



## Monolec® Hydraulic Oil (single grade) (6105, 6107, 6110 & 6120)

### *Extended-Life Oil Provides Smooth Hydraulic Power*

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A long-lasting, anti-foaming oil designed to protect the life of high-speed hydraulic pumps and motors, Monolec® Hydraulic Oil offers superior protection against water contamination, rust, corrosion and oxidation. Each single-grade formula – available in four different viscosities – outperforms other commercial hydraulic oils in thermal, oxidative and hydrolytic stability.

#### Beneficial Qualities

##### *Provides Long-Lasting, Cost-Saving Service*

- Maintains long oil service life
- Extends drain intervals
- Reduces oil consumption, including need for make-up oil
- Minimizes labor and downtime required for oil changes
- Outperforms commercial hydraulic oils in thermal, oxidative and hydrolytic stability

##### *Prevents Wear & Extends Equipment Life*

- Protects metal components from scuffing, galling and other wear
- Prevents or minimizes leaks by protecting seals and hoses
- Minimizes equipment downtime and failure
- Reduces need for replacement parts and labor

##### *Resists Water Contamination, Rust, Corrosion & Oxidation*

- Separates rapidly from water, allowing for easy drain-off
- Prevents rust and corrosion with high film strength and R & O inhibitors
- Provides superior oxidation resistance
  - o Reduces sludge and varnish formation
  - o Prevents plugged orifices and sticky valves
  - o Minimizes viscosity changes during temperature fluctuations
- Provides smooth, uninterrupted power flow
  - o Eliminates fade or chatter by breaking up foam with powerful anti-foaming agent
  - o Maintains system cleanliness with oxidation-resistant formula



#### Proprietary Additives

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

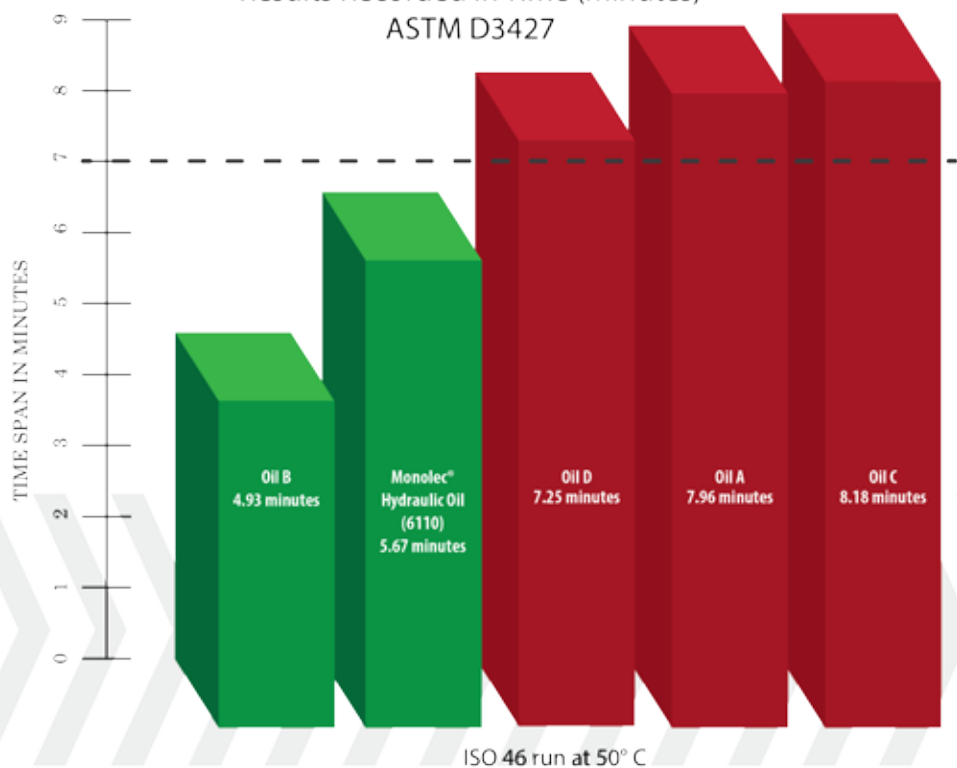
**Monolec®** wear-reducing additive creates a single molecular lubricating film on metal surfaces, vastly increasing oil film strength without affecting clearances. An invaluable component in LE's engine oils, industrial oils and many of its other lubricants, Monolec allows opposing surfaces to slide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





## Air Release Lab Test Results

Results Recorded in Time (Minutes)

ASTM D3427



To meet the test variant for the Parker Dennison HF-0 specification, the air release must be completed in 7 minutes or under.

Monolec®	Oil C
	
Shows Monolec® Hydraulic Oil with no entrained air	Shows Oil C with entrained air that did not fully release within the 7 minute time frame.

This test measures the time for entrained air content to fall to a relatively low value. Entrained air in hydraulic oil can cause sponginess and lack of sensitivity of the control of turbine and hydraulic systems. It is critical that hydraulic fluid has the ability to separate entrained air from oil.

