



## Product Data Sheet

Tribol MWO LS Way Oils are for the lubrication of machine tool slides and ways. They were developed as alternatives to Tribol MWO 20 and MWO 40 Way Oils using oil-soluble, organo-metallic additives in the place of the Tribol lubricating solids. MWO 20LS and 40LS are ISO Viscosity Grades ISO VG 68 and 200, respectively. These unique Way Oils are intended for use where solid lubricants cannot be used for cosmetic or other reasons.

MWO LS Way Oils offer excellent thin-film wear protection because of a proprietary blend of antiwear, extreme pressure (EP), and friction-modifying agents which perform synergistically in combination. These agents are fully dissolved in oil. When subjected to the extreme pressure of contacting asperities (microscopic high spots), these additives convert to low-shear compounds on working surfaces, lubricating much like solid-film lubricants.

Because the additives in MWO LS Way Oils are fully dissolved but act like solid lubricants in service, the products are designated "LS" for "Liquid Solids."

### DESCRIPTION

The high quality base oils in Tribol MWO LS Way 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.

MWO LS Way 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.

Tribol MWO LS Way Oils are "low phenol" products, typically containing less than 2 ppm of phenolic compounds.

### APPLICATIONS

MWO LS Way Oils are intended for those applications where machine tool way oils like Tribol MWO Oils are considered. In particular, MWO LS Way Oils are recommended where the use of lubricating solids may be restricted due to manufacturer's requirements, very fine filtration, or concern about solids contaminating the manufacturing process.

MWO LS Way Oils are also suitable for many components of machine tools, including slides and ways, plain and antifriction bearings, translating screws, headstock gears, and some circulating systems (see Notes).

MWO LS Way Oils are especially useful in applications where non-drip characteristics are desirable to reduce oil loss or control "Fly-off" from cams, eccentrics, conveyors, press shaft bearings, and in worn and older machines with expanded clearances.

Other important uses for MWO LS Way Oils include the lubrication of chains and wire ropes where good adhesion and tackiness are needed. These characteristics are especially needed where there is potential for heavy condensation, or even water wash.

### ADVANTAGES

MWO LS Oils special formulation is most effective toward the elimination of "stick-slip" and "chatter" on all ways, vertical and horizontal.

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

### NOTES

Tribol MWO LS Way Oils are **not** intended for use in hydraulic systems, nor in certain circulating systems, that serve both ways and critical hydraulics.

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

Please See Reverse Side For Typical Properties.

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**TRIBOL MWO LS 06-97 -R01**

Formerly PDS 3418-1 6/97

**Molub-Alloy®**

**Optimol®**

**Tribol®**

**TYPICAL PROPERTIES****MWO 20LS****MWO 40LS**

Specific Gravity, ASTM D1298, @ 15.6°C/60°F	0.9036	0.9110
API Gravity, ASTM D1298, @ 60°F	25.1	23.8
ISO Viscosity Grade	68	220
Viscosity, ASTM D445, D2161:		
@ 40°C cSt	69.5	217.0
@100°C, cSt	8.2	16.8
@100°F, SUS	362	1155
@210°F, SUS	54	87
Flash Point, ASTM D92, COC, °C/°F	188/370	213/415
Pour Point, ASTM D97, °C/°F	-29/-20	-21/-5
Rust Test, ASTM D665,		
Procedure A (Distilled Water)	Pass	Pass
Procedure B (Synthetic Sea Water)	Pass	Pass
Conradson Carbon Residue, ASTM D189		
Base Oil, wt. %	0.05	0.06
Timken Extreme Pressure Test, ASTM D2782		
OK Load, lbs/kg	60/27	60/27
Four Ball Wear Test (40 kg, 75°C/167°F, 1800 rpm, 1 hr)		
Scar Diameter, mm	0.45	0.45
Four Ball Extreme Pressure Test, ASTM D2783		
Load Wear Index, kg	50	53
Weld Load, kg	250	315
Falex Wear Test, ASTM D2670, wear teeth	5	5
Stick-Slip (Cincinnati Milacron)	0.75	0.75
Phenol Content, ppm (4 AAP, Weck Laboratory) (phenolics by 4-amino antipyrine method)	<2.0	<2.0
Tribol Solids, Grade Classification	-- Contains no Solids--	

Subject to usual manufacturing tolerances.