NOVIN Ball Bearing

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World-class

SF-1X

[1] SF-1X is wall wrapped bearings made of triple layer composites material which consists of a steel backing, a sintered porous bronze particles interlayer and calendared with PTFE and Pb mixture as surface layer. It is of low friction coefficient, anti-wear, anti-corrosion and can be used without oil, or only a trace of oil os needed. Moreover, it is of low cost, low vibration and low noise, compact and light. SF-1X is widely applied in various sliding articles of different kind of machines such as textile machines, tobacco machines, hydraulic vehicles, automobiles, agriculture and forests machines and soon.

Load Capacity	140N/mm²	Friction Coef(μ)	0.04~0.20
Temperature Limit	-195℃~280℃	PV Limit (dry)	3.6N/mm²·m/s
Speed Limit	5m/s	PV Limit (oil)	50N/mm²·m/s

SF-1T

[2]SF-1T is composed of a specially designed surface layer of PTFE formulations and is specifically applied for the high PV bushes of gear oil pumps.

It is to be used in hydrodynamic or boundary lubricating condition of medium or high pressure gear oil pumps such as P=16-25Mpa, V=3.5-5m/s. It shows the benefit of low friction coefficient, wear resistant and anti-impact properties. At hydrodynamic lubrication, the PV limit reaches to 120 N/mm2.m/s. It is a best choice for the bushes of various kinds of gear pumps as well as plunger pumps, vane pumps and so on. It's successfully tested over one million times by Changjiang hydraulic equipments company.

Load Capacity	140N/mm²	Friction Coef(μ)	0.03~0.18
Temperature Limit	-195℃~280℃	PV Limit (dry)	4.3N/mm²·m/s
Speed Limit	10m/s	PV Limit (oil)	60N/mm²·m/s

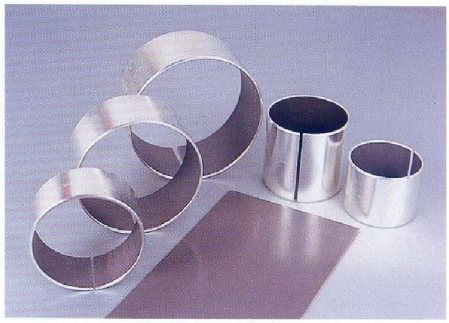
SF-1P

[3]SF-1P is particularly suitable for bushes in reciprocating motion, and the properties are similar to that of the foreign product designated as Dd2. It is wear resistant, and so can keep the lubricating oil clear after long period of working. Meanwhile it can protect the mating surface from wearing. It is used widely as oil damping vibrating absorber of automobiles, motorcycles and various hydraulic cylinders, hydraulic motors and pneumatic elements.

Load Capacity	140N/mm²	Friction Coef(μ)	0.04~0.20
Temperature Limit	-195℃~ 280℃	PV Limit (dry)	3.6N/mm²·m/s
Speed Limit	2.5m/s	PV Limit (oil)	50N/mm²·m/s

SF-1W

[4]SF-1W is a new type bushing without lead composition which is developed aiming at increasing demands on environmental protection. Besides its wide application on general machines, SF-1X is particularly suitable for food machine, pharmaceutical machine, tobacco , machine etc.



Load Capacity	140N/mm²	Friction Coef(μ)	0.04~0.20
Temperature Limit	-195℃~280℃	PV Limit (dry)	3.6N/mm²·m/s
Speed Limit	5m/s	PV Limit (oil)	50N/mm²·m/s

SF-1B

[5]SF-1B is of high safety factory, and is particularly appropriate for high temperature environment where no oil is efficient and where the machine must be under successive long period working condition.
This is widely used in steel metallurgy industry such as bushes for roller grooves of successive casting machines, cement grouting pumps and screw conveyers for cement. It can also be composed in steel housing or fabricated into Flanged bushes which can move both in radial and in axial Directions.
It can be applied in bridge bearing plate because of thicker inner surface layer to arrive 130N/mm².

