



Synthetic Compressor Lubricants

Lubrimist Synthetic Oils

LSO



Lubrication Requirements for Air/Gas Compressor Operation



- Lubricant is exposed to high heat. Most mineral oil-based products will oxidize rapidly and form sludge and carbon deposits.
- Contamination of dirt, dust and chemicals from gas intake can lead to wear, corrosion, deposits and oxidation.
- In reciprocating compressors, oxidation products deposit on valve surfaces and result in valve sticking. Deposits result in lower efficiency and may lead to fires and explosions.
- Oxidation deposits on discharge valves increases acidity, wear and abrasion.
- Low oil volatility is required to minimize oil consumption.
- Most compressor manufacturers recommend synthetic compressor lubricants for reciprocating compressors.





Compressor Fluid – Standards and OEMs



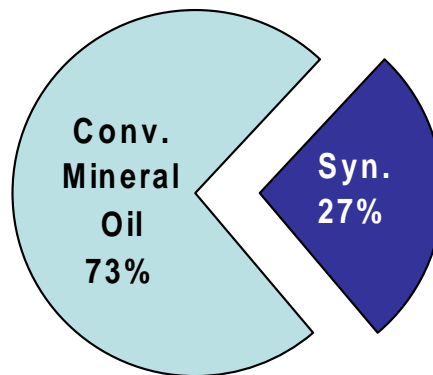
- DIN 51506 performance specifications
 - VDL type for compressors with oil temperatures up to 220 deg C.
 - VC and VCL for oil temperatures up to 160 deg C.
 - VB and VBL, up to 140 deg C.

- ISO Classification
 - ISO-L-DAA: Reciprocating, light duty
 - ISO-L-DAB: Reciprocating, medium duty
 - ISO-L-DAC: Reciprocating, heavy duty

- Key OEMs include:
 - Dresser Rand Atlas Copco Joy
 - Gardner Denver Quincy Sperre



Total Air/Gas Compressor Fluids



- Higher proportion of synthetic fluids used in compressor lubrication compared to other industrial applications e.g. hydraulic systems or gear boxes.
- OEMs favor synthetics for factory fill because of their extended drain capability (90% of factory fill is synthetic).
- OEM specify in-house synthetic lubricants for extended warranties and to provide lower maintenance and longer equipment life.



Lubrication Systems Company LSO



- Fully-formulated synthetic diester-based compressor lubricants.
- ISO VG 32, 46, 68, 100 & 150 viscosity grades available
 - LSO 32: ISO VG 32
 - LSO 46: ISO VG 46
 - LSO 68: ISO VG 68
 - LSO 100: ISO VG 100
 - LSO 150: ISO VG 150
- Recommended primarily for reciprocating and rotary air/gas compressors. Meets performance requirements of:
 - ISO-L-DAC (Heavy-duty reciprocating compressors)
 - ISO-L-DAJ (Heavy-duty rotary compressors)





Vistone Product Features



- Derived from fully synthetic diesters and hydrocarbons
- Additive package is ashless, zinc-free and tailored for the specific base stocks.
- Cost-Performance benefits realized from
 - Extended Drain Intervals
 - Improved Equipment Life
- Superior oxidation and thermal stability for overall performance. Vistone LSO 100 RPVOT (ASTM D2272) measured at 1684 minutes.
- Reduced lubricant thickening and acid formation
- Low pour point for year-round lubrication



- Very low deposit forming behaviour (Panel Coker test)
- Low evaporative loss compared to conventional mineral oil reduces oil consumption
- High flash-point, fire-point and auto-ignition properties to ensure safe operation
- Excellent performance in all areas:
- High film strength for superior wear protection
- Cleanliness
- Demulsibility
- Low air entrainment, better air release and foaming resistance
- Rust protection



Advantages of LSO



- Field proven additive and base fluid technology to provide:
 - Oxidative and thermal stability
 - Wear protection
 - Rust protection
 - Air release and demulsibility
- Suitable for wide application range for reciprocating and rotary air compressors
- Ideal substitute for high-stress applications beyond the capability of conventional mineral oil products
- Improved system cleanliness





Advantages of LSO (cont'd)



- Performance in laboratory evaluations correlates with end-user benefits in the field:
 - Extended oil service life (increased by a factor between 5 to 8 when LSO replaced mineral oil)
 - Reduced maintenance and down-time
 - Lower oil consumption





OEM Approvals



- Compressor manufacturers do not generally publish specifications or issue formal approvals for service fill lubricants
- LSO products are used by leading oil companies who recommend their use in air compressor systems such as:
 - Dresser Rand
 - Atlas Copco
 - Joy
 - Gardner Denver
 - Quincy
 - Sperre
- This is not a full list nor a representation of warranty. Users should contact the OEM prior to switching compressor fluids.





Properties of LSO



Characteristics	LSO	Competitors' Products
4-Ball Wear D4172 Diameter, mm	0.4	0.4-0.8
FZG DIN 51354, Fail stage	10 (Vistone 803)	≤ 9
RPVOT D2272, Minutes	1340 - 1684	890 - 1110 (Mineral based: 350- 500)
Conradson carbon residue, mass %	≤ 0.03	≤ 0.03
Air release, minutes	< 2	4-15
Rust prevention D665B	Pass	Pass/Fail



- The Rotating Pressure Vessel Oxidation Test (RPVOT) and Conradson Carbon oxidation tests measure an oil's resistance to oxidative decomposition and resulting problems such as viscosity increase, acid formation and sludge formation.
- LSO compressor fluids are formulated with highly stable diester basestocks and anti-oxidants, enabling extended lubricant drain intervals.
- The oxidation life of LSO is up to 5 times longer than mineral-based fluids

Oxidation Test	LSO	Similar Products
RPVOT (D 2272), min.	1340 - 1684	890 – 1,110 (Mineral: 300 – 500)
Conradson Carbon (D 189) residue mass%	≤ 0.03	≤ 0.03

- Results in the FZG gear test and the 4 ball wear test determine an oil's ability to protect moving parts such as vanes, gears and bearings from wear.
- LSO compressor fluids are formulated with special ashless anti-wear additives, making them suitable for use in a variety of industrial applications.

Wear Test	LSO 150 (ISO VG 150)	Range Among Competition
4 Ball Wear (D 4172) scar diam. (mm)	0.4	0.4-0.8
FZG (DIN 51354) Fail Stage	10	9



LSO Benefits Summary



- Lower Lubrication Costs
Longer lube life, drain intervals
Lower lube consumption
Smaller lube inventory
- Reduced Machine Parts Maintenance
Fewer deposits & parts sticking
Fewer routine replacements
- Energy Savings
Less thickening and better lubricity
Reduced machine load
- Reduced Machinery Maintenance
Fewer overhauls
Less maintenance
Less unscheduled downtime
- More Efficient Production
Fewer scheduled shutdowns
- Improved Margin of Safety
Reduced flash/fire hazard
Fewer equipment failures
Noise reduction

Overall Lower Operating Costs

