



# **TECHNICAL DATA**

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## **#161 MOLY AIRLINE OIL**

Moly Airline Oil is a premium non-detergent anti-wear rust and oxidation inhibited oil that is specially formulated for use in all types of low pressure and high pressure airlines and all types of pneumatic tool systems that are found in the mining and construction industry.

Moly Airline Oil is blended from the finest high viscosity index solvent refined, severely hydro-finished 100% pure paraffin base stocks available. These high viscosity index 100% pure paraffin base stocks provide Moly Airline Oil with the following performance characteristics:

1. **Excellent Thermal Stability**
2. **Excellent Resistance to Oxidation and Thermal Degradation**
3. **A naturally High Viscosity Index. This results in a minimum change in viscosity that helps prevent excessive leakage, sluggish operation and lower overall efficiency and other deficiencies attributed to low viscosity index oils over wide operating temperature ranges.**
4. **Excellent Film Strength.**
5. **Excellent Operating Temperature Reduction. Superior Chemical Stability.**
6. **Low Volatility.**
7. **Low Carbon Forming Tendencies**

Blended into these 100% pure paraffin base oils is a highly specialized multi-functional additive package that provides the Moly Airline Oil with the following performance benefits:

1. **Exceptional anti-wear protection**
2. **Extended pump life**
3. **Extended bearing life**
4. **Enhanced thermal and oxidative stability**
5. **Superior hydrolytic stability**
6. **Excellent demulsibility characteristics**
7. **Excellent rust and corrosion protection**
8. **Excellent anti-foaming properties and air release properties**
9. **Reduced sludge, varnish and deposit formation**
10. **Improved durability of non-ferrous parts**
11. **Excellent protection against the drying out of seals and gaskets.**
12. **Enhanced compatibility with existing fluids**
13. **Enhanced fluid life**
14. **Enhanced seal life**
15. **Reduced system maintenance**

Continued on Next Page

TD-161 (Rev. 6/01)

The trend among pneumatic system manufactures is to employ higher speeds and pressures. This results in conditions of thin-film lubrication that can result in excessive wear, which can cause a loss in system efficiency and costly shutdown for maintenance.

To prevent this wear a liquid soluble type of moly known as Micron Moly® is further blended into the Moly Airline Oil. Micron Moly® plates itself to the metallic sliding and rubbing metallic surfaces of the pneumatic system. Once plated Micron Moly® forms a long lasting solid lubricant film that is capable of withstanding pressures up to 500,000 pounds per square inch. Micron Moly® also reduces friction between the moving parts. This results in less heat being generated, which in turn reduces operating temperatures and downtime.

### TYPICAL PROPERTIES

ISO Grade	5	10	20
SAE Grade	22	32	46
AGMA Gravity 60°F	-----	-----	1
Specific Gravity 60°F/15.5°C	0.8602	0.8708	0.8708
Viscosity SUS 38°/100°F (ASTM D-445)	105-122	155-207	123-250
Viscosity Cst 40°C (ASTM D-445)	20.00-23.5	30.00-40.00	41.40-48.50
Viscosity Cst 100°C (ASTM D-445)	4.0-4.5	5.0-6.0	6.2-7.1
Viscosity Index (ASTM D-2270)	98	100	99
Flash Point °F/°C (ASTM D-92)	400°/204°	420°/216°	430°/221°
Fire Point °F/°C (ASTM D-92)	440°/227°	460°/238°	460°/238°
Pour Point °F/°C (ASTM D-97)	-25°/-32°	-10°/-23°	0°/-18°
Aniline Point °F/°C (ASTM D-611)	220°/104°	220°/104°	228°/109°
Rust Test (ASTM D-665)			
Procedure A (Distilled Water)	Pass	Pass	Pass
Procedure B (Salt Water)	Pass	Pass	Pass
Copper Strip Corrosion Test (ASTM D-130)			
3 hours	1a	1a	1a
Hydrolytic Stability (ASTM D-2619)			
Copper Wt. Loss mg/cm <sup>2</sup>	0.01	0.01	0.01
Acidity of water mg/KOH	0.05	0.05	0.05
Demulsibility Test (ASTM D-1401)			
Oil-Water-Emulsion	40-40-0	40-40-0	40-40-0
Minutes	15	15	15
Denison Filterability Test			
Time without water (seconds)	----	112	112
Time with 2% water (seconds)	----	146	146

Typical Properties Continued on Next Page

TYPICAL PROPERTIES CONTINUED

Oxidation Stability Test (ASTM D-943)			
Hours to TAN of 2	3,000	3,000	3,000
Sludge Tendencies (ASTM D-4310)			
Total Sludge, mg.	36	36	36
Total Copper, mg	22	22	22
Total Iron, mg	0.1	0.1	0.1
Thermal Stability Test (Cincinnati Milicron Method) 168 hours/135°C, copper, steel catalyst)			
Sludge mg/1000ml	3.9	3.9	3.9
Condition of Copper Rod	1	1	1
Condition of Iron Rod	1	1	1
Four Ball Wear Test (ASTM D-4172) (1 hour/40kg/54°C)			
Wear Scar Diameter, mm	0.45	0.4	0.4
Four Ball EP Test (ASTM D-2783)			
Weld Points, kgs.	126	126	126
Load Wear Index, kgs.	----	26.2	26.2
Falex Continuous Load Procedure A (ASTM D-3233)			
Failure Load, lbs.	----	1250	1250
Conradson Carbon Residue (ASTM D-189)	0.3	0.3	0.3
Total Acid Number (ASTM D-664)	0.5-0.9	0.5-0.9	0.5-0.9
Vickers Pump Wear Test (ASTM D-2882)			
Weight Loss, mg	----	12	12
Vickers 35VQ25 Pump Test			
Total Wt. Loss Vane, mg	5	5	5
Total Wt Loss Ring, mg	11	11	11
Denison T5D042 Pump Test			
Mm (inches) of wear, vane	0.239 (0.0094)	0.239 (0.0094)	0.239 (0.0094)
FZG Test A/8.3/90 (ASTM D-5182)			
Load Stage Pass	----	12 <sup>th</sup>	12 <sup>th</sup>
Foam Test (ASTM D-892)			
Sequence I	0/0	0/0	0/0
Sequence II	0/0	0/0	0/0
Sequence III	0/0	0/0	0/0
Air Release (ASTM D-3427)			
Time (minutes @ 50°C/122°F	0.5	0.5	1
Dielectric Strength (ASTM D-887)	39 kilovolts	39 kilovolts	39 kilovolts