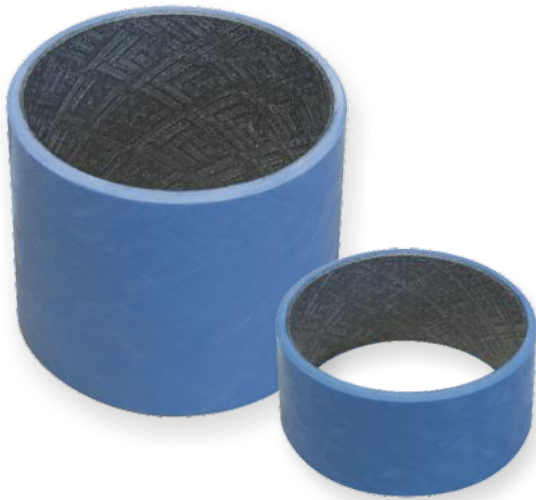


# HPMB®

## HIGH PRECISION FIBER REINFORCED COMPOSITE BEARING



### APPLICATIONS

**Industrial** – Railroad stabilization system, railroad brake linkages, injection molding machines – guide bushings, hydraulic cylinder pivots, water turbines – wicket gates, servomotors, links, water gates, valves

### CHARACTERISTICS

- Machinable inner and outer diameters for superior application precision, circularity and cylindricity tolerances
- Pre-machined high precision HPMB bearings available for immediate installation
- High precision through easy single point machining of the bearing liner, on-site prior to installation
- Superior precision achieved with post-installation (inner diameter tolerance IT7 attainable) single point machining of the bearing liner
- High load capacity
- Excellent shock and edge loading capacity
- Low friction with negligible stick-slip
- Low wear rate for extended bearing life
- Excellent corrosion resistance
- Dimensionally stable - very low water absorption, low swelling
- Environmentally friendly grease-free operation
- Tested by Powertech Test to evaluate performance of self-lubricated bushings in wicket gate applications
- Tested acc. to ASTM E595/ECSS-Q-ST-70-02C - Outgassing properties of materials used in Spacecraft equipment

### AVAILABILITY

**Bearing forms made to order:** Finished cylindrical bushings, pre-machined cylindrical bushings, flanged cylindrical bushings (subject to design review)

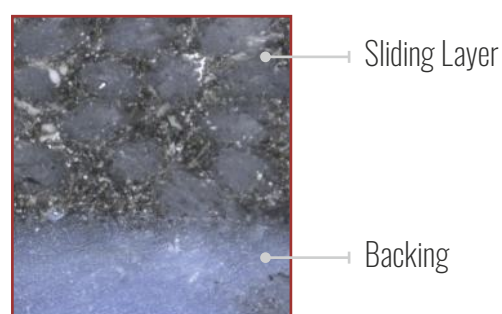


| BEARING PROPERTIES                      |                         | UNITS                   | VALUE        |
|-----------------------------------------|-------------------------|-------------------------|--------------|
| <b>GENERAL</b>                          |                         |                         |              |
| Maximum load, p                         | Static                  | N/mm <sup>2</sup>       | 210          |
|                                         | Dynamic                 | N/mm <sup>2</sup>       | 140          |
| Operating temperature                   | Min                     | °C                      | - 196        |
|                                         | Max                     | °C                      | 163          |
| Coefficient of linear thermal expansion | Normal to the Surface   | 10 <sup>-6</sup> /K     | 12.6         |
| <b>DRY</b>                              |                         |                         |              |
| Maximum sliding speed, U                |                         | m/s                     | 0.13         |
| Maximum pU factor                       |                         | N/mm <sup>2</sup> x m/s | 1.23         |
| Coefficient of friction, f              |                         |                         | 0.03 - 0.12* |
| <b>RECOMMENDATIONS</b>                  |                         |                         |              |
| Shaft surface roughness, Ra             |                         | µm                      | 0.2 - 0.8    |
| Shaft surface hardness                  | Normal                  | HB                      | > 180        |
|                                         | For longer service life | HB                      | > 480        |

\* Depending on operating conditions

| OPERATING PERFORMANCE    |                            |
|--------------------------|----------------------------|
| Dry                      | Very Good                  |
| Oil lubricated           | Fair                       |
| Grease lubricated        | Not Recommended            |
| Water lubricated         | Very Good                  |
| Process fluid lubricated | To be tested by final user |
| FOR SUPERIOR PERFORMANCE |                            |
| Oil lubricated           | GAR-FIL / HPF              |
| Grease lubricated        | DX / DX10                  |
| Process fluid lubricated | GAR- FIL / HPF             |

## MICROSECTION



For additional product offerings visit:  
<https://www.ggbearings.com/en/our-products/fiber-reinforced-composite-bearings/hpmb>