

# ***CIP Composite Bearings***

## ***Oil & Gas***



Columbia Industrial Products  
CIP Composites

## CIP Composites

CIP Composites are laminated composite bearing materials made by impregnating fabrics with thermosetting resins. The physical properties of CIP Composites make them an excellent choice for various applications in the Oil & Gas industry.

CIP Composites offer an attractive, performance driven alternative to the more traditional metallic materials commonly used for bearings and bushings. CIP Composites are easily machined and perform excellently in heavy duty applications where high loads, shock and edge loading may be anticipated. CIP materials are non-metallic and do not contain fiberglass or any abrasive fillers (such as calcium carbonate).

Reduce overall maintenance and increase wear life with CIP Composites as wear pads, thrust washers, wear rings and bearings.



# Reliability through Superior Quality

## Standard Material Increments

### Tubes

Minimum Bore.....3/8" (9.5mm)  
Maximum Bore.....54" (1371mm)  
Standard Lengths.....16" - 24" - 32" (406mm - 609mm - 812mm)

### Sheets

Minimum Thickness.....1/16" (1.6mm)  
Maximum Thickness.....6" (152mm)  
Standard Widths.....16"-24"- 32" (406mm - 609mm - 812mm)  
Standard Lengths.....24" - 36"- 48" - 60"  
(609mm - 914mm - 1219mm - 1524mm)

## Custom Components

Special components can be manufactured to CIP or customer's drawings. Parts requiring hex, square or irregular ID shapes can be produced.



## Columbia Industrial Products

CIP is dedicated to providing the highest quality material performance with exceptional customer service to build long term relationships.

## CIP Services World Wide

- Superior Customer Service
- 24 Hour Emergency Support
- Engineering & Technical Support
- Custom Sizes
- Short Lead Times

## Benefits

- No Abrasive Fillers (Calcium Carbonate)
- Environmentally Friendly
- Wet or Dry Running
- Stable in Fresh & Salt Water
- Self Lubricating
- Low Coefficient of Friction
- Edge Load Tolerant
- Excellent Wear Life
- High Shock Loading
- Low Moisture Absorption
- Custom Sizes
- Freeze or Press Fit
- Easy to Machine
- Machinable in Place
- Non-Conducting Available

## Physical Properties (Tests performed on CIP 100 series sheet material)

### Compressive Strength

Ultimate.....	50,000 PSI	345 MPa
Yield.....	15,000 PSI	103 MPa
Parallel.....	13,500 PSI	93 MPa
Tensile Strength.....	11,000 PSI	75 MPa
Tensile Modulus of Elasticity.....	470,000 PSI	3,240 MPa
Poisson's Ratio.....	0.231	
Shear Strength.....	12,000 PSI	82 MPa
Flexural Modulus of Elasticity.....	260,000 PSI	1,793 MPa
Hardness Rock well.....	100 M	
Density.....	.047lbs/in <sup>3</sup>	1.3 g/cm <sup>3</sup>
Water Swell.....	<0.1%	

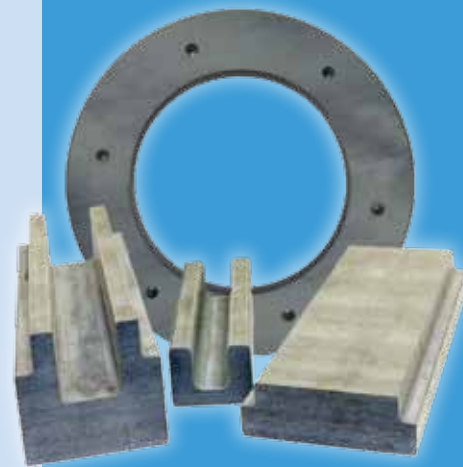
## Thermal Properties

### 100 & 200 Materials

Operating Temperatures.....	-40° to 200°F	-40° to 93°C
Coefficient of Thermal Expansion.....	68° to 200°F	20° to 93°C
Normal to Laminate.....	3.5 x 10 <sup>-5</sup> /Δ°F	6.3 x 10 <sup>-5</sup> /Δ°C
Parallel to Laminate.....	1.8 x 10 <sup>-5</sup> /Δ°F	3.2 x 10 <sup>-5</sup> /Δ°C

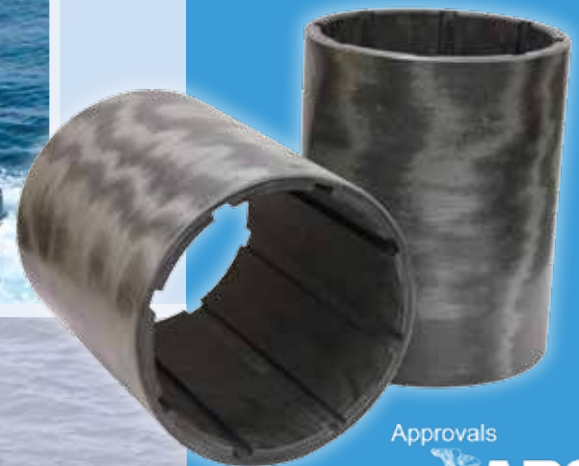
### CIP 300 Materials

Operating Temperatures.....	-40° to 400°F	-40° to 204°C
Coefficient of Thermal Expansion.....	68° to 400°F	20° to 204°C
Normal to Laminate.....	4.0 x 10 <sup>-5</sup> /Δ°F	7.2 x 10 <sup>-5</sup> /Δ°C
Parallel to Laminate.....	2.0 x 10 <sup>-5</sup> /Δ°F	3.6 x 10 <sup>-5</sup> /Δ°C



## Applications

- Turbo Drill Head Bearings
- Buoy Anchor Pin Bearings
- Stinger Rollers
- Tanker Mooring Systems
- Hydrodynamic Excavators
- Windlass
- Jack Lift Bearings
- Drill String Support Pivots
- Dredging Ships
- Fairleads
- Sheaves
- Chain Guards



*Experience built it.*

*Innovation drives it.*





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