Load Capacity	140N/mm²	Friction Coef(μ)	0.03~0.18
Temperature Limit	-195℃~300℃	PV Limit (dry)	4.3N/mm²·m/s
Speed Limit	5m/s	PV Limit (oil)	50N/mm²·m/s

SF-1D

[6]SF-1D hydraulic bushing is developed on the basis of SF-1P and meanwhile considering the motion way of oil pump and damper. It is the substitute of and parallels in performance with abroad DP4. In addition to covering the same usage of SF-1P, SF-1D in particular fits frequently reciprocating motion with a high side force. It is a tendency to gradually replace SF-1P with SF-1D, the latter will cover a wide application in automobile, motor damper and oil pumps, etc.

Load Capacity	140N/mm²	Friction Coef(μ)	0.04~0.20
Temperature Limit	-195℃~ 280℃	PV Limit (dry)	3.8N/mm²·m/s
Speed Limit	3m/s	PV Limit (oil)	50N/mm²·m/s

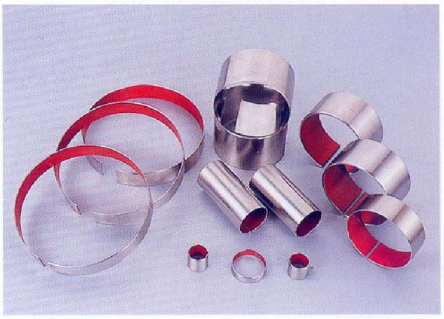
SF-1S

[7]SF-1S is of oil resistant, acid resistant, alkali-resistant and seawater resistant. moreover, there is no lead in the PTEE surfacelayer, and so is particularly fit for bushings in foodstuff machines, alkali flow meters, pumps motion elements in pharmaceutical machines, printing machines chemical engineering machines and other ocean industry. This is a triple layers composites bush, the base material being a bronze plate and a film of heat resistant power filled PTEE being calendered onto the sintered spherical bronze interlayer.

Load Capacity	140N/mm²	Friction Coef(μ)	0.04~0.20
Temperature Limit	-195℃~ 280℃	PV Limit (dry)	3.6N/mm²·m/s
Speed Limit	2.5m/s	PV Limit (oil)	50N/mm²·m/s

SF-1SS

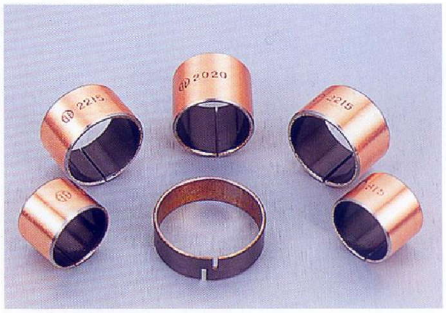
[8]SF-1SS stainless bushing with plastic coated is based on stainless steel spay-painted PTEE on the surface. It is of anti-acid, anti-alkali, anti-salty liquid and can be widely used in chemical industry such as acid/alkali flow indicator, pumps, valves etc and also in the sliding position where anti-corrosion is a necessity mostly in sea industry.



Load Capacity	100N/mm²	Friction Coef(μ)	0.03~0.18
Temperature Limit	-190℃~ 280℃	PV Limit (dry)	3.0N/mm²·m/s
Speed Limit	2.5m/s	PV Limit (oil)	40N/mm²·m/s

SF-PK

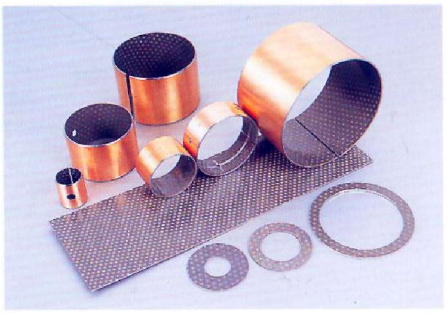
[9]SF-PK is new kind of sliding bearings. It consists of steel, bronze and PTFE. The advantage is better when being in water and little oil. Its PEEK thickness is over 0.1 mm so that it has longer life than SF-1. It's widely used in high quality shock absorbers, lathes and lifting parts of tanks and rockets.



