

Somos[®] PerFORM Reflect



In motorsports – as in automotive, rail and aerospace - speed is key. Getting ready for a race, from design to the track you need to be the fastest. Printing your wind tunnel models with Somos[®] PerFORM Reflect saves more than 30% post treatment. So, you can get your aerodynamic designs onto your vehicle faster - and be more competitive on the track, road, rail or air.

In Formula One, typically a car body is printed at 60% of its normal size for simulation purposes and checked with particle imaging velocimetry (PIV) in critical areas. Somos[®] PerFORM Reflect is a new and unique DSM stereolithography material developed specifically for 3D printing parts for wind tunnel testing with PIV. With this innovation DSM again sets a standard in enabling faster aerodynamic design optimizations - in motorsports and beyond.

Somos[®] PerFORM Reflect produces strong, stiff, high-temperature resistant composite parts that are ideal for wind tunnel testing. Extensive tests show that the new Somos[®] PerFORM Reflect reduces post-processing by more than 30% as it eliminates the need for additional PIV coatings. This translates into faster data collection, decreasing overall lead time per design iteration and allowing customers to conduct iterations faster.

Somos[®] PerFORM Reflect utilizes patented new technology that allows for reducing and even eliminating much of the finishing work required with traditional materials. Based on DSM's industry standard Somos[®] PerFORM, the new resin demonstrates all the performance attributes that customers rely on such as low viscosity, low settling, fast processing and high stiffness and heat resistance.



Key Benefits

- Ready-to-use material for PIV wind tunnel testing
- Faster image processing, higher accuracy wind tunnel models
- >30% reduction in post-processing time
- Excellent detail resolution
- Improved surface quality, faster part finishing
- Superior high heat properties

Applications

- Wind tunnel testing for aerodynamic design optimization
- High-temperature testing
- Electrical casings
- Automotive housings
- Tooling



Motorsports engine cover vent printed in Somos[®] PerFORM Reflect

Technical Data

Liquid Properties		Optical Properties		
Appearance	Orange	E_c	8.4 mJ/cm ²	[critical exposure]
Viscosity	~1100cP @ 30°C	D_p	4.15 mil	[slope of cue-depth vs ln (E)curve]
Density	~1.61 g/cm ³ @ 25°C	E_{10}	93.4 mJ/cm ²	[exposure that gives 0.254 mm (.010 inch) thickness]

Mechanical Properties		UV Postcure		Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
D638-14	Tensile Strength	63.3 MPa	9180	72.4 MPa	10500 psi
D638-14	Tensile Modulus	10135 MPa	1470 ks	9653 MPa	1400 ksi
D638-14	Elongation at Break	0,79%		0,96%	
D638-14	Poisson's Ratio	0,318		0,315	
D790-15e2	Flexural Strength	119 MPa	17300 psi	130 MPa	18800 psi
D790-15e2	Flexural Modulus	8273 MPa	1200 ksi	7722 MPa	1120 ksi
D256-10e1	Izod Impact (Notched)	16.9 J/m	0.316 ft-lbf/in	20.0 J/m	0.375 ft-lbf/in
D2240-15	Hardness (Shore D)	92		94	
D570-98	Water Absorption	0,19%		0,14%	

Thermal/Electric Properties		UV Postcure		Thermal Postcure	
ASTM Method	Property Description	Metric	Imperial	Metric	Imperial
E831-14	C.T.E. -40 - 0°C (-40 - 32°F)	26.3 µm/m°C	14.6 µin/in°F	25.7 µm/m°C	14.3 µin/in°F
E831-14	C.T.E. 0 - 50°C (32 - 122°F)	35.8 µm/m°C	19.9 µin/in°F	31.5 µm/m°C	17.5 µin/in°F
E831-14	C.T.E. 50 - 100°C (122 - 212°F)	88.3 µm/m°C	49.1 µin/in°F	50.5 µm/m°C	28.1 µin/in°F
E831-14	C.T.E. 100 - 150°C (212 - 302°F)	85.8 µm/m°C	47.7 µin/in°F	87.4 µm/m°C	48.5 µin/in°F
D150-18	Dielectric Constant 60 Hz	4,22		4,22	
D150-18	Dielectric Constant 1 kHz	3,96		3,92	
D150-18	Dielectric Constant 1 MHz	3,67		3,65	
D149-09	Dielectric Strength	6.6 kV/mm	675 V/mil	27.5 kV/mm	699 V/mil
E1545-11	Tg via DMA (E")	70°C	158°F	94°C	201°F
D648-16	HDT @ 0.46 MPa (66 psi)	94.0°C	201°F	276°C	529°F
D150-18	HDT @ 1.81 MPa (264 psi)	76.5°C	170°F	122°C	252°F

More information

For more information and buying options, please visit www.dsm.com/additive-manufacturing/

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