



## **MS-1A**

### **280° F Cure High Modulus Compression Molding System**

**MS-1A** is a high performance carbon fiber/epoxy resin compression molding system based on high modulus carbon fiber. MS-1A compression molding compound yields unparalleled stiffness and high strength. MS-1A is qualified for space applications.

#### **TYPICAL MS-1A PROCESS PARAMETERS**

- Pre-weigh the desired amount of molding compound.
- Pre-heat molding compound in 160° F ± 10° F oven for 10 minutes. Form mold charge to approximately fit cavity. Charge cavity with molding compound.
- Cure temperature: 280° F - 310° F, pinch pressure: 250 psi for 15 – 30 seconds. Close mold to 2000 psi, hold 30 minutes.

#### **MS-1A AMBIENT/DRY MECHANICAL PROPERTIES**

<i>Property*</i>	<i>ASTM Method</i>	<i>Coupon Form</i>	<i>Avg. Value</i>
Tensile Strength (ksi)	D 3039	Net Molded	42
Tensile Modulus (msi)	D 3039	Net Molded	19
Compressive Strength (ksi)	D 3410	Net Molded	41
Compressive Modulus (msi)	D 3410	Net Molded	16
Flexural Strength (ksi)	D 790	Net Molded	67
Flexural Modulus (msi)	D 790	Net Molded	13
Notched Shear Strength (ksi)	D 5370	Machined	19
Notched Shear Modulus (msi)	D 5370	Machined	3
Bolt Bearing Str. (ksi) [Single Shear]	D 5961	Machined	53

\* All properties normalized to 52% fiber volume.

#### **MS-1A PHYSICAL PROPERTIES**

<i>Property</i>	<i>Test Method</i>	<i>Average Value</i>
Fiber Length (inches)	N/A	1
Density (g/cm <sup>3</sup> )		1.50 – 1.55
Thermal Expansion X,Y (ppm/°F)		0.1 – 0.3
Tg (° F), Post Cured @ 350° F	DSC	327
Outgassing (%) [TML / CVCM]	ASTM E 595	0.063 / 0.00

Actual molding technique and conditions, fiber length, and part geometry will affect properties obtained.

2970 Bay Vista Court, Benicia, California 94510 ♦ Telephone: 707.747.2750 ♦ Facsimile: 707.747.2754

Information presented herein is typical and representative of material performance. Actual molding technique and conditions, fiber length, and part geometry will affect properties obtained. Any and all warranties, either express or implied, are disclaimed. All recommendations or suggestions contained herein or based hereon must be evaluated by the user to determine applicability and suitability for a particular use. Values should not be used directly for specification purposes without prior discussion with YLA, Inc. YLA, Inc. does not guarantee duplication of said results by third parties.