Load Capacity	100N/mm²	Friction Coef(μ)	0.05~0.20
Temperature Limit	-190℃~ 250℃	PV Limit (dry)	3.0N/mm²·m/s
Speed Limit	2.5m/s	PV Limit (oil)	40N/mm²·m/s

SF-2X

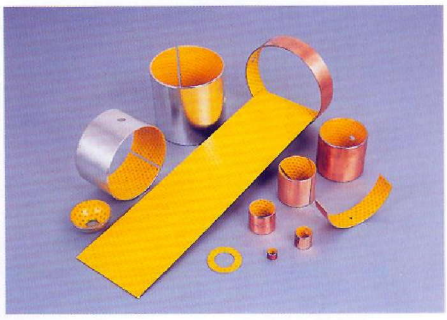
[10]SF-2X boundary lubrication bushing is based on a composite material with 3 firmly bonded layers: steel as backing, sintered bronze spherical powder as interlayer and modified POM as lining layer. It fits well for low speed, heavy duty and normal temperature and saves cost and prolongs working life when replacing normal all copper sleeves. It is widely applied in auto chassis, forging machine, metallurgical and mining machine, civil engineering , power station, strip rolling industries, etc.



Load Capacity	70N/mm²	Friction Coef(μ)	0.05~0.25
Temperature Limit	-40℃~130℃	PV Limit (dry)	2.8N/mm²·m/s
Speed Limit	2.5m/s	PV Limit (oil)	22N/mm²·m/s

SF-2Y

[11]SF-2Y non-lead boundary lubrication bearing is improved on the basis of SF-2X. It can be applied to the field where non-lead is required. Now it's widely used in textile machines, auto operating parts and other middle speed, middle load and grease lubrication occasions.



Load Capacity	70N/mm²	Friction Coef(μ)	0.05~0.25
Temperature Limit	-40℃~130℃	PV Limit (dry)	2.8N/mm²·m/s
Speed Limit	2.5m/s	PV Limit (oil)	22N/mm²·m/s

SF-2S

[12]SF-2S is similar to foreign made DS bush, and may be operated without lubricant or under a trace of oil. It is of low friction, anticorrosion and is of long life. This is now applied in machines under oscillating motion and in open field or in corrosive environment such as hoisters, bulldogger, tower cranes, and printing or dyeing machines for textiles.

Load Capacity	70N/mm²	Friction Coef(μ)	0.04~0.20
Temperature Limit	-40℃~130℃	PV Limit (dry)	3.2N/mm²·m/s
Speed Limit	5m/s	PV Limit (oil)	25N/mm²·m/s

FB090

[13]FB090 is a kind ofbushes wrapped by bronze strip. The bronze is of particular formulation with high specific gravity and on its surface may be incorporated with spherical or diamond shaped indentations or oil grooves as required by customers. It is of high load capacity and long life. In place of traditional bronze bush, it is more cheap and more compact. It is widely applied in hoisting machines and other construction machines, automobiles, tractors, trucks, machine tools andsome mineral engines.

Base material	CuSn8P0.3 or CuSn6.5P0.1		
Hardness	HB90～120	Temperature limit	-80℃～200℃
Load capacity	75N/mm²	Speed limit	2.5m/s

FB092

[14]FB092 bronze bushing is based on bronze CUSN8.3P6.3 and evenly distributed drilling oil hole on its body. When in assembly, oil or grease should be stored in the holes before bushing is sealed form both ends. FB092 has the advantages of abundant oil storage, easy -to - assembly, machine the compactness etc. It can replace the conventional whole copper middle load, low speed such as in convey machine, hoisting machine, windlass, aligning machine etc.

Base material	CuSn8P0.3 or CuSn6.5P0.1		
Hardness	HB90～120	Temperature limit	-100℃～200℃
Load capacity	60N/mm²	Speed limit	2.5m/s

JDB-1

[15]JDB-1 solid lubricant embedded bushing is a new type made from strong brass and homogeneously embeddedwith solid lubricant in its body. It breaks through the limit of general bearing whose lubrication depends on oil film. So heavy duty, anti-corrosion,or where oil is hard to be introduced. Its performance doubles both on hardness and wear-friction.

It is now widely applied in successive casting machines, mineral machine, ships, turbo generators, hydraulic turbines and injection molding machines forplastics.

Base material	CuZn24A16	Dynanic load	100N/mm²
Base hardness	HB230～270	Friction coef(μ)	<0.16
Temperature Max.	300℃	Sliding velocity limit	dry0.4m/s oil5m/s

JDB-2

[16]JDB-2 isalsoone type ofJDB series. It isbase on bronze CuSn6Zn6Pb3 and evenly embedded with a solid under low load, high temperature and middle speed, e.g. gemel in furnace gate, convey way of the baking furnace, light industry and tooling machine industry etc.

