



PROVEN PERFORMANCE BEST SERVICE HIGHEST QUALITY



Serving the hydro industry since 1998

We Can Do It!



CIP Hydro Composite

CIP Hydro™ is a laminated composite bearing material specifically developed for hydro environments and is proven to be an excellent replacement for wood, bronze, thermoplastics i.e. nylon or acetal, and urethanes. The physical properties of CIP Hydro make it an excellent choice as bearing and wear materials in various applications.

CIP Hydro has built a solid reputation of having proven performance over time and offering the best service in the industry. We have a long history of working with the US Army Corps of Engineers, utilities, and contractors providing high quality bearing products.

Tested by PowerTech Labs and approved by the US Army Corps of Engineers

Experience built it.

Innovation drives it.



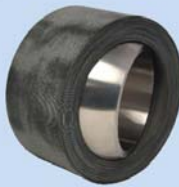
Standard Shapes

Tubes

- Minimum Bore..... 1/2 in. (13 mm)
- Maximum Bore 70 in. (1778 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. Expedited requests for custom products are treated on an individual basis.



CIP Services World Wide

- No minimum quantities required
- Custom prototypes
- Emergency service
- Superior customer service
- Engineering & technical support
- Custom sizes
- Short lead times

CIP Hydro™ is manufactured by Columbia Industrial Products - visit us o

Benefits

- Environmentally friendly
- Self-lubricating
- Negligible water swell
- Excellent wear life
- High shock loading
- Edge load tolerant
- Stable in fresh & salt water
- Low friction
- Easy to machine
- Machinable in place
- Eliminates greasing systems
- Freeze fitting
- Non-conducting
- Light weight
- Custom sizes



Physical Properties

Compressive Strength (ASTM D695)

Ultimate.....	50,000 PSI	345 MPa
Yield	15,000 PSI	103 MPa
Parallel.....	13,500 PSI	93 MPa
Modulus.....	500,000 PSI	3,447 MPa
Tensile Strength (ASTM D638)	12,000 PSI	82 MPa
Tensile Modulus of Elasticity (ASTM D638).....	470,000 PSI	3,240 MPa
Poisson's Ratio (ASTM D3039-08)		0.231
Shear Strength (ASTM D2344).....	12,000 PSI	82 MPa
Flexural Modulus of Elasticity (ASTM D790) ...	260,000 PSI	1,793 MPa
Hardness Rockwell M (ASTM D785).....		100
Density (ASTM D792)	0.047 lbs/in ³	1.3g/cm ³
Water Swell (ASTM D570).....		<0.1%



Hydro Applications

Composite bearing and wear materials for hydro applications.

- Wicket Gate
- Main Guide
- Linkage
- Servo Motor
- Head Cover
- Operating Ring
- Vertical Gate
- Spillway Trunnion
- Lock/Miter Gate
- Fish Screens/Ladders
- Trash Rakes

Thermal Properties

Coefficient of Thermal Expansion

Operating temperatures.....	-40° to 200° F	-40° to 93° C
Coefficient of Thermal Expansion		
Normal to Laminate.....	$3.5 \times 10^{-5} / \Delta^{\circ}F$	$6.3 \times 10^{-5} / \Delta^{\circ}C$
Parallel to Laminate	$1.8 \times 10^{-5} / \Delta^{\circ}F$	$3.2 \times 10^{-5} / \Delta^{\circ}C$



Reliability through
superior quality



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