

## ► A1000-RAM10 (high temperature performance)

### Product Information

Elementum 3D's Aluminum Metal-Matrix Composites (MMC) combine the ductility, conductivity and toughness of metals with the strength, hardness, stiffness, and wear resistance of ceramic reinforcing phases. Aluminum MMCs are of particular interest to aerospace, automotive, and military applications that require high specific strength, and extreme wear resistance.

### Physical and Chemical Properties

Material composition: Proprietary A1000 w/10% ceramic

Density: 2.91 g/cc

Relative density: > 99.9%

Ultimate tensile strength: \*Approx. 49.7 ksi (343 MPa)

Yield strength: \*Approx. 38 ksi (262 MPa)

Hardness: 55 ±2 HRB

Wear: Pending

Modulus of elasticity: \*\* Approx. 93 GPa

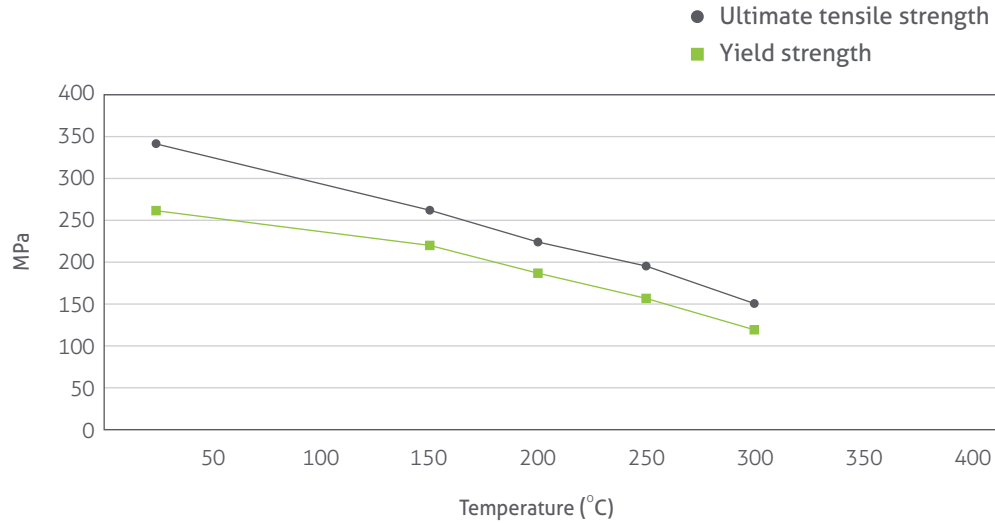
Thermal conductivity: 108 W/(m·K) (measured in xy)

Deposition rate: 6.8 mm<sup>3</sup>/s

### Elevated Temperature Testing

Testing temperature		Ultimate tensile strength		Yield strength		Elongation
°C	°F	MPa	ksi	MPa	ksi	%
25	77	343	49.7	262	38.0	11
150	302	264	38.3	220	31.9	12
200	395	224	32.4	187	27.1	13
250	482	193	27.9	166	24.1	13
300	572	152	22.0	121	17.6	15

All samples above were stress relieved at 300°C for 2 hours.  
[1] ASTM E8



All stated values are approximate values. All details given above are our current knowledge and experience, and are dependent on the equipment, parameters and operating conditions. The data provided in this document is subject to change and only intended as general information on a material set that is continually improving and developing. The data does not provide a sufficient basis for engineering parts. All samples were produced on an EOS M290. All tensile tests were performed at third party certified test labs such as Westmoreland Mechanical Testing & Research.

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