Base material	CuSn6Zn6Pb3	Dynanic load	60N/mm²
Base hardness	HB80~100	Friction coef(μ)	<0.15
Temp Max.	350℃	Sliding velocity limit	2m/s

JDB-3

[17]JDB-3 has almost the same constructure as JDB-2. It is based on a bimetal material, which is sintered CuSn6Zn6Pb3 as a lining on its steel backing, likewise embedded with solid lubricant. Besides having the functions of JDB-2, it saves cost, improves compress strength and is also jointing between bush`s end and machine part. It is suitable for metallurgy machine, construction machine part. It is suitable for metallurgy machine, construction machine and where oil is hard to be employed such as oil convey equipment.

Base material	Steel CuSn6Zn6Pb3	Dynanic load	70N/mm²
Base hardness	HB60~90	Friction coef(μ)	<0.14
Temp Max.	300℃	Sliding velocity limit	2m/s

JDB-4

[18]JDB-4 is based on cast iron Ht250 and embedded with solid lubricant. It is a typical cost saving product. It can be applied as a substitute of JDB-2 in where mechanical demands are mot very high, for instance, guide post of mould, for instance, guide post of mould, mold-frame of plastic injection machine etc.

Base material	HT250	Dynanic load	60N/mm²
Base hardness	HB180~230	Friction coef(μ)	<0.18
Temp Max.	400℃	Sliding velocity limit	0.5m/s

JDB-5

[19]JDB-5 is reinforced product of JDB series. It is based steel GCR15 and embedded with solid lubricant. It is of high compress strength and particularly suitable for supporting position in hoisting machine, e.g. The support or stand of windlass and of crane. But it should not be applied in water or in acid/alkali circumstance.

Base material	GCr15	Dynanic load limit	250N/mm²
Base hardness	HRC58~60	Load limit under lm/min	70N/mm²
Friction coef(μ)	< 0.17	Sliding velocity limit	0.1m/s
Temperature max.	350℃	PV limit	2.5N/mm²·m/s

JDB-1U

[20]JDB-1U takes oil in inner grooves to work. It can be used in low speed because of larger load, longer life and higher HB than Al-Cu bearing. Now JDB-1U is mostly used in gear cases and joint parts of grabs.

Base material	CuZn24Al 6	Dynanic load limit	100N/mm²
Base hardness	HB230~270	Friction coef(μ)	<0.16
Temperature max.	170℃	Sliding velocity limit	Oil1.5m/s

UF-850

[21]UF-850 is a steel-bronze bearing, which is sintered with 6-6-3 bronze in its inside as a lining and uses 20# steel as backing. The performance of this structure parallels that if all 6-6-3 bronze bearing but saving cost. So it can replace thick wall bronze bearing and improve product competence to use in oil box, construction machines and other high precision but low speed occasions.

Lead bronze alloy	CuPb6Sn6Zn3	Temperature max.	260℃
Load capacity	65N/mm²	Harderness alloy	(70~100)HB

JF-800

[22]JF-800 bimetal bearing is based upon steel and sintered with CuPb10Sn10 or CuSn6Zn6Pb3 as a lining layer. This type is the best performance within the rang of Cu-Pb alloy bearings. It can be used in balance suspensions of heavy-duty vehicles, wheels of bulldozers, auto chassis and so on. It's mostly suitable for middle speed and high impact occasions.

Lead bronze alloy	CuPb10Sn10 or CuSn6Zn6Pb3		
Load Capacity	65N/mm²	Harderness alloy	(70~100)HB
Temperature Max.	260℃		

JF-720

[23]JF-720 is a bimetal bushing with steel as backing and sintered CuPb24Sn4 as lining layer. This type has fairly good performance in anti-fatigue and load capacity. It is suitable for middle speed and middle load. When over plated certain soft alloy, it can be applied in high-speed internal combustion engine and as connect-rod bushing.

Lead bronze alloy	CuPb24Sn4	Temperature max.	170℃
Load capacity	38N/mm²	Harderness alloy	(45~70)HB

JF-700

[24]JF-700 is a bimetal bushing with steel as backing and sintered CuPb30 as lining layer. It has good performance in anti-seizing, alien substance contamination. It is necessary to be overplated certain soft alloy and mostly appliedin internal combustion engine under high speed and middle to low load. e.g. Main bushing and connect-rod bushing.

