

# Somos® Element

A stereolithography material engineered to create flawless investment castings

## Product Description

Through continuous interaction with our customers, pattern makers and foundries, Somos® developed the groundbreaking stereolithography resin Somos® Element — the new standard for producing Investment Casting patterns.

Somos® Element is an antimony-free stereolithography material that has been specifically designed to improve the repeatability and quality of 3D printed casting patterns. Patterns created with Somos® Element leave trace amounts of lightweight, easily-removable ash residue after burnout and have good green strength, so there's no worry of breakage during handling, while being dimensionally stable during storage. Any residue that is left behind is easily removed, leaving a perfectly clean void in the ceramic mold. This translates into lower mold prep times and lower rates of rework, saving customers time and money.

## Key Benefits

- Trace amounts of ash that are lightweight and easily removed
- Suitable for high-end alloy castings
- Rapid draining
- Produces accurate, repeatable parts regardless of size



Ash is easily blown away with Somos® Element

# Somos® Element Technical Data

Liquid Properties		Optical Properties		
Appearance	Clear	$E_c$	10 mJ/cm <sup>2</sup>	[critical exposure]
Viscosity	~125 cps @ 30°C	$D_p$	5.2 mils	[slope of cure-depth vs. ln (E) curve]
Density	1.11 g/cm <sup>3</sup> @ 25°C	$E_{10}$	68.4 mJ/cm <sup>2</sup>	[exposure that gives 0.254 mm (.010 inch) thickness]

Mechanical Properties		UV Postcure	
ASTM Method	Property Description	Metric	Imperial
D638-14	Tensile Modulus	3,170 MPa	460 ksi
D638-14	Tensile Strength at Break	53 MPa	7.7 ksi
D638-14	Elongation at Break	2.3%	
D570-98	Water Absorption	0.36%	
D790-15e2	Flexural Strength	114 MPa	16.6 ksi
D790-15e2	Flexural Modulus	3,230 MPa	468 ksi
D256-10e1	Izod Impact (Notched)	22 J/m	0.41 ft-lb/in
D2240-05	Durometer Hardness	86	

Thermal/Electrical Properties		UV Postcure	
ASTM Method	Property Description	Metric	Imperial
E831-13	C.T.E. -40 - 0°C (-40 - 32°F)	56.8 µm/m°C	31.5 µin/in°F
E831-13	C.T.E. 0 - 50°C (32 - 122°F)	75.7 µm/m°C	42.1 µin/in°F
E831-13	C.T.E. 50 - 100°C (122 - 212°F)	137 µm/m°C	76.1 µin/in°F
E831-13	C.T.E. 100 - 150°C (212 - 302°F)	142 µm/m°C	78.9 µin/in°F
D150-11	Dielectric Constant 60 Hz	3.7	
D150-11	Dielectric Constant 1 KHz	3.6	
D150-11	Dielectric Constant 1 MHz	3.4	
D149-09	Dielectric Strength	18.3 kV/mm	465 V/mil
E1545-11	T <sub>g</sub>	58°C	136°F
D648-16	HDT @ 0.46 MPa (66 psi)	58°C	136°F
D648-16	HDT @ 1.81 MPa (264 psi)	53°C	127°F

Burnout Properties		
Method	Property Description	
ICP	Antimony Content	Not detectable (<3 ppm)
TGA	Ash Content	<0.005 %

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

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## About RPS

RPS has been in operation over ten years and our engineers collectively have decades of experience working with stereolithography and laser sintering equipment. With proven experience in 3D printing, engineering, electronics, computer-aided engineering and more, we understand the technology and can offer advice on how it can suit your specific application.

We manufacture the **NEO800** stereolithography system, designed, developed and built by RPS engineers. We are also an HP Channel Partner of HP's Multi-Jet Fusion technology and offer a range of materials and software through our partnership with market-leading suppliers ALM, DSM Somos® and Materialise.

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