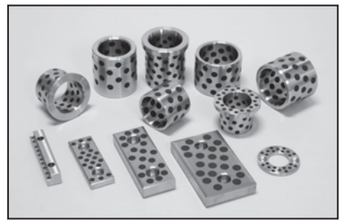
Oiles 500SP1 High-strength brass bearings with embedded solid lubricant



RoHS2 ELV Lead Free

Feature

- Serviceable without the need for lubrication.
- Demonstrates high performance under high-load and low-speed operations.
- Demonstrates superior wear resistance in applications where oil film is seldom produced such as reciprocating motions, oscillation, frequent starts and stops, etc.
- Superior chemical resistance and corrosion resistance.
- Standard products are available in various sizes.

Service range	500SP1 SL1		500SP1 SL4
Lubrication condition	Dry	periodic lubrication	Dry
Service temperature range ℃	−40～+300	−40～+150	−40～+80
Allowable max. pressure P N/mm² {kgf/cm²}	29 (150) {296 (1,530)}		49 (150) {500 (1,530)}
Allowable max. velocity V m/s {m/min}	0.50 {30}	1.00 {60}	0.25 {15}
Allowable max. PV value N/mm² · m/s {kgf/cm² · m/min}	1.65 {1,010}	3.25 {1,990}	1.65 {1,010}

The values in parentheses are static bearing pressures, which are the bearing pressures in applications with no motion or very small motion (≦0.0017m/s[0.1m/min]).

Mechanical properties

Density	——	g/cm³	7.8
Tensile strength	JIS Z 2241	N/mm² {kgf/mm²}	755 {77}
Tensile elongation at break	JIS Z 2241	%	12
Compressive strength	——	N/mm² {kgf/mm²}	345 {35} (Note)
Impact strength	JIS Z 2242	J/cm² {kgfm/cm²}	19 {1.9}
Hardness	JIS Z 2243	HBW	210
Modulus of longitudinal elasticity	——	N/mm² {kgf/mm²}	105,000 {10,700}
Co-efficient of linear expansion	——	×10⁻⁵ ℃⁻¹	2.12
Thermal conductivity	——	W/m℃ {cal/sec℃cm}	87.8 {0.21}

※The values shown above are typical values, not the standard values.
(Note) Compressive strength is 0.1%

⚠ When you use standard 500SP1 seires in the temperature of 150℃ and over, contact us for more information.

⚠ Refer to page 36 for the suitable solid lubricant for made-to-order bearings.

⚠ Please indicate the type of motion (rotation, reciprocating, rotation & reciprocating) for custom-made products.

⚠ Solid lubricant, SL401 and SL403 are not lead-free.

Lathe turning

Cutting tool	carbide tool (JIS)	
	Relief angle	5～10°
	Rake angle	2～5°
	Nose radius (mm)	0.40～0.80
Condition	Speed (m/min)	100～200
	Cut depth (mm)	0.05～0.30
	Feed (mm/rev)	0.08～0.30

Some products require application of solid lubricants on the sliding surface after processing.
※Contact us for grinding and milling information.

Machining accuracy (bushing)

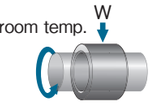
I.D.	O.D.	Length
class 7 to 8	class 6 to 7	class 8 to 9

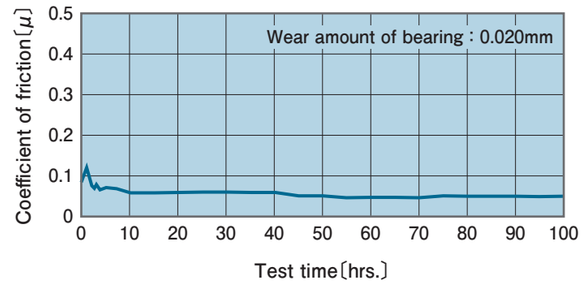
Classes here are in JIS standard.
This product demonstrates satisfactory performance at the slide surface roughness of Rz6.3 to 12.5μm.

Test data

Journal rotation test 500SP1-SL1

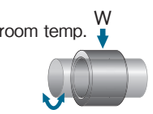
<Testing conditions>
Bearing dimension : φ40×φ50× ℓ 30
Mating material : S45C high frequency quenched
Pressure : 24.5N/mm² {250.0kgf/cm²}
Velocity : 0.033m/s {2.0m/min}
Test time : 100hrs.
Ambience : in the atmosphere, room temp.
Lubrication : dry

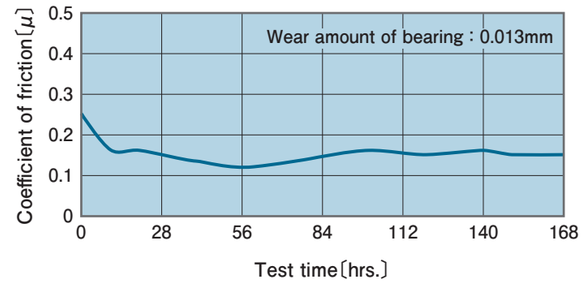




Journal oscillation test 500SP1-SL1

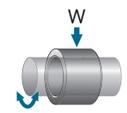
<Testing conditions>
Bearing dimension : φ40×φ50× ℓ 30
Mating material : S45C
Pressure : 19.6N/mm² {200.0kgf/cm²}
Velocity : 0.025m/s {1.5m/min}
Oscillating cycle : 24cpm
Oscillating angle : ±45°
Test time : 168hrs.
Ambience : in the atmosphere, room temp.
Lubrication : dry

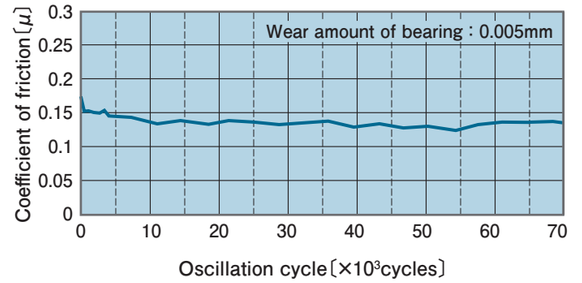




Journal oscillation test 500SP1-SL4

<Testing conditions>
Bearing dimension : φ40×φ50×ℓ30
Mating material : SUS304
Pressure : 29.4N/mm² {300kgf/cm²}
Velocity : 0.012m/s {0.75m/min}
Oscillating cycle :12cpm
Oscillating angle : ±45°
Test cycle : 70,000cycle (97.2h)
Ambience : in the atmosphere, room temp.
Lubrication : initial grease SL464g coating





Journal oscillation test 500SP1-SL4

<Testing conditions>
Bearing dimension : φ60×φ75×ℓ50
Mating material : SUS403
Pressure : 24.5N/mm² {250kgf/cm²}
Velocity : 0.018m/s {1.13m/min}
Oscillating cycle :12cpm
Oscillating angle : ±45°
Test cycle : 70,000cycle (97.2h)
Ambience : in the purified water
Lubrication : initial grease SL464g coating