Lead bronze alloy	CuPb30	Temperature max.	170℃
Load capacity	25N/mm²	Harderness alloy	(30~45)HB

JF-20

[25]JF-20 is a high tin and aluminum based bushing. Which adopts steel as backing and is coated a lining of AlSn20Cu throunh rolling treatment. It is of fairly good fatigue resistance, load capacity ang good anti-corrosion and also perform well in bearings sliding properties. It is widely applied under high speed and low load such as in internal combustion engine, air comperssor and cooling machine.

Lead bronze alloy	AlSn20Cu	Temperature max.	150℃
Load capacity	30N/mm²	Harderness alloy	(30~40)HB

FB08G

[26]FB08G is a kind of steel-lead bronze alloys based bearing which is embedded with particular formulation of solid lubricants. Owing to the high strength, high load capacity and the spirally distributed diamond type of the embedded solid lubricant, the high temperature lubricating action and wear resistant action as extraordinary exploited. The lubrication area of the bearing surface is being about 25%. This type of bearing is particularly applied in starting motor for automobiles, generators, cranes and those machines in metallurgical industry.

Surface material	CuSn10Pb10+Gr.		
Load capacity	65N/mm²	Friction coef(μ)	0.06~0.2
Temperature limit	-100℃~260℃	Speed limit	4m/s

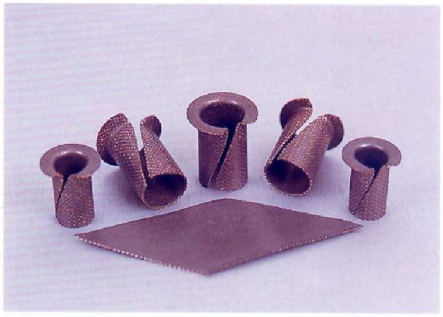
FB09G

[27]FB09G is based upon bronze and embedded with solid lubricants. It can be used in auto transmission shaft and other occasions because FB09G is made of bronze alloy with prolongation and other special materials.

Surface material	CuSn6.5P0.1+Gr.		
Load capacity	65N/mm²	Friction coef(μ)	0.06~0.2
Temperature limit	-100℃~260℃	Speed limit	4m/s

FR

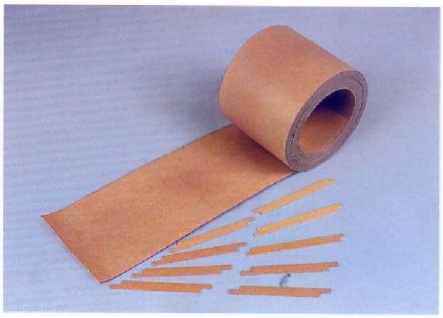
[28]FR is a composites material with bronze wire mesh as frame and calendered with a film if filled poly tetrafluoroethylene.This is of low friction and low wear, and is rather soft and is to be applied readily by inserting between the two rubbing metal surfaces, and can fulfill the ideal aim of no noise, no lubricating, no maintenance and no pollution. At present, this is applied in those mechanical elements under relatively low load and low speed. Such as in textile machines, spherical bearings. Automobile door hinge and the operating rod for cars.



Load Capacity	100N/mm²	Friction Coef(μ)	0.05~0.20
Temperature Limit	-40℃~280℃	Speed Limit	1.0m/s

FD-1

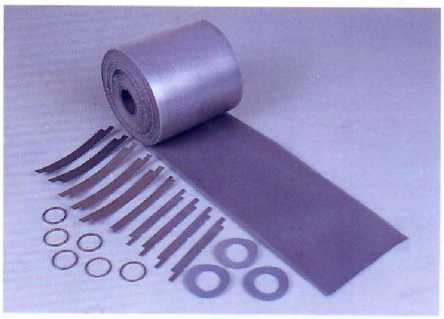
[29]FD-1soft strip is based on PTFE and mold pressed and sintered into lubricants mainly copper etc. It is of low friction, low wear. Its tensile strength can meet the motion of mono piston ring. Due to its low friction, FD-1 can be applied under oil or without oil and so it's the best choice of auto damper, piston ring. At present, it is adopted in a lot of China autos such as Audi, Volkswogen, cetiron etc and it maintains low friction long-termly.



