.25%

TECHNICAL DATA					
Thermal/Electrical Properties		**Somos® ProtoTherm 12110** UV Postcure		**Somos® ProtoTherm 12110** Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
E831-05	C.T.E. -40 - 0°C (-40 - 32°F)	58.0 µm/m°C	32.2 µin/in°F	53.2 µm/m°C	31.2 µin/in°F
E831-05	C.T.E. 0 - 50°C (32 - 122°F)	85.5 µm/m°C	47.5 µin/in°F	64.9 µm/m°C	36.1 µin/in°F
E831-05	C.T.E. 50 - 100°C (122 - 212°F)	124.4 µm/m°C	69.1 µin/in°F	81.2 µm/m°C	45.1 µin/in°F
E831-05	C.T.E. 100 - 150°C (212 - 302°F)	139.1 µm/m°C	77.3 µin/in°F	116.3 µm/m°C	64.6 µin/in°F
D150-98	Dielectric Constant 60 Hz	3.54	3.54	3.41	3.41
D150-98	Dielectric Constant 1 KHz	3.52	3.52	3.37	3.37
D150-98	Dielectric Constant 1 MHz	3.39	3.39	3.12	3.12
D149-97A	Dielectric Strength	16.6 kV/mm	421 V/mil	17.8 kV/mm	461 V/mil
E1545-00	Tg	59.3°C	139°F	135.1°C	232°F
D648	HDT @ 0.46 MPa (66 psi)	52.9°C	127°F	154.9°C	311°F
D648	HDT @ 1.81 MPa (264 psi)	48.0°C	118°F	151.3°C	304°F

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