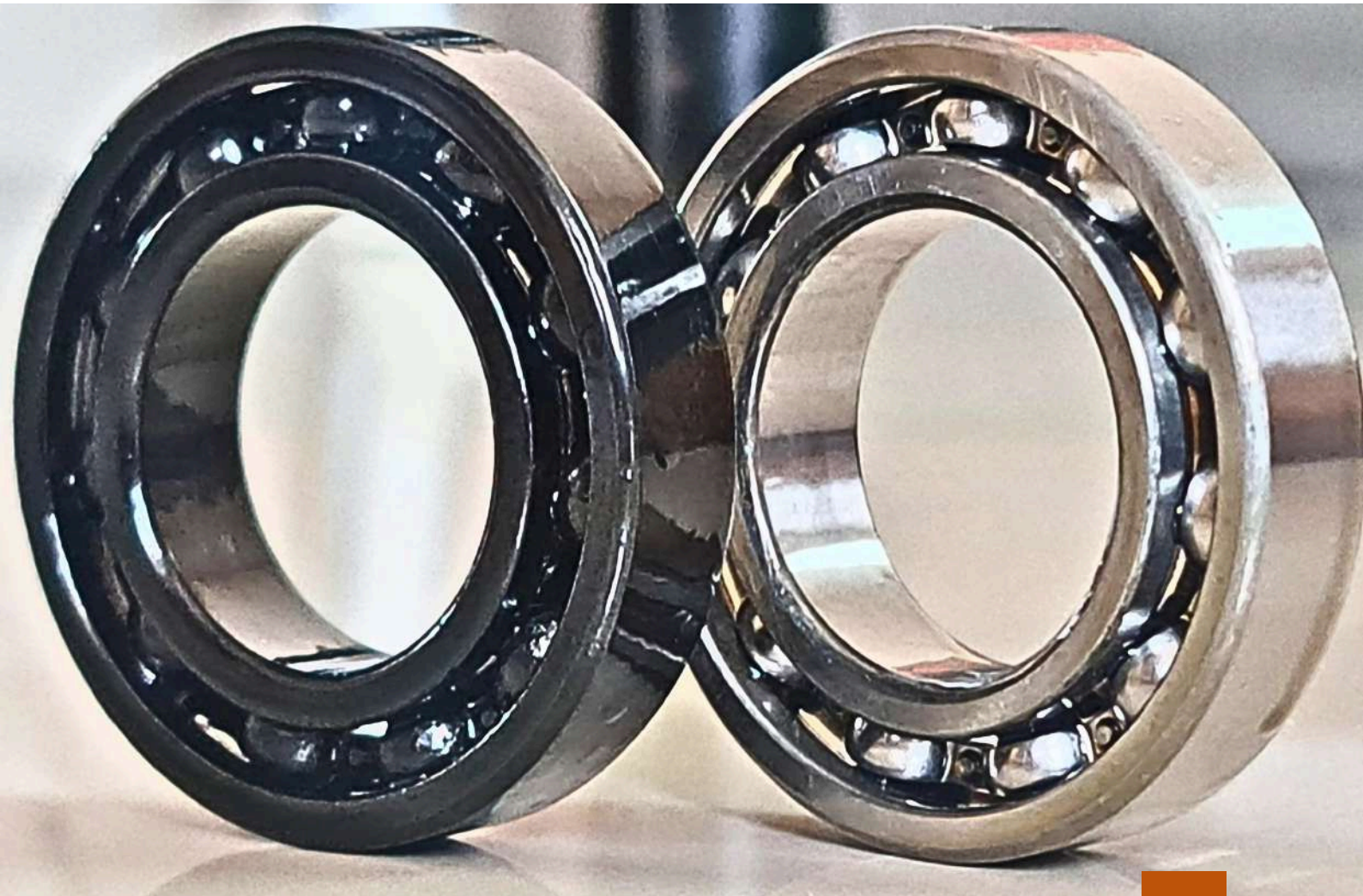




HARDAI ARMND ENGINEERING SOLUTIONS
DESIGN IN INDIA



MolyKul Spin



<https://hardaiarmnd.com>
<https://molykul.com>



Transform Your Industry

With our highly durable MoS₂ Dry
Lubricated Bearings - MolyKul Spin

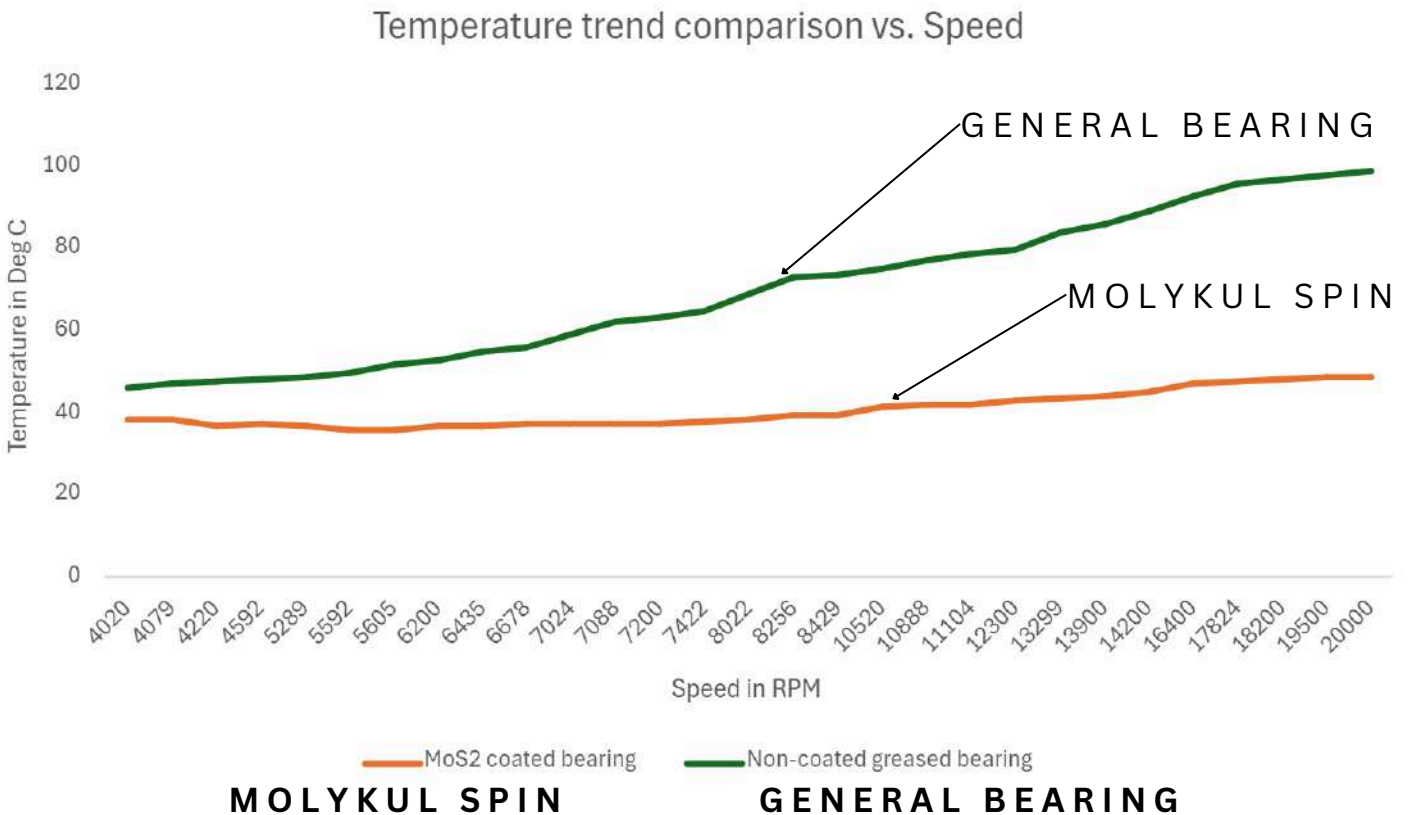


Molykul Spin - Testing

MoS2 Coated Bearing temperature rise test with Standard bearing

Hardai ARMND conducted a series of tests comparing the thermal performance of coated and non-coated 6302 bearings under specific operational conditions. The test setup was designed to handle speeds up to 33,000 RPM, facilitated by a 3:1 gear ratio coupled with a 910kv BLDC motor. Temperature measurements were taken using a K-type thermocouple to ensure precise monitoring. The results indicated significant differences in thermal performance, with the coated bearings showing lower temperatures and improved heat dissipation compared to the non-coated ones, demonstrating the effectiveness of the coating in enhancing bearing performance at high speeds.

THERMAL TESTING (MOLYKUL SPIN VS. GENERAL BEARING)