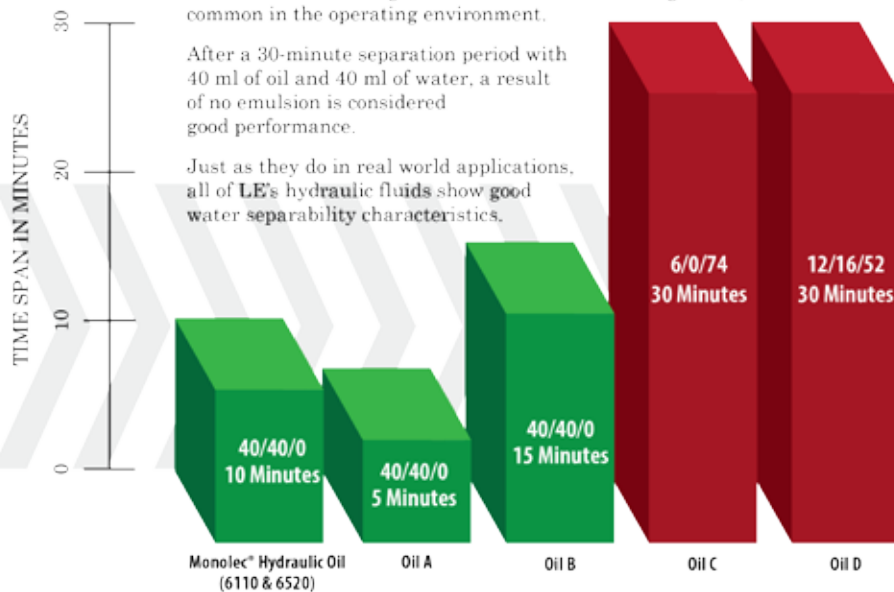
# Water Separability Test Results

ASTM D1401

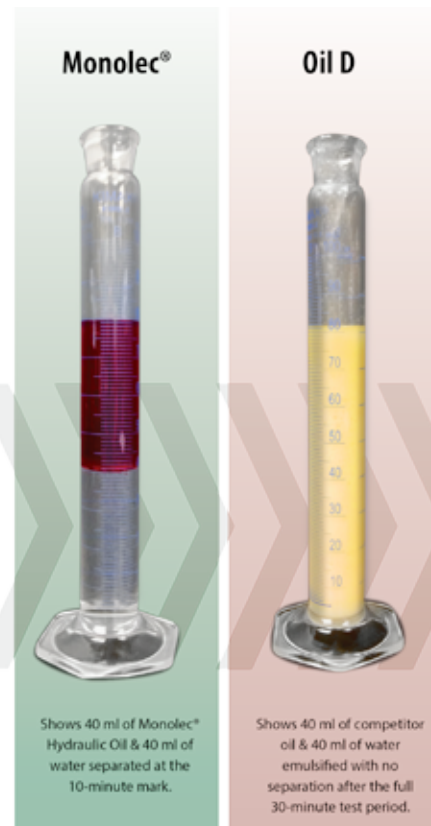
This test is performed as an indicator of an oil's ability to separate from water under conditions of high water contamination and agitation, both of which are common in the operating environment.

After a 30-minute separation period with 40 ml of oil and 40 ml of water, a result of no emulsion is considered good performance.

Just as they do in real world applications, all of LE's hydraulic fluids show good water separability characteristics.



RESULTS: Oil/Water/Emulsion





## Monolec® Hydraulic Oil (single grade)

	<b>6105</b>	<b>6107</b>	<b>6110</b>	<b>6120</b>
<b>Color</b>	Red	Red	Red	Red
<b>ISO VG / SAE Grade</b>	22	32	46	68
<b>Relative Density @ 60°F/60°F, ASTM D1298</b>	0.864	0.868	0.870	0.874
<b>Viscosity @ 100°C, cSt, ASTM D445</b>	4.660	5.220	6.910	8.720
<b>Viscosity @ 40°C, cSt, ASTM D445</b>	21.94	30.26	47.09	68.02
<b>Viscosity Index ASTM D2270</b>	≥95	≥95	≥95	≥95
<b>Flash Point °C (°F), (COC), ASTM D92</b>	193 (380)	221 (430)	232 (450)	238 (460)
<b>Pour Point °C (°F), ASTM D97</b>	-33 (-27)	-30 (-22)	-27 (-16.6)	-24 (-11)
<b>Rust Test 4 hrs @ 60°C, DI H<sub>2</sub>O, ASTM D665A</b>	pass	pass	pass	pass
<b>Rust Test 4 hrs @ 60°C, Sea H<sub>2</sub>O, ASTM D665B</b>	pass	pass	pass	pass
<b>Copper Corrosion 3 hrs @ 100°C, ASTM D130</b>	1a	1a	1a	1a
<b>Emulsion Characteristics @ 54°C, oil-water-emulsion/minutes, ASTM D1401</b>	40-40-0/5	40-40-0/10	40-40-0/10	40-40-0/10
<b>Air Release 9.0-90.0 cSt@40°C: 50°C, minutes, ASTM D3427</b>	0.50	1.25	4.84	6.68
<b>Dielectric Strength Kv, ASTM D877, KV</b>	≥40	≥40	≥40	≥40

### Performance Requirements Met or Exceeded

- AIST 126, 127
- ANSI/AGMA 9005-E02-RO
- ASTM D6158
- Bosch-Rexroth RD 90220
- Denison (Parker-Hannifin) HF-0
- DIN 51524-2
- Eaton (Vickers) 694 (formerly M-2950-S and I-286-S)
- ISO 11158
- MAG (Cincinnati Milacron, Cincinnati Machine)
  - o P68 (6107)
  - o P69 (6120)
  - o P70 (6110)
- SAE MS 1004
- SEB 181222 (6110, 6120)

### Typical Applications

- Hydraulic pumps, motors and systems:
  - o In-plant stations
  - o Forklifts
  - o Construction equipment
  - o Well service equipment
  - o Utility service boom trucks

### Recommendation

- This product should not be used for fire-resistant hydraulic fluid applications.