Coatings for an energy efficient world

MoS²

Molybdenum di-Sulphide [MoS²] is one of the most lubricious coatings currently available. It has a dynamic coefficient of 0.01 and provides an exceptionally low slip surface, which can be used over a wide range of temperatures from cryogenic levels up to 400°C (fully run-in).

MoS² has the unique ability to lubricate precision components used within a extensive industrial sector spectrum. It is capable of operating in high load applications from 0-25kbar (substrate dependant).

APPLICATION EXAMPLES

Application	Properties
Plastic Moulding	Enhances melt flow and aids material release
Motor Sport Bearings and Gearboxes	Reduces power losses and progressive wear
Die Casting Moulds	Prevents seizing of ejectors and moving parts
Vacuum and Cryogenic	Low friction dry lubricant with reduced outgassing
Cutting and Forming Tools	Extends working life and improves tool efficiency
Threading and Splined Components	Reduces fretting, galling and sizing
Marine Components	Long term lubricant for components operating in brine
Oils and Gas Components	Low friction for valves, shafts and fasteners–in a wide range of offshore applications

APPLICATIONS

AEROSPACE

MoS² anti-galling properties make it ideal for components such as fasteners, bearings, valves, hydraulic connectors, actuators and engine rotables.

AUTOMOTIVE

MoS² uses lower friction and associated reduced heat build-up – to provide significant performance improvements for gears, valves, camshafts bearings and drive train components. These performance improvements are being realised both in automotive mass production applications and in the high performance automotive sector.

INJECTION MOULDING AND PRESS TOOLS

The use of MoS² in polymer processing has resulted in reduced cycle times and machine downtime in moulding, pressing and extrusion operations. This is purely as a result of the low slip surface, which improves polymer melt flow and mould release.

HIGHLY LOADED MECHANICAL COMPONENTS

MoS² coatings provide massive reductions in friction. The tungsten di-sulphide based deposition process provides dry lubrication technology in applications such as rotating and linear bearings manufactured from a variety of substrate materials including steels, titanium alloys or ceramics.

SEMI- CONDUCTOR EQUIPMENT

Natural lubrication of components with precision tolerances is provided by MoS² especially when working under vacuum conditions – that would adversely affect other thin film coating properties. Components such as linear bearings and micro-gears are regularly coated with MoS².

MEDICAL AND PHARMACEUTICAL COMPONENTS

MoS² low friction qualities provide reliable biocompatible lubrication for orthopaedic devices and instruments. Similarly, pharmaceutical components used in tablet presses and wear parts in food processing equipment will see improved performance as a result of the thin metal sulphide layer.

MoS^2 films are a combination of molybdenum disulfide lubricant and high performance resins. MoS^2 coatings are thermally cured and thoroughly bonded to the base metal of the coated part. Uses for MoS^2 coatings include applications that require a lubricant that is more unreactive when in use, and remains sturdy.

MoS^2	Typical Properties
MT2936 MoS^2 Product Grade	MnP04 pre-treatment
Colour	Grey/Black
Corrosion Resistance ASTMB117 (Salt Spray)	500 + Hours
Static CoF 0.14	0.14
As-deposited Service Temperature	
Continuous	150°C
Intermittent	175°C
Fully run-in service temperature	
Continuous	340°C
Intermittent	400°C

PRINCIPLE BENEFITS OF MOS^2

- Good adhesion to metals
- Low coefficient of friction
- Good wear life (resistance to fretting and galling)
- Corrosion resistance
- Resistance to many chemicals and solvents

Gears, bearings and couplings benefit from the deposition of MoS^2

Wallwork Cambridge: Coatings for an energy efficient world

Wallwork Cambridge, provides an advanced coating, heat treatment and vacuum brazing service. Hard coatings available include DLC, Titanium Nitride, Chromium Nitride and other high performance ceramic and carbon based coatings.

Wallwork also designs, builds and supplies production PVD coatings and bespoke research vacuum systems and is a partner in a number of pan-European collaborative research projects

Wallwork operates 24/7 with nationwide logistics support and meets recognised quality and process accreditations for the likes of Rolls Royce and BAE systems ISO 9001 and PRI NADCAP.

WALLWORK HEAT TREATMENT GROUP

Wallwork Manchester

Treatments in Bury include carburising, case hardening, and nitriding and nitro carburising and extend to Tufftriding™ and cryogenic treatments as well as hardening, tempering, annealing, normalising, stress relieving, austempering and martempering. Capacity includes gas atmosphere, salt bath and vacuum processes. Recently introduced are capabilities to deposit DFL products: MoS^2 and Xylan®.

Wallwork Cast Alloys

The Wallwork Cast Alloys foundry supplies high quality heat resistant castings and precision components for high temperature materials, mainly Nickel and Chromium Ni/Cr alloys. Services include recycling, in-house design and pattern making, rapid response emergency replacement castings and metallurgical analysis.

Wallwork Birmingham

This full service operation supports the motor sport and automotive sectors with comprehensive services that extend from large traditional salt bath furnaces to the latest vacuum processing units.

Wallwork Newcastle

Sub Contract heat treatment including: sealed quench and tempering, vacuum and Induction hardening and plasma nitriding. PlasOx coating techniques as well as DFL products MoS^2 and Xylan® are also supplied.

www.wallworkht.co.uk

Tel: +44 (0) 161 797 9111 Email: sales@wallworkht.com