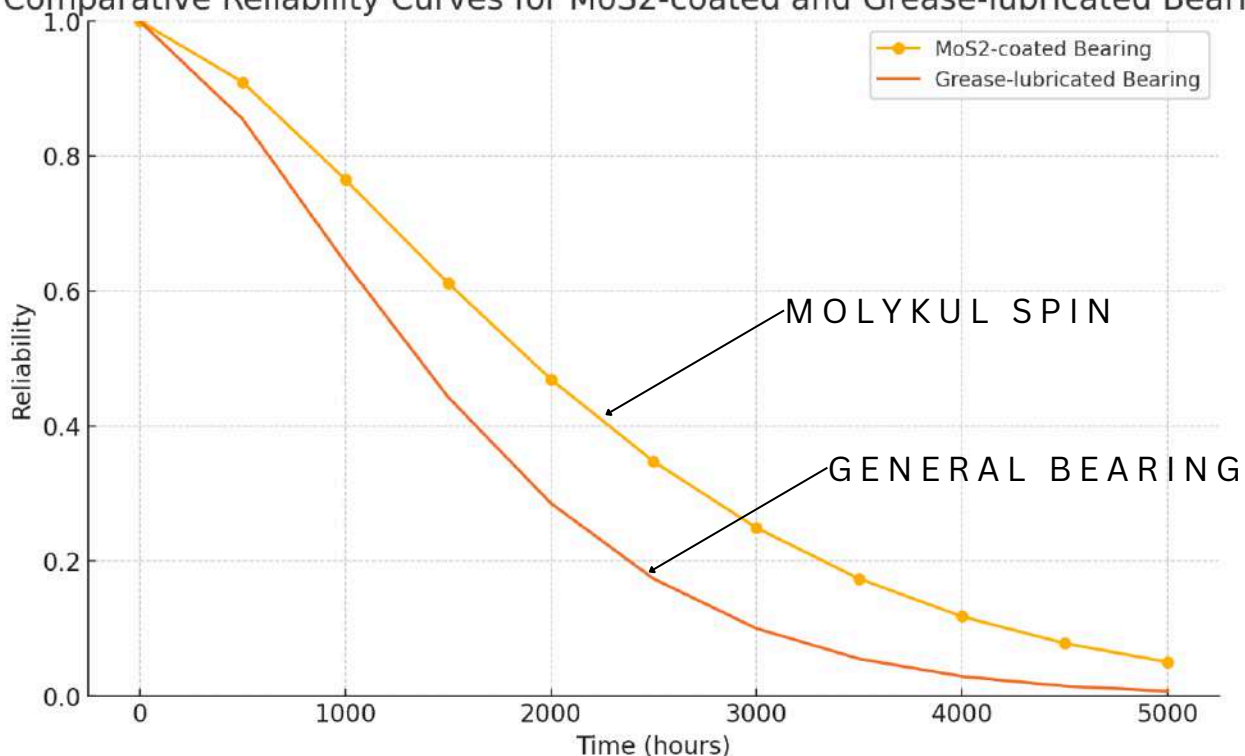
Molykul Spin - Reliability

MoS2 Coated Bearing temperature rise test with Standard bearing

The reliability calculation for bearings based on lubrication and temperature uses the Weibull distribution. The manufacturer's L10 life (time by which 10% of bearings fail) is adjusted for conditions like lubrication type and operating temperature. For example, MoS2-coated bearings, with better lubrication and lower temperature, have a higher L10 life (4200 hours) compared to grease-lubricated ones (3000 hours). The Weibull scale parameter (η) is derived from the L10 life, using a typical shape parameter (β). The reliability function $R(t) = e^{-(t/\eta)^\beta}$ estimates the probability of survival up to time t .

RELIABILITY (MOLYKUL SPIN VS. GENERAL BEARING)

Comparative Reliability Curves for MoS2-coated and Grease-lubricated Bearings



Molykul Spin - Types

MoS2 Coated Ball & Roller Bearing products by Hardai ARMND



MKS XXXX - AP

For open environment

Applications

Pumps housing, Wheel hub, Gear box, Conveyors, bending machine, Aerospace, High speed bearings.

All Type & Size of Ball bearings



MKS XXXX - B

For closed environment

Applications

Gear box, automotive Engines, pump and compressors, alternator, generators, aerospace.

All Type & Size of Ball bearings



