

AMALGA COMPOSITES, INC.



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

BLACK AMALGON® (BA)

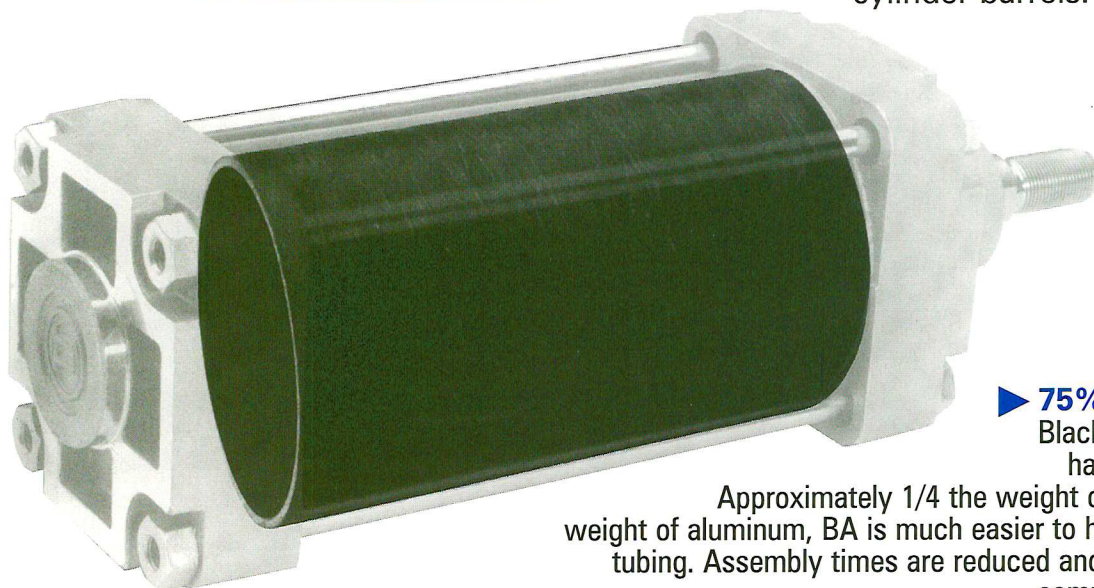
Pneumatic Cylinder Tubing

(Clear and Custom Colors Available)

The Alternative to Metal

For more than 30 years Amalga has produced an alternative to metallic pneumatic cylinder tubing.

Constructed of fiber reinforced thermoset epoxy matrix, Black Amalgon has an inner surface of evenly dispersed low friction additives. The results: A light weight, high strength, corrosion resistant composite material which replaces carbon steel, honed and chromed steel, stainless steel, aluminum or brass cylinder barrels.



...the Better Choice

- ▶ **75% Reduction in Weight.** Black Amalgon reduces material handling and shipping costs.

Approximately 1/4 the weight of steel or brass and 3/4 the weight of aluminum, BA is much easier to handle than traditional metal tubing. Assembly times are reduced and stress loads on connected component parts are decreased.

- ▶ **Superior Corrosion Resistance.** Trouble-free performance in chemical, high moisture and other adverse environments including salt and chlorinated water which results in significant reduction in life cycle costs.

- ▶ **Reduced Maintenance Costs.** No piston lock-up. BA's manufacturing process ensures a smooth, self-lubricating inside surface that prevents pistons from sticking, even after they have remained idle for months. Ongoing tests conducted on non-lubricated cylinders resulted in cycles of greater than a million strokes without requiring seal replacement.

- ▶ **Storage Capacity.** We can stock products to meet your JIT, MRP or KAN BAN requirements.

- ▶ **Eliminate Honing Costs.** A surface smoother than honed steel...without the cost of honing. A 5-15 Ra micro-inch inside surface finish performs just like a honed surface.

- ▶ **Shape Stability and Impact Resistance.** Ship, store and cut BA, it will retain its circular shape. Unlike metals, the product does not dent. Material impact strength is 40 Izod ft.- lbs.

- ▶ **Excellent Thermal Stability.** With a very low coefficient of thermal expansion, BA operates efficiently up to 275° F and customers have reported success in using our product at temperatures below -300° F.

- ▶ **Non-Magnetic Material.** Permits magnetic sensors to control piston movement directly through the wall thickness.

AMALGA COMPOSITES, INC.

