

## **AMALGA** COMPOSITES, INC.

# Composite Cores and Rollers

for Lightweight, High Speed

### *Composites. . . the Better Choice*

- ▶ **Up to 75% lighter than metals.**  
Lighter rollers mean less inertia and higher speeds
- ▶ **High stiffness to weight ratio**  
Reduced machine wear
- ▶ **Increased Machine Life.**  
Less wear and tear on bushing, bearings and journals



#### **COMPANY PROFILE**

Founded in 1966, Amalga Composites, Inc., of Milwaukee, Wisconsin is a leader in the design, engineering and manufacturing of superior quality composite components. Amalga Composites is one of the country's largest independent filament-winding operations with:

- 80,000 sq.ft. manufacturing facility
- three coating/painting areas
- six separate production lines
- complete machining capabilities
- three 200 x 40-foot overhead crane bays

Doctoral-level engineering provides the design expertise to meet the toughest requirements and offer immediate technical support for our customers, from prototype through production. Our company provides high-volume output for both domestic and international customers.

#### **PRODUCT CAPABILITIES**

- Pneumatic Cylinder Tubing
- Pressure Vessels
- Drive Shafts
- Magnetic Coil Forms
- Booms and Masts
- Food Grade Tubing
- Tubular Cores, Rollers and Shafts
- Reservoir Quality Tubing
- Electrical Tubing and Fuse Components
- Launch Tubes

### *Applications*

- ▶ **Printing Press Rollers**
- ▶ **Process Rollers**
- ▶ **Idler Rollers**
- ▶ **Blown Film Lines**
- ▶ **Laminating Lines**
- ▶ **Paper and Film Machines**
- ▶ **Many other applications**

### *Features*

- ▶ **FILAMENT WOUND CONSTRUCTION**
- ▶ **CARBON FIBER AND/OR FIBERGLASS CONSTRUCTION**
- ▶ **LARGE RANGE OF DIAMETERS.**  
From 1 inch to 42 inch
- ▶ **LARGE RANGE OF LENGTHS**  
Up to 30 feet
- ▶ **CUSTOM ROLL ENDS**  
Thru Shaft w/ bearings, Live Shaft, Internal Bearings w/shafts
- ▶ **DYNAMIC BALANCING**
- ▶ **WALLS AS THIN AS 0.060 INCH**
- ▶ **CUSTOM FINISHES AND COATINGS AVAILABLE**

***Amalga Composite Cores and Rollers are designed, engineered and manufactured to meet the toughest applications***

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## AMALGA COMPOSITES, INC.

### CORES/ROLLERS

*Built for maximum stiffness.*

Material Properties	E-glass	Commercial Carbon	High Modulus Carbon
Flexural Modulus Longitudinal, x 10 <sup>6</sup> psi	5.5	14.0	21.0
Flexural Modulus Circumferential, x 10 <sup>6</sup> psi	1.1	5.0	7.5
Tensile Strength Longitudinal, psi	115,000	130,000	130,000
Tensile Strength Circumferential, psi	N/A	36,000	36,000
Compressive Strength Longitudinal, psi	5,000	130,000	130,000
Compressive Strength Circumferential, psi	26,000	50,000	50,000
Shear Modulus, x 10 <sup>6</sup> psi	1.0	1.0	2.2
Shear Strength, psi	8,000	8,000	8,000
CTE Circumferential, x 10 <sup>-6</sup> in/in/°F	8.6	7.1	6.4
CTE Longitudinal, x 10 <sup>-6</sup> in/in/°F	4.8	0.17	-43.6
Poisson's ratio, NUxy	0.27	0.24	0.69
Density, Lb/in <sup>3</sup>	0.072	0.058	0.058

#### Design Criteria

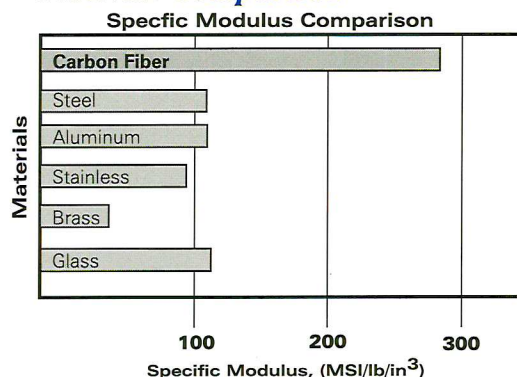
Web Material - \_\_\_\_\_  
 Web Width - \_\_\_\_\_  
 Web Speed - \_\_\_\_\_  
 Web Tension - \_\_\_\_\_  
 Operating Temp - \_\_\_\_\_  
 Max. Allowable \_\_\_\_\_  
 Deflection - \_\_\_\_\_  
 Wrap Angle - \_\_\_\_\_  
 Nip width - \_\_\_\_\_  
 Nip Angle - \_\_\_\_\_

### OVERWRAP REPAIRS

*Existing Cores and Rollers can be overwrapped for extended life.*

Material Properties	E-glass	Commercial Carbon
Flexural Modulus Longitudinal, x 10 <sup>6</sup> psi	1.2	1.3
Flexural Modulus Circumferential, x 10 <sup>6</sup> psi	8.0	19.0
Tensile Strength Longitudinal, psi	5,000	6,000
Tensile Strength Circumferential, psi	210,000	210,000
Compressive Strength Longitudinal, psi	17,000	35,000
Compressive Strength Circumferential, psi	138,000	185,000
Shear Modulus, x 10 <sup>6</sup> psi	0.8	1.0
Shear Strength, psi	8,000	8,000
CTE Circumferential, x 10 <sup>-6</sup> in/in/°F	3.7	-0.09
CTE Longitudinal, x 10 <sup>-6</sup> in/in/°F	13.3	11.9
Poisson's ratio, NUxy	0.08	0.02
Density, Lb/in <sup>3</sup>	0.072	0.058

#### Material Comparison



#### Application Assistance

So that we can better assist you in developing the right product for your application, please contact us by calling 414-453-9555 or e-mailing: [amalg@execpc.com](mailto:amalg@execpc.com). We will be happy to help you chose the product which best suits your application.

### Dimension Requirements

A	B	C	D	E	F
JOURNAL DIAMETER	BEARING WIDTH	CORE DIAMETER	FACE LENGTH	JOURNAL LENGTH	OVERALL LENGTH
Tolerance					
+	+	+	+	+	+
-	-	-	-	-	-