MKS XXXX - CCB

Customization

Applications

Customizable with user specific applications. Material of bearing, cage and seals can be customized.

All Type & Size of Ball bearings



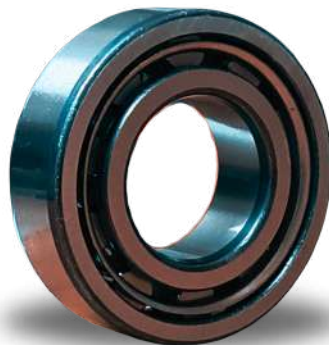
MKS XXXXX - APR

For open environment

Applications

Sugacane factory, fleet wheels, stone crushers, electric motors, rolling machines, etc

All Type & Size of Roller bearings



MKS XXXXX - RR

For closed environment

Applications

Electric motors, gear box, engines, pumps and compressors, vacuum machines, etc

All Type & Size of Roller bearings



MKS XXXX - CUS

Customization

Applications

Customizable with user specific applications. Material of bearing, cage and seals can be customized.

All Type & Size bearings

Molykul Spin

Doping Nanomaterials customizations with MoS₂ by Hardai ARMND



Cu-MoS₂

Applications

Manufacturing, Automotives, Vacuum, turbines, bearings, rollers

Customization available



Sn-MoS₂

Applications

Electronics, switches, connectors, sensors, thermostat, etc.

Customization available

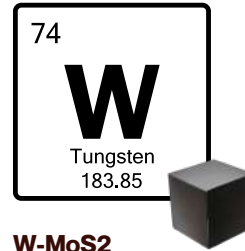


Ti-MoS₂

Applications

Automotives, Aerospace, Manufacturing, High speed bearings

Customization available

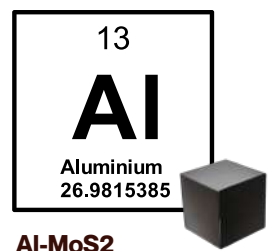


W-MoS₂

Applications

Engine, Mold and dies, cutting tools, Chain & Pulley, gears, bearings.

