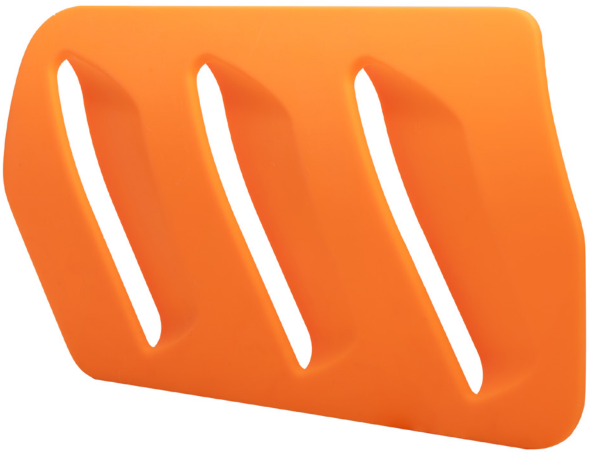
stratasys

Somos® PerFORM Reflect™

Stereolithography

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 stereolithography material developed specifically for 3D printing parts for wind tunnel testing with PIV. With this innovation, Stratasys 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 Stratasys' industry standard Somos® PerFORM, Somos® PerFORM Reflect demonstrates all the performance attributes that customers rely on such as low viscosity, low settling, fast processing, 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

Ideal Applications

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

LIQUID PROPERTIES		OPTICAL PROPERTIES		
Appearance	Orange	E_C	8.4 mJ/cm²	[critical exposure]
Viscosity	~1,100 cP @ 30°C	D_P	4.15 mils	[slope of cue-depth vs ln (E) curve]
Density	~1.61 g/cm³ @ 25°C	E_{10}	93.4 mJ/cm²	[exposure that gives 0.254 mm (.010 inch) thickness]

Data Sheet

MECHANICAL PROPERTIES		UV POSTCURE		THERMAL POSTCURE	
ASTM Method	**Property Description**	**Metric**	**Imperial**	**Metric**	**Imperial**
D638-14	Tensile Strength	63.3 MPa	9,180	72.4 MPa	10,500 psi
D638-14	Tensile Modulus	10,135 MPa	1,470 ksi	9,653 MPa	1,400 ksi
D638-14	Elongation at Break	0.79%		0.96%	
D638-14	Poisson's Ratio	0.318		0.315	
D790-15e2	Flexural Strength	119 MPAa	7,300 psi	130 MPa	18,800 psi
D790-15e2	Flexural Modulus	8,273 MPA	1,200 ksi	7,722 MPa	1,120 ksi
D256A-10e1	Izod Impact (Notched)	16.9 J/m	0.316 ft-lbf/in	20 J/m	0.375 ft-lbf/in
D2240-15	Hardness (Shore D)	92		94	
D570-98	Water Absorption	0.19%		0.14%	

THERMAL/ELECTRICAL 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	9,180	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	1,470 ks	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		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		87.4 μm/m°C	48.5 μin/in°F
D150-18	Dielectric Constant 60 Hz	4.22			
D150-18	Dielectric Constant 1 KHz	3.96			
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°C	201°F	276°C	529°F
D150-18	HDT @ 1.81 MPa (264 psi)	76.5°C	170°F	122°C	252°F

These values may vary and depend on individual machine processing and post-curing practices.

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