



# CIP Marine

**24-Hour Emergency Support  
1-Day Turnaround for Custom Sizes**

**CIP Composites** are laminated polymer materials made by impregnating textiles with thermosetting resins. Solid lubricants are added to the resin to provide evenly dispersed lubrication throughout the material, eliminating the need for external lubrication. This combination of resin reinforced with textile creates a dimensionally stable material **ideal for replacing bronze** in marine environments.



## Applications

- Rudder / Pintle
- Stern Tube
- Propeller Shaft
- Fin Stabilizers
- Thrusters
- Fairleads
- Crane Masts / Davits
- Winches / Capstans
- Skidding Pads
- Stern Rollers
- A-Frame / LARS



**Benefits:** self-lubricating • low coefficient of friction • high load capacity • eliminates greasing systems • wet or dry running • negligible water swell • extended operating life • light weight • manufactured to specification • nonconducting • common installation (press, freeze, fasten, or bond) • easy to machine • environmentally friendly • nonmetallic • made in the USA

**One Group, One Location, Reaching Globally**

## Standard Shapes

### Tubes

Minimum Bore	1/2 in. (13 mm)
Maximum Bore	65 in. (1651 mm)
Standard Lengths	16 – 24 – 32 in. (406 – 610 – 813 mm)

### Sheets

Minimum Thickness	1/8 in. (3 mm)
Maximum Thickness	6 in. (152 mm)
Standard Widths	16 – 24 – 32 in. (406 – 610 – 813 mm)
Standard Lengths	24 – 36 – 48 – 60 in. (610 – 914 – 1219 – 1524 mm)

## Custom Products / Short Lead Times

**Custom sizes, fast delivery and expert service to meet your needs.** CIP offers a fully equipped machine shop on location where components can be manufactured to customers' specifications or our experts can provide recommendations. Expedited requests for custom products are treated on an individual basis.



## Physical Properties - CIP Marine

### Compressive Strength

Ultimate	51,000 PSI (351 MPa)
Yield	15,000 PSI (103 MPa)

### Tensile Strength

12,000 PSI (83 MPa)

### Rockwell Hardness

100 M

### Density

.047 lbs/in<sup>3</sup> (1.3 g/cm<sup>3</sup>)

### Water Swell

<0.15%

## Mechanical Properties

### Coefficient of Friction - Dry

0.15 - 0.20

## Thermal Properties

### Operating Temperatures

-40° to 200°F (-40° to 93°C)

### Coefficient of Thermal Expansion

$3.5 \times 10^{-5} / \Delta^{\circ}\text{F}$  ( $6.3 \times 10^{-5} / \Delta^{\circ}\text{C}$ )



RINA and ABS Type Approved for rudder and stern tube bearings.



CIP is dedicated to providing the highest quality products with a focus on exceeding requirements. We strive for complete customer satisfaction through continuous improvement in service and quality.

## Columbia Industrial Products

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