Customization available



Al-MoS₂

Applications

Aerospace, Defense, Biomedical, Automotives, Environment

Customization available



Cr-MoS₂

Applications

Biomedical, Healthcare equipments, Aerospace, Manufacturing

Customization available

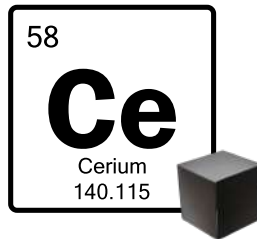


Si-MoS₂

Applications

Biomedical, Healthcare equipments, Electronics, Automotives

Customization available



Ce-MoS₂

Applications

Aerospace, Pollution control, High speed bearings.

Customization available



Zn-MoS₂

Applications

Gear box, Heavy Duty, Engines, Brakes, Cutting tools, electrical actuators

Customization available



Mn-MoS₂

Applications

Jet Engines, High Temperature Applications

Customization available

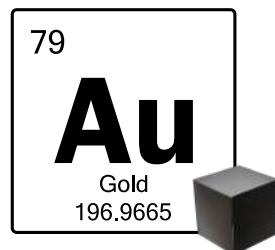


Sb-MoS₂

Applications

Heavy Duty, cyclic load, Micro Movements, manufacturing

Customization available



Au-MoS₂

Applications

Electro-Mechanical actuators, Aerospace

Customization available



Ag-MoS₂

Applications

Aerospace, satellite, Bearings, gears.

Customization available

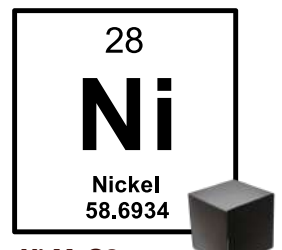


Sm-MoS₂

Applications

Aerospace, automotives, Manufacturing

Customization available



Ni-MoS₂

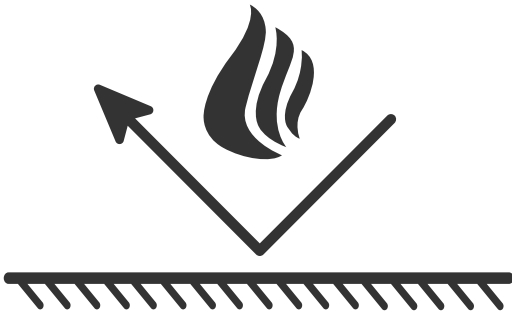
Applications

Thermal Insulations, pumps & compressors, automotives, Aerospace

Customization available

Molykul properties

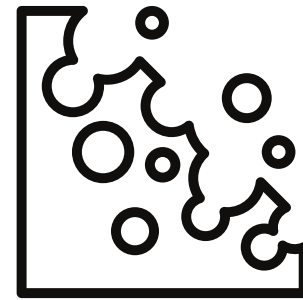
Core properties of MolyKul Spin Bearings



Wide Temperature Range

Description

MoS₂ Nano material with high-temperature capacity exhibits exceptional heat resistance, maintaining its lubricating properties even under extreme temperatures.



Anti-Corrosion

Description

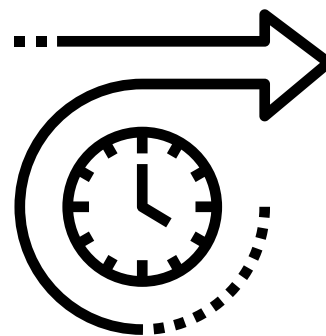
MoS₂ Nano material as an anti-contaminant demonstrates impressive corrosion resistance, safeguarding surfaces against degradation even in harsh environments.



Eco-Friendly

Description

MoS₂ Nano material is environmentally friendly, as it is free from harmful chemicals and compounds. Its use reduces the need for traditional lubricants.



Highly durable

Description

MoS₂ Nano material prolongs the lifespan of machinery and components by reducing friction and wear. Its durable nature ensures long-lasting protection against mechanical stress.

MolyKul Specs

Technical Specifications of MolyKul Spin Bearings



MKS XXXX - AP

For open environment

Applications

Pumps housing, Wheel hub, Gear box, Conveyors, bending machine, Aerospace, High speed bearings.

