

Oiles 500SP₄ High-strength brass bearings with embedded solid lubricant



Feature

- 500SP₄ is a self-lubricating bearing with embedded solid lubricant and metal base that conforms to the universally-acknowledged ASTM Standards (C86300).
- 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.

Service range		500SP ₄ SL1	
Lubrication condition	Dry	periodic lubrication	
Service temperature range °C	-40~+300	-40~+150	
Allowable max. pressure P N/mm ² {kgf/cm ² }	29 (150) {296 (1,530)}		
Allowable max. velocity V m/s {m/min}	0.50 {30}	1.00 {60}	
Allowable max. PV value N/mm ² · m/s {kgf/cm ² · m/min}	1.65 {1,010}	3.25 {1,990}	

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

※Above values are applicable when solid lubricants SL1 are used.

※Use the solid lubricant SL464 (lead-free) in water or in environments where the bearings are always exposed to water splashes. The operating temperature range is from -40°C to +80°C (-40°F to 176°F).

Mechanical properties

Density	—	g/cm ³	7.8
Tensile strength	JIS Z 2241	N/mm ² {kgf/mm ² }	755 {77}
Tensile elongation at break	JIS Z 2241	%	12
Compressive strength	—	N/mm ² {kgf/mm ² }	345 {35} (Note)
Impact strength	JIS Z 2242	J/cm ² {kgf/cm ² }	19 {1.9}
Hardness	JIS Z 2243	HBW	223
Modulus of longitudinal elasticity	—	N/mm ² {kgf/mm ² }	105,000 {10,700}
Co-efficient of linear expansion	—	$\times 10^{-5}$ °C ⁻¹	2.2
Thermal conductivity	—	W/m°C {cal/sec°Ccm}	87.8 {0.21}

※The values shown above are typical values, not the standard values.

(Note) Compressive strength is 0.1%

▲ 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)	
Condition	Relief angle	5~10°	
	Rake angle	2~5°	
	Nose radius (mm)	0.40~0.80	
	Speed (m/min)	100~200	
Condition	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.

Oiles 500SPR Hard special copper alloy bearings with embedded solid lubricant



Features

- Applicable to higher pressure than 500HP.
- Help realize a long-life operation or a compact design.

Service range	500SPR SL1	
Lubrication condition	Dry	periodic lubrication
Service temperature range °C	-40~+150	
Allowable max. pressure P N/mm ² {kgf/cm ² }	90 (200) {918 (2,041)}	
Allowable max. velocity V m/s {m/min}	0.25 {15}	0.50 {30}
Allowable max. PV value N/mm ² · m/s {kgf/cm ² · m/min}	1.65 {1,010}	3.25 {1,990}

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

※Above values are applicable when solid lubricants SL1 are used.

Mechanical properties

Density	—	g/cm ³	7.49	Hardness	JIS Z 2243	HBW	280
Tensile strength	JIS Z 2241	N/mm ² {kgf/mm ² }	780 {79}	Modulus of longitudinal elasticity	—	N/mm ² {kgf/mm ² }	105,000 {10,720}
Tensile elongation at break	JIS Z 2241	%	1.0	Co-efficient of linear expansion	—	$\times 10^{-5}$ °C ⁻¹	1.97
Compressive strength	—	N/mm ² {kgf/mm ² }	460 {47} (Note)	※The values shown above are typical values, not the standard values. (Note) Compressive strength is 0.1%			

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

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

Test data

Journal oscillation test 500SPR-SL1

<Testing conditions>

Bearing dimension : $\phi 60 \times \phi 75 \times \phi 42$

Mating material : SCM440 quenched by high frequency induction hardening

Pressure : 90N/mm² {918kgf/cm²}

Velocity : 0.008m/s {0.47m/min}

Oscillation cycle : 5cpm

Oscillation angle : $\pm 45^\circ$

Test time : 100hrs.

Ambience : in the atmosphere, room temp.

Lubrication : initially-greased only