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Metric Measurement System

Model No. ¹	Standard Bore Size (mm)	Random Lengths to	Operating kPa Non-Tie Rod Design ²	Operating kPa Tie Rod Design ²	Kilograms Per Meter
MBA32	32	1.52 meters	6614	13298	0.492
MBA40	40	1.52 meters	5305	10680	0.805
MBA50	50	3.05 meters	4203	8544	0.969
MBA63	63	3.05 meters	3376	6752	1.223
MBA72	72	3.05 meters	3128	5822	1.059
MBA80	80	3.05 meters	2618	5305	1.640
MBA100	100	3.05 meters	2136	4272	1.938
MBA125	125	3.05 meters	1723	3445	2.385
MBA125 A	125	3.05 meters	2756	4754	3.578
MBA160	160	3.05 meters	1309	2687	2.982
MBA160 A	160	3.05 meters	2136	3721	4.622
MBA160 B	160	3.05 meters	2963	4685	6.262
MBA200	200	3.05 meters	1034	2136	3.727
MBA200 A	200	3.05 meters	1723	2963	5.665
MBA200 B	200	3.05 meters	2343	3790	7.604

FOOTNOTES:

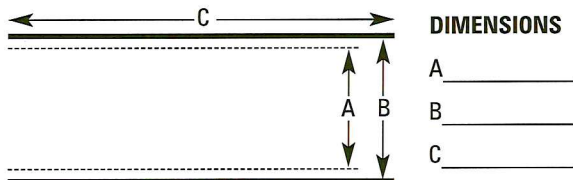
- Under 1.000-inch tooling available. Tooling constantly upgraded. Call for availability.
- Operating pressure calculated with minimum 4:1 safety factor.

Let Us Quote Your Application!

NAME: _____

COMPANY: _____

PHONE: _____



CHAMFER: NO YES Angle _____

SHOULDER: NO YES Depth _____ Length _____

HOLES: NO YES Diameter _____ Location _____

OTHER OPERATIONS: _____

QUANTITY IN PRODUCTION: _____

TOLERANCE REQUIREMENTS: O.D. _____ I.D. _____

Length _____ Other _____

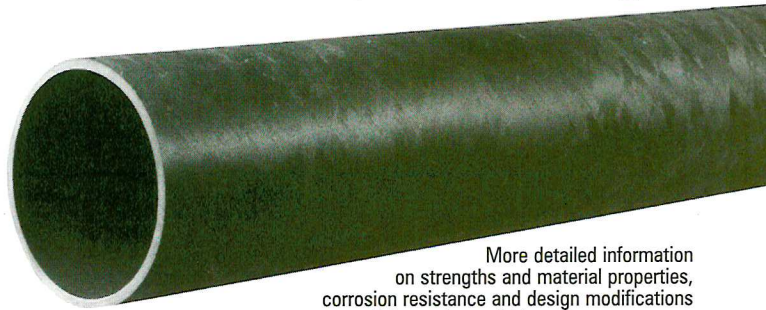
SAFETY FACTOR: _____

CYLINDER APPLICATION? YES NO

FAX this to: 414-453-9561

BLACK AMALGON® (BA)

Pneumatic Cylinder Tubing



More detailed information on strengths and material properties, corrosion resistance and design modifications will be made available upon your request.

Standard Measurement System

Model No. ¹	Standard Bore Size (Inches)	Random Lengths to	Operating PSI Non-Tie Rod Design ²	Operating PSI Tie Rod Design ²	Weight Per Foot LBS
BA100	1.000	5 feet	1220	2440	0.33
BA112	1.125	5 feet	1080	2170	0.37
BA125	1.250	5 feet	980	1950	0.41
BA150	1.500	5 feet	810	1620	0.50
BA175	1.750	5 feet	700	1390	0.56
BA200	2.000	10 feet	610	1200	0.66
BA225	2.250	10 feet	543	1000	0.75
BA250	2.500	10 feet	490	970	0.83
BA275	2.750	10 feet	440	890	0.91
BA300	3.000	10 feet	410	810	1.00
BA325	3.250	10 feet	380	750	1.10
BA350	3.500	10 feet	350	700	1.20
BA375	3.750	10 feet	330	650	1.30
BA400	4.000	10 feet	300	610	1.30
BA500	5.000	10 feet	240	490	1.70
BA575	5.750	10 feet	210	420	1.90
BA600	6.000	10 feet	200	410	2.00
BA700	7.000	10 feet	170	350	2.30
BA800	8.000	10 feet	150	300	2.70
BA1000 A	10.000	10 feet	190	330	5.00
BA1000 B	10.000	10 feet	260	430	6.70
BA1200 A	12.000	10 feet	160	280	6.00
BA1200 B	12.000	10 feet	220	360	8.00
BA1400 A	14.000	10 feet	140	240	7.00
BA1400 B	14.000	10 feet	190	310	9.30
BA1600 B	16.000	10 feet	170	270	10.70
BA1600 C	16.000	10 feet	210	320	13.40
BA1800 B	18.000	10 feet	150	240	11.50
BA1800 C	18.000	10 feet	190	290	15.00
BA2000 B	20.000	10 feet	130	220	13.50
BA2000 C	20.000	10 feet	170	260	17.00
BA2400 C	24.000	8 feet	140	220	19.10
BA2800 D	28.000	10 feet	120	220	36.00
BA3000 D	30.000	8 feet	100	200	41.40

Standard wall thickness: .125 to .500. Custom wall thicknesses available.