

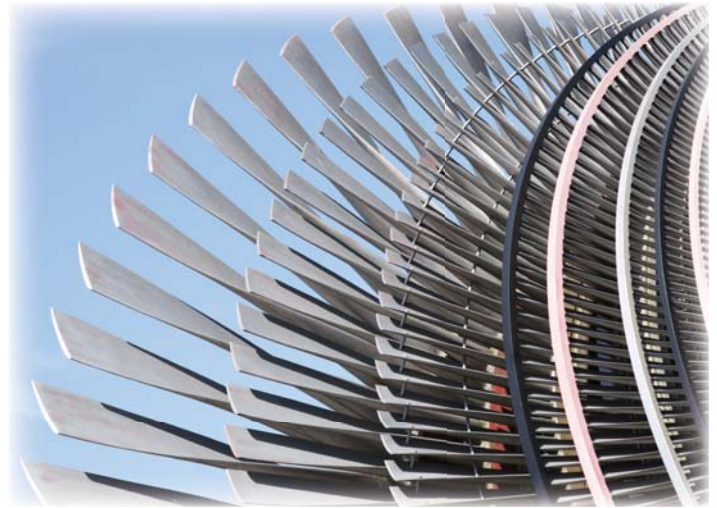


Monolec® Turbine Oil (6461-6463)

Premium Oil Boosts Turbine Performance

Highly effective for steam, hydro and gas turbine applications, Monolec Turbine Oil (6461-6463) reduces varnish, reduces water contamination, lengthens equipment life and extends drain intervals. It is a premium, high-performance turbine oil with excellent water separation characteristics, rust and oxidation inhibitors, and improved wear-reducing properties. Its proprietary formula consists of select low-volatility paraffinic base fluids enhanced with a synergistic mix of high-performance additives.

Certain turbine applications – including gear-driven turbines or those in which a hydraulic control system and turbine share the same oil – require oil with anti-wear properties. Unlike many anti-wear additives that decrease the oxidation resistance of turbine oils, the proprietary wear-reducing additive in Monolec Turbine Oil provides increased protection against wear with no negative effect on the oxidation life of the oil.



Beneficial Qualities

Reduces Varnish & Deposits in Gas & Steam Turbines

- Exhibits excellent thermal stability
- Has rapid air release properties
- Resists formation of varnish and sludge

Reduces Water Contamination in Steam & Hydro Turbines

- Separates readily from water
- Provides excellent resistance to foaming
- Imparts superior rust protection

Lengthens Equipment Life

- Protects moving parts, due to its high film strength

- Enhances wear-reducing properties without affecting R & O inhibitors
 - Protects thrust plates in bearings

Extends Drain Intervals

- Provides long-term oxidation resistance and thermal stability
- Is easily filtered for long-term oil cleanliness

Available Grades

- ISO 32 (6461)
- ISO 46 (6462)
- ISO 68 (6463)

Proprietary Additive

LE's proprietary additives are used exclusively in LE lubricants. Monolec Turbine Oil contains Monolec.

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.



Monolec® Turbine Oil

	<u>6461</u>	<u>6462</u>	<u>6463</u>
Color	Amber	Amber	Amber
Color ASTM D1500	1	1	1
ISO VG / SAE Grade	32	46	68
Relative Density @ 60°F/60°F, ASTM D1298	0.864	0.868	0.872
Viscosity @ 100°C, cSt, ASTM D445	5.14	6.82	8.83
Viscosity @ 40°C, cSt, ASTM D445	29.73	46.12	69.10
Viscosity Index ASTM D2270	95	95	95
Flash Point °C (°F), (COC), ASTM D92	228 (442)	234 (455)	238 (460)
Pour Point °C (°F), ASTM D95	-30 (-22)	-30 (-22)	-24 (-11)
Low Temperature Stability FTM 3458	Pass	Pass	Pass
Rust Test 4 hrs @ 60°C, Sea H₂O, ASTM D665B	Pass	Pass	Pass
Copper Corrosion 3 hrs @ 100°C, ASTM D130	1b	1b	1b
Oxidation by RPVOT @ 150°C, minutes, ASTM D2272	915	915	915
Oxidation by TOST hours, ASTM D943	>4,000	>4,000	>4,000
Panel Coker mg, FTM 3462	134	134	134
Four-Ball Wear @ 75°C, 1,200 rpm, 40 kgf, 60 minutes, mm wear, ASTM D4172	0.42	0.42	0.42
Ash—Sulfated %, ASTM D874	0.05	0.05	0.05
Acid Number mg KOH/g, ASTM D974	≤0.15	≤0.15	≤0.15
Emulsion Characteristics @ 54°C, oil-water-emulsion/minutes, ASTM D1401	40ml-40ml-0ml/5	40ml-40ml-0ml/5	40ml-40ml-0ml/5
Filterability wet, Stage I, ISO 13357	Pass	Pass	Pass
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
Air Release 9.0-90.0 cSt @ 40°C: 50°C, minutes, ASTM D3427	2.3	2.3	2.3

Performance Requirements Met or Exceeded

- Alstom
- Cincinnati Machine
- DIN 51524 Part 1
- General Electric
- ISO 8068 (L-TSA & L-TGA)
- MIL-H-17672D 2075 TH
- Siemens
- Solar Turbine
- USDA H2
- Westinghouse

Recommendations

- Monolec Turbine Oil is suitable for all mainline and peaking turbine applications.

Typical Applications

- Mainline steam, hydro and gas turbine generators
- Circulating oil systems
- Centrifugal compressors
- Other long-service-life applications



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