Somos® NanoTool

Unspecified

DSM Somos®

Message:

DSM's Somos® NanoTool produces strong, stiff, high-temperature resistant composite parts on conventional stereolithography machines. This material is heavily filled with non-crystalline nanoparticles allowing for faster processing. It exhibits superior sidewall quality, along with excellent detail resolution compared to other composite stereolithography materials.
Applications
Somos® NanoTool's smooth surface quality and high initial modulus make it an excellent resin for metal plating-a growing application which saves time and money as an alternative to metal prototypes. It's also ideal for creating strong, stiff parts with excellent high heat resistance, including wind tunnel models for aerospace and automotive applications, as well as rapid tooling for injection molding.

General Information			
Filler / Reinforcement	Unspecified Nano		
Features	Good Processability Good Surface Finish High Heat Resistance High Strength Ultra High Stiffness		
Uses	Aerospace Applications Automotive Applications Engineering Parts Modeling Material Molds/Dies/Tools Prototyping		
Appearance	Off-White		
Forms	Liquid		
Processing Method	3D Printing, Stereolithography		
Physical	**Nominal Value**	**Unit**	**Test Method**
Density	1.65	g/cm³	
Water Absorption			ASTM D570
Equilibrium [1]	0.15 to 0.16	%	
Equilibrium [2]	0.23	%	
Viscosity (30°C)	2.50	Pa·s	
Poisson's Ratio			ASTM D638
-- [3]	0.34 to 0.38		
-- [4]	0.29 to 0.36		
Critical Exposure	8.30	mJ/cm²	
Penetration Depth	109.2	µm	
Hardness	**Nominal Value**	**Unit**	**Test Method**

Durometer Hardness [5] (Shore D)	94		ASTM D2240
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus			ASTM D638
-- [6]	10400 to 11200	MPa	
-- [7]	11000 to 11400	MPa	
Tensile Strength			ASTM D638
-- [8]	66.3 to 80.3	MPa	
-- [9]	61.7 to 78.0	MPa	
Tensile Elongation [10] (Break)	0.70 to 1.0	%	ASTM D638
Flexural Modulus			ASTM D790
-- [11]	9960 to 10200	MPa	
-- [12]	10200 to 10800	MPa	
Flexural Strength			ASTM D790
-- [13]	103 to 149	MPa	
-- [14]	79.0 to 121	MPa	
Impact	**Nominal Value**	**Unit**	**Test Method**
Notched Izod Impact			ASTM D256A
-- [15]	14 to 17	J/m	
-- [16]	12 to 15	J/m	
Thermal	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed [17]	258 to 263	°C	
0.45 MPa, Unannealed [18]	225	°C	
1.8 MPa, Unannealed [19]	85.0 to 90.0	°C	
1.8 MPa, Unannealed [20]	104	°C	
Glass Transition Temperature			ASTM E1545
-- [21]	57.0 to 62.0	°C	
-- [22]	86.0 to 89.0	°C	
CLTE - Flow			
-40 to 0°C [23]	2.5E-5 to 2.6E-5	cm/cm/°C	ASTM E831
0 to 50°C [24]	2.6E-5 to 3.1E-5	cm/cm/°C	ASTM E831
0 to 50°C [25]	3.0E-5 to 3.2E-5	cm/cm/°C	ASTM E831
50 to 100°C [26]	5.7E-5 to 5.9E-5	cm/cm/°C	ASTM E831
50 to 100°C [27]	7.6E-5 to 8.7E-5	cm/cm/°C	ASTM E831
100 to 150°C [28]	9.0E-5 to 9.6E-5	cm/cm/°C	ASTM E831
100 to 150°C [29]	9.5E-5 to 1.0E-4	cm/cm/°C	ASTM E831
Electrical	**Nominal Value**	**Unit**	**Test Method**
Dielectric Strength [30]	16 to 17	kV/mm	ASTM D149
Dielectric Constant			
60 Hz [31]	3.90		ASTM D150
60 Hz [32]	4.00		ASTM D150
1 kHz [33]	3.80		ASTM D150

1 kHz [34]	3.90	ASTM D150
1 MHz [35]	3.60	ASTM D150

NOTE	
1.	UV Postcure & Thermal Postcure
2.	UV Postcure
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33.	UV Postcure & Thermal Postcure
34.	UV Postcure
35.	UV Postcure & Thermal Postcure

Recommended distributors for this material

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