
# 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

| *Liquid Properties* | | *Optical Properties* | | |
|---|---|---|---|---|
| Appearance | Orange | $E_c$ | 8.4 mJ/cm² | [critical exposure] |
| Viscosity | ~1100cP @ 30°C | $D_p$ | 4.15 mil | [slope of cue-depth vs In (E)curve] |
| Density | ~1.61 g/cm3 @ 25°C | $E_{10}$ | 93.4 mJ/cm² | [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 MPAa | 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 | 9180 | 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 | 1470 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 | | 4,22 | |
| D150-18 | Dielectric Constant 1 kHz | 3,96 | | 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) | 94.0°C | 201°F | 276°C | 529°F |
| D150-18 | HDT @ 1.81 MPa (264 psi) | 76.5°C | 170°F | 122°C | 252°F |

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

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