# 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

| *Property** | *ASTM Method* | *Coupon Form* | *Avg. Value* |
|---|---|---|---|
| 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

| *Property* | *Test Method* | *Average Value* |
|---|---|---|
| Fiber Length (inches) | N/A | 1 |
| Density ($g/cm^3$) | | 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.

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