Tensile strength	22N/mm	Speed Limit	1.5m/s
Friction Coef	0.09	Temperature Limit	-100℃~250℃

FD-2

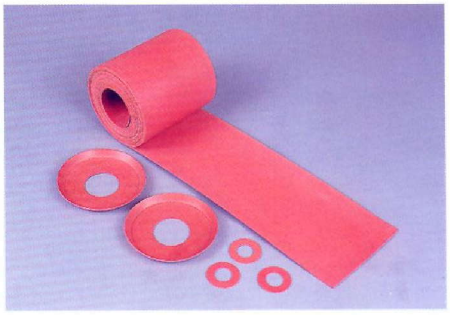
[30]FD-2 soft strip is based on PTFE and filled with graphite and other lubricants which are milled, pressed and finally sintered into PTFE basis. This material is of good elasticity, low friction coefficient, high wear resistance. It fits to be used together with metal backing. It proves Excellent friction-wear performance on the damper piston, such as in Volkswagen, Buick auto etc, through the process of FD-2 covering onto metallurgical powder part.



Tensile strength	20N/mm	Speed Limit	1.5m/s
Friction Coef	0.06	Temperature Limit	-100℃~250℃

FD-3

[31]FD-3 modified soft strip is based on PTEE and filled into specific lubricant through a combination of mold pressing and sintering. It is of high wear resistance, good anti impactness and good performance in airproof. At present it is widely applied in flow pump of the greasing machine and ring seal etc.



Tensile strength	23N/mm	Speed limit	1.5m/s
Friction coef	0.08	Temperature limit	-100~250℃

FD-B

[32]FD-B piston is specially applied for auto shock absorbers. They've anti-friction. Many auto manufacturers, including Xiali, Santana, Buick and Honda use the pistons. Our products are nearly getting to the level of counterpart overseas.

Base material	Fe+PTFE	Load capacity	>5000N
Temperature limit	-80~260℃	Friction coef	<0.05

NEW FD-Al

[33]FD-Al linear motion bearing is one kind of self-lubricated linear motion products. They're used in moulds' slipways and precision machines instead of steel rolling bushings. The bearings have obvious advantages such as low noise, low cost and working without oil.

Base material	Al+PTFE+OTHER		
Load capacity	10N/mm^2	Temperature limit	-40~160℃
Friction coef	0.05~0.10		

FU-1

[34]FU-1 the bronze power is mold pressed under high pressure and then sintered under high temperature, and oil is soaked into the homogeneously spreaded tiny pores of the metal under vacuum. Fu-1 bearing can withstand dry condition in medium speed and low load for sometime. Moreover it is cheap and stable in dimension. This is widely used in domestic electric and electronic machines, chemical engineering machines, automobiles and official business machines.

Base material	CuSn6Pb6Zn3 or CuSn10		
Load capacity	35N/mm²	Temperature limit	-80~160℃
Friction coef	0.12~0.18		

FU-2

[35]FU-2 iron power bearings can protect shaft with oil. They've anti-friction same as bronze power bearings under low load. They're widely used in textile machines, electric tools and absorbers of auto and motorcycle. When being static, they can beacted as orientation bushing.

Base material	Fe	Temperature limit	-80~160℃
Load capacity	45N/mm²	Friction coef	0.15~0.20

NEW

FU-3

[36]FU-3 bronze and iron bearings have the advantages of FU-1 and FU-2. The proportion of iron and bronze can be designed by customers' different requests. It can reduce cost but satisfy customers.

Base material	Fe+Cu+C	Temperature limit	-80~160℃
Load capacity	45N/mm²	Friction coef	0.12~0.20

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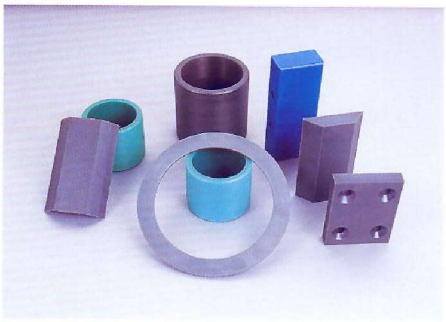
OMC

