MOLUB-ALLOY® MWO OILS

Product Data Sheet

A series of oils designed specifically to lubricate the slides and ways of machine tools of all sizes. Precision in the dimensions and finish of machined parts necessitates the smooth and uniform movement of machine tool components that slide on ways.

Reciprocating way tables on machine tools must stop and start again at each change of direction. The oil film, at standstill, is squeezed to a minimum thickness allowing metal asperities (microscopic high spots) on opposing surfaces to interlock even if the oil film is not broken. If microscopic welds occur on impact, then erratic motion called "stick-slip" occurs at the breakaway as the table reverses. This action, also called "chatter," manifests itself in poor finish and even in loss of tolerance of parts being machined.

Actual asperity contact and welding can develop sufficient heat to cause rupture of boundary oil film, leading to machine wear and ultimately to catastrophic galling of slideways. A significant margin of protection over conventional way lubricants is achieved in the Molub-Alloy MWO Way Oils by the use of a proprietary, **high performance**, additive system. The system includes chemical extreme pressure (EP) additives working synergistically with select Molub-Alloy lubricating solids in a highly stable suspension.

Because of their unique combination of way oil additives with the Molub-Alloy **high performance** systems, MWO Way Oils have become some of the most versatile lubricants for industrial applications. They add a non-drip, stay-in-place character to general plant applications and they are commonly used on wire rope, chains and other mechanisms exposed to the elements including the washing action of water.

Molub-Alloy MWO Way Oils are part of Castrol Performance Lubricants' Eco-Solutions™ product offering. Formulated to address environmental concerns, they are free of lead, chlorinated solvents, and barium. They contain less than 2 ppm of phenol.

DESCRIPTION

The high quality base oils in Molub-Alloy MWO Oils were selected for their ability to maintain strong film integrity even under great stress. Additional compounding with select polymers adds both adhesive and cohesive characteristics to these products.

Metallic lubricating solids of grade and size distribution best suited to the lubrication of precision ways are treated to increase their natural positive affinity to metal surfaces and are thoroughly dispersed to assure effectiveness during the lubricant's full working life.

MWO Oils are not corrosive to ferrous or non-ferrous metals and rust and oxidation inhibiting characteristics are maximized to afford effective rust protection and long life of the oil.

APPLICATIONS

Intended applications of Molub-Alloy MWO Oils are in machine tools, including circulation systems (see NOTES), primarily for the lubrication of ways and slides.

They are very suitable for many components of machine tools including plain and antifriction bearings, translating screws and gears such as are used in headstocks and speed change units.

MWO Oils are widely used in general applications where a non-drip characteristic is desirable to reduce oil loss or "fly-off" from cams, eccentrics, conveyors, press shaft bearings, or from machines, which from long use or earlier wear conditions, have expanded clearances.

An important use for MWO Way Oils is their application to wire ropes, chains, even floor chains dragging manufactured goods through detergent wash systems. They resist the washing action of water and offer both corrosion and wear protection in wet environment. For extreme conditions including aqueous surfactants used in machining coolants, Castrol Performance Lubricants' Engineering should be consulted.Application of MWO Oils may be by oil can, oil cup, reservoir, or by circulation or dispensing systems designed for way oils.

Please See Reverse Side For Typical Properties.

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ADVANTAGES

Reduced friction, most evident under boundary conditions, is directly attributed to the presence of a proprietary blend of lubricating solids. This benefit is most pronounced where frequent start-up, slow speeds and high and unexpected loads are encountered.

Substantial increase in the working life of both parts and lubricant is provided by a protective layer of Molub-Alloy solids. This increases load bearing area which can reduce unit pressures, operating temperatures and wear.

MWO Oils' special formulation and Molub-Alloy solids are most effective toward the elimination of "stick-slip" and "chatter" on all ways, vertical and horizontal.

Their non-drip nature can reduce the soilage of production and housekeeping problems as well.

Overall savings are derived from the aforementioned and result from less labor and downtime, smoother, more efficient operation with longer parts life and extended lubrication cycles in general application.

NOTES

Molub-Alloy MWO Oils should **not** be used in conjunction with diatomaceous earth filter. Other type filters need only their recommended inspection and service.

MWO Oils are not designed for use in hydraulic systems or in certain circulating systems incorporating both ways and critical hydraulics.

For specific terms, conditions, warranty and availability, refer to the Castrol Performance Lubricants' Price List in effect at time of purchase.

TYPICAL PROPERTIES

	MWO 10	MWO 20	MWO 30	MWO 40	MWO 50
ISO Viscosity Grade, ASTM D 2422	46	68	100	220	320
Specific Gravity, ASTM D 1298, @ 15.6°C/60°F	0.9088	0.9059	0.9088	0.9135	0.9200
API Gravity, ASTM D 1298, @ 60°F	24.2	24.7	24.2	23.4	22.3
Viscosity, ASTM D 445, D 2161:					
@ 40°C, cSt	43.5	65.9	108.9	207.2	308.5
@ 100°C, cSt	6.3	7.9	10.5	15.4	18.8
@ 100°F,SUS	225	343	574	1107	1667
@ 210°F,SUS	47	53	62	81	96
Flash Point, ASTM D 92, COC, °C/°F	182/360	190/375	199/390	232/450	235/455
Pour Point, ASTM D 97, °C/°F	-29/-20	-29/-20	-26/-15	-20/-5	-15/+5
Rust Test, ASTM D 665					
Procedure A (Distilled Water)	Pass	Pass	Pass	Pass	Pass
Procedure B (Synthetic Sea Water)	Pass	Pass	Pass	Pass	Pass
Conradson Carbon residue, ASTM D 189					
Base Oil, wt %	0.03	0.05	0.05	0.06	0.08
Timken Extreme Pressure Test, ASTM D 2782					
OK Value, lbs/kg	50/23	60/27	60/27	60/27	60/27
Four Ball Wear Test, (40 kg, 75°C/167°F,					
1800 rpm, 1 hr) Scar Diameter, mm	0.40	0.40	0.40	0.40	0.40
Four Ball Extreme Pressure Test, ASTM D 2783					
Load Wear Index, kg	50	50	50	53	53
Weld Load, kg	315	315	315	315	315
Falex Wear Test, ASTM D 2670, wear teeth	5	5	5	5	5
Stick Slip (Cincinnati Milacron)	<,8	<.8	<.8	<.8	<.8
Phenol Content, ppm (4 AAP, Weck Laboratory)					
(phenolics by 4-amino antipyrine method)	<2.0	<2.0	<2.0	<2.0	<2.0
Molub-Alloy Solids, Grade Classification	-FLUID LUBRICANT-				

Subject to usual manufacturing tolerances.