All Type & Size of Ball bearings

We are MoS₂ Dry lubrication expert

Density of MoS₂	5 g/cc
Melting point	2300°C
Min. Particle size	10 nano meter
Storage requirement	Dust free packing
Bearing Specs	Customizable with standards



MKS XXXXX - APR

For open environment

Applications

Sugacane factory, fleet wheels, stone crushers, electric motors, rolling machines, etc

All Type & Size of Roller bearings

Film Material	Molybdenum Di sulfide (MoS₂)
Coating Colour	Black
Doping as per app.	As per application
Min. Coating thickness	1 micron
Service tmepature	Customizable as per application

MolyKul Application

Major Industrial applications of MolyKul Spin Bearing



MKS XXXX - AP

For open environment

Applications

Pumps housing, Wheel hub, Gear box, Conveyors, bending machine, Aerospace, High speed bearings.

All Type & Size of Ball bearings



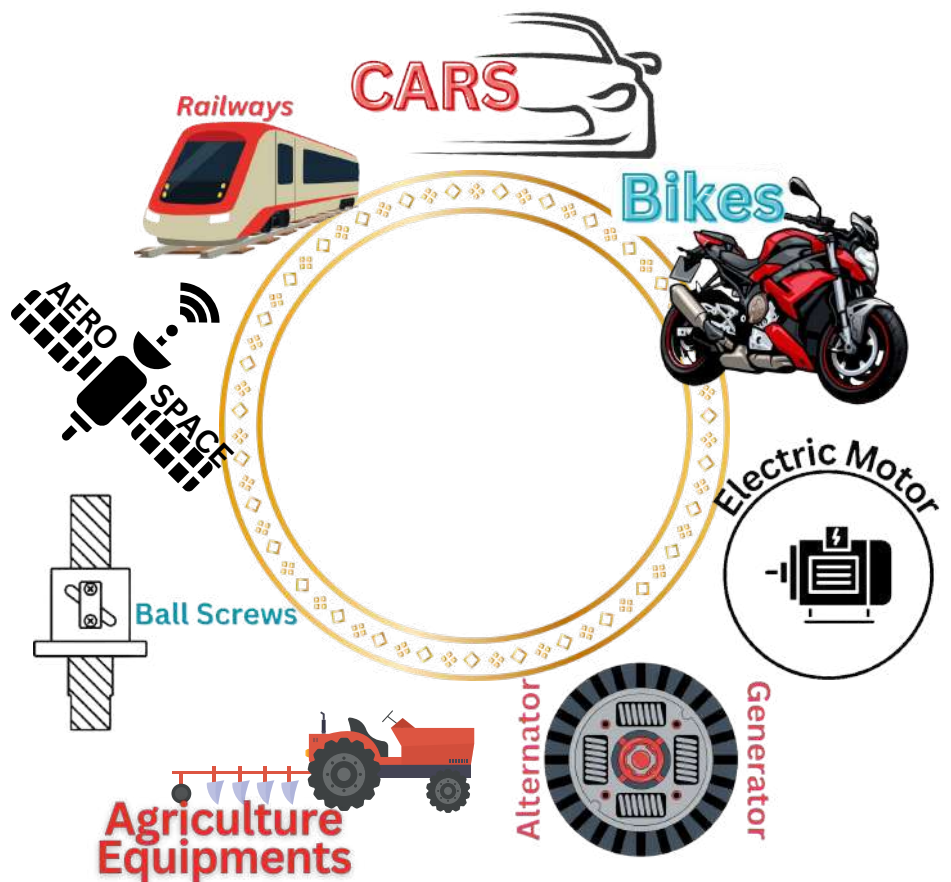
MKS XXXXX - APR

For open environment

Applications

Sugacane factory, fleet wheels, stone crushers, electric motors, rolling machines, etc

All Type & Size of Roller bearings





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