

Product Information



Monolec® Syn Industrial Oil

(9032-9150 & 9220-9680)

Versatile Synthetic Provides Cool, Clean Performance

Monolec Syn Industrial Oil (9032-9150, 9220-9680) is designed to prolong equipment life by combating the effects of high temperatures, contamination and loads that accelerate wear. It is a versatile synthetic lubricant that meets or exceeds the requirements of gearboxes, air compressors, vacuum pumps, hydraulic systems, and roll mill bearings found in the textile, plastic, rubber and paper industries. It is formulated with high-viscosity 100 percent synthetic base oil and a specially developed additive package for applications running at extreme temperatures. The additive package provides outstanding thermal stability and rust and oxidation resistance as well as wear resistance as pressures and temperatures rise. A foam suppressant completes the package. The base oil and additive formulation works synergistically to reduce wear, extend oil drain intervals, reduce oil consumption, and practically eliminate deposits and sludge formation, all while providing excellent compatibility with seals.



Beneficial Qualities

Provides Reliable, Wear-Resistant Service

- Increases equipment reliability, reducing replacement and repair costs
- Features extremely high natural viscosity index
- Maintains viscosity in service
- Maintains performance in high and low temperatures
- Exhibits outstanding oxidation and thermal stability
- Controls corrosive and scuffing wear

Ensures Clean, Moisture-Resistant Operation

- Keeps application clean and running at peak efficiency

- Eliminates carbon deposits, sludge and varnish
- Will not harm seals and plastics
- Protects metal surfaces from moisture
- Provides superior rust protection
- Is completely nonfoaming in service

Reduces Oil Consumption

- Extends drain intervals due to outstanding oxidation resistance
- Requires less make-up oil due to low volatility
- Reduces environmental impact with less waste oil for disposal
- Is compatible with other lubricants, making conversion easy

Proprietary Additive

LE's proprietary additives are used exclusively in LE Monolec Industrial Oil.

Monolec® wear-reducing additive creates a single molecular lubricating film on metal surfaces, vastly increasing oil film strength without affecting clearances. An invaluable component in LE's engine oils, industrial oils and many of its other lubricants, Monolec allows opposing surfaces to slide by one another, greatly reducing friction, heat and wear.



Asset Reliability Solutions™

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Monolec® Syn Industrial Oil

	<u>9032</u>	<u>9046</u>	<u>9068</u>	<u>9100</u>	<u>9150</u>
Color	Green	Green	Green	Green	Green
ISO VG / SAE Grade	32 / -	46 / 20	68 / -	100 / 40	150 / 50
Relative Density @ 60°F/60°F, ASTM D1298	0.848	0.852	0.855	0.858	0.857
Viscosity @ 100°C, cSt, ASTM D445	6.1	8.1	10.8	14.9	20.6
Viscosity @ 40°C, cSt, ASTM D445	32.3	46.8	68.0	100.0	152
Viscosity Index ASTM D2270	140	145	148	155	157
Flash Point °C (°F), (COC), ASTM D92	246 (475)	249 (480)	244 (470)	243 (470)	243 (470)
Pour Point °C (°F), ASTM D97	-57 (-71)	-51 (-60)	-45 (-49)	-42 (-44)	-39 (-38)
Rust Test 4 hrs @ 60°C, DI H₂O, ASTM D665A	Pass	Pass	Pass	Pass	Pass
Rust Test 4 hrs @ 60°C, Sea H₂O, ASTM D665B	Pass	Pass	Pass	Pass	Pass
Copper Corrosion 3 hrs @ 100°C, ASTM D130	1b	1b	1b	1b	1b
Oxidation by RPVOT @ 150°C, minutes, ASTM D2272	1,203	1,203	1,203	1,203	1,203
Four-Ball EP Weld Point kgf, ASTM D2783	200	200	200	200	200
Four-Ball Wear @ 75°C, 1,200 rpm, 40 kgf, 60 minutes, mm wear, ASTM D4172	0.40	0.40	0.40	0.40	0.40
Ash—Sulfated %, ASTM D874	0.06	0.06	0.06	0.08	0.08
Acid Number mg KOH/g, ASTM D664	0.25	0.25	0.25	0.25	0.25
Emulsion Characteristics @ 54°C, oil-water-emulsion/minutes, ASTM D1401	40-40-0/5	40-40-0/5	40-40-0/5	40-40-0/5	40-40-0/5
Foaming Characteristics @ 24°C/93.5°C/24°C, 3 sequences, ml of foam/time to break, ASTM D892	0/0;0/0;0/0	0/0;0/0;0/0	0/0;0/0;0/0	0/0;0/0;0/0	0/0;0/0;0/0
Evaporation 22 hrs @ 100°C, % loss, ASTM D972	0.77	0.77	0.76	0.76	0.76



Monolec® Syn Industrial Oil

	9220	9320	9460	9680
Color	Green	Green	Green	Green
ISO VG	220	320	460	680
Relative Density @ 60°F/60°F, ASTM D1298	0.864	0.867	0.868	0.865
Viscosity @ 100°C, cSt, ASTM D445	27.0	36.5	47.6	78.5
Viscosity @ 40°C, cSt, ASTM D445	221	321	461	680
Viscosity Index ASTM D2270	157	160	161	199
Flash Point °C (°F), (COC), ASTM D92	243 (470)	243 (470)	241 (465)	246 (475)
Pour Point °C (°F), ASTM D97	-33 (-27)	-27 (-17)	-24 (-11)	-42 (-44)
Rust Test 4 hrs @ 60°C, DI H₂O, ASTM D665A	Pass	Pass	Pass	Pass
Rust Test 4 hrs @ 60°C, Sea H₂O, ASTM D665B	Pass	Pass	Pass	Pass
Copper Corrosion 3 hrs @ 100°C, ASTM D130	1b	1b	1b	1b
Oxidation by RPVOT @ 150°C, minutes, ASTM D2272	1,149	1,133	1,130	1,203
Four-Ball EP Weld Point kgf, ASTM D2783	200	200	200	200
Four-Ball Wear @ 75°C, 1,200 rpm, 40 kgf, 60 minutes, mm wear, ASTM D4172	0.31	0.31	0.31	0.35
Ash—Sulfated %, ASTM D874	0.06	0.09	0.05	0.03
Acid Number mg KOH/g, ASTM D664	0.25	0.25	0.25	0.25
Emulsion Characteristics @ 82°C, oil-water-emulsion/minutes, ASTM D1401	40-40-0/10	40-40-0/15	40-40-0/15	43/37/0-20
Foaming Characteristics @ 24°C/93.5°C/24°C, 3 sequences, ml of foam/time to break, ASTM D892	0/0;0/0;0/0	0/0;0/0;0/0	0/0;0/0;0/0	0/0;0/0;0/0



Performance Requirements Met or Exceeded

- AGMA 9005-D94 (OS)
- USDA H2

Typical Applications

- Air compressors (reciprocating & rotary)
- Bearings (oil-lubricated)
- Chains (including dryer chains)
- Gearboxes
- Hydraulic systems
- Vacuum pumps
- Worm Gears (9460 & 9680)
- Also suitable for use as:
 - ◊ Circulating oil
 - ◊ AGMA R & O Gear Oil

Changeover Procedures

Because of the excellent cleaning action of LE's Monolec Synthetic Industrial Oil – which dissolves, loosens and removes any existing deposits – certain routine procedures are recommended when changing a compressor from another type of lubricant. Basically, all compressor and downstream parts that will be in contact with the oil should be as clean as practical before the changeover. Detailed changeover procedures are available upon request.



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LI30054 rev. 3-24