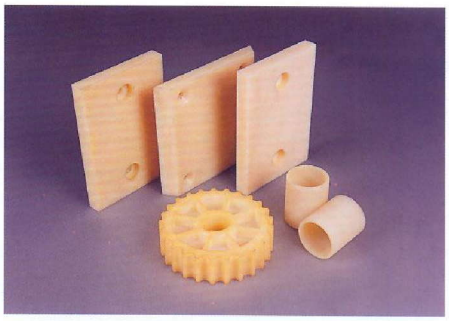
[37]OMC is an oil impregnated nylon material bushing. It is a high strength, self-lubricating plastic material made form nylon monomer after catalyzed polymerization reaction which is meanwhile added lubricants in the progress. OMC is widely used in hydro-electricity engineering, metallurgy machine, rubber-making machine, etc.



Tensile strength	14~20MPa	Linear expension	$1x10^{-4}$/℃
Hardness HRC	R118	Friction coef	0.12~0.16
Temperature limit	-40℃~80℃		

GMC

[38]GMC is a reinforced nylon material. Due to the filling of glass fiber, it is of high strength, good rigidity, low stick slip. So it is widely applied in mining machine, ship-making industry and paper-making industry etc.



Tensile strength	14~20MPa	Linear expension	$1x10^{-4}$/℃
Hardness HRC	R118	Friction coef	0.45~0.5
Temperature limit	-40℃~80℃		

NEW TF-1

[39]TF-1 black lead alloy bearings are improved according to JF-800 metal ones. The series bearings have obvious advantages, including anti-friction, protecting shaft without oil because black lead is dispersed. When being oilless or in high temperate, they can be used in guide part of squeegee, sliding part of lift equipments and high-sliding part of water-wheel machines.

Lead bronze alloy	CuSn10Pb10+C	Temperature max.	300℃
Load capacity	50N/mm²	Friction coef	0.08~0.18

NEW TF-2

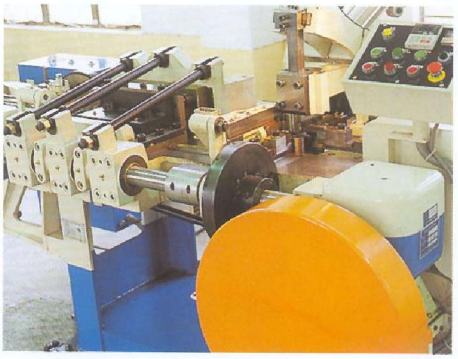
[40]TF-2 black lead with Ni alloy bearings are new series solid lubricating ones. The series bearings are better anti-rust function and more suitable high temperate than TF-1 series bearings. They're widely used in rail switch outside, auto mould and metallurgy machines.

Lead bronze alloy	CuSn10Pb10+C+Ni	Temperature max.	400℃
Load capacity	40N/mm²	Friction coef	0.08~0.18

Facilities Overview

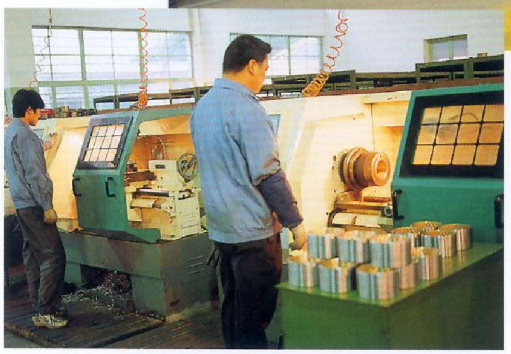
Automatic Bearing Material Sintering Line

Plant Corner

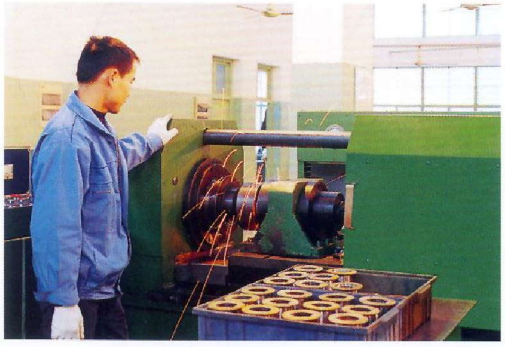


Bearing Automatic Molding

Material Separating Machine



Numerical Control Lathe



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