

# Lubrication Reference Guide



LE Products Manufactured Under An ISO 9001:2000 Certified Quality System

## LE: Dedication to Customer Support

Since 1951, Lubrication Engineers®<sup>®</sup>, Inc. has manufactured and marketed a comprehensive line of heavy-duty, premium quality lubricants, including some of the most versatile, vari-purpose products available today.

### OUR OBJECTIVE: INCREASE YOUR PROFITABILITY

LE products are designed to increase your profitability through:

- Longer Equipment Life – fewer capital expenditures.
- Extended Service Intervals – reduced lubricant consumption.
- Energy Reductions.
- Reliability – less downtime, less lost production.
- Fewer Repairs – fewer parts and less labor.
- Less Inventory – multi-purpose products.

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**LUBRICATION ENGINEERS®<sup>®</sup>, Inc.**

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## LE: Products

### VERSATILE PRODUCTS WITH UNEQUALED PERFORMANCE

LE products are designed to give unequalled performance in virtually any application under operating conditions that vary from normal to severe.

We have dedicated our resources to continually provide you with high performance, consistent quality lubricants.

■ **R&D** continually investigates advanced technology to develop tomorrow's lubricants. LE's own additive company, The Almasol Corp., perfected wear-reducing additives which have been used on every U.S. manned space mission. You benefit from LE's exclusive and proprietary additives, the use of superior base oils and technology.

■ **SUPERIOR BASE OILS** – LE's petroleum lubricants contain 100% Mid-Continent paraffinic base oils. Using special refining techniques, these base oils have a saturated molecular structure similar to the synthetic PAOs. Thus, they offer excellent oxidation resistance, superior lubricity, long life and few deposits/sludge.

■ **ALMASOL®** – Greatly reduces friction and wear while withstanding very high loads and temperatures up to 1900°F (1038°C).

■ **MONOLEC®** – Vastly increases oil film strength while reducing friction, heat and wear.

■ **QUINPLEX®** – Provides water and moisture resistance.

■ **PYROSHIELD®** – For extreme heavy duty and shock loading.

■ **UNINTERRUPTED SUPPLY** (even under conditions of temporary shortages that might occur) is assured through our huge inventory of highest quality base stocks.



### LUBRICATION ENGINEERS®<sup>®</sup>, INC. IS YOUR SINGLE SOURCE FOR:

- Greases
- Power Fluids
- Engine Oils
- Hydraulic Oils
- Turbine Oils
- Open and Enclosed Gear Lubricants
- Rock Drill Oils
- Compressor Oils
- Food Grade Lubricants
- Synthetic Lubricants
- Fuel Supplements
- Wire Rope Lubricants

## Money-Saving Support from LE



### LUBRICATION SPECIALISTS

**Local Support** - Dedicated representatives nationwide to work with you to meet your lubrication needs.

**Lubrication Experts** - Our representatives are experienced. Many have been with us 10 to 20 years or more. You get the benefit of their expertise.

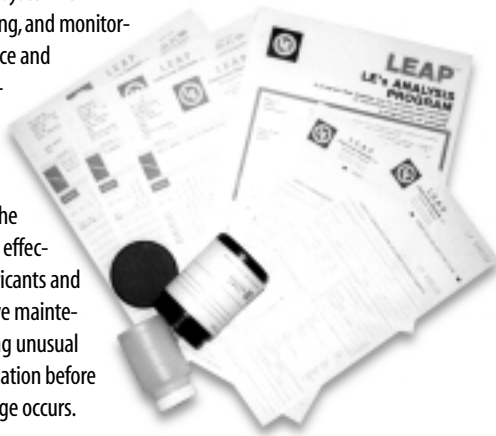
**Technical Support** - Qualified personnel back up our representatives to assist you.

### LE'S ENERGY SAVING PROGRAM – ZAP

Because of LE's superior base oils, proprietary additives and other technology, customers generally have experienced a 5% or more reduction in power consumption using LE lubricants. This is documented through LE's ZAP Program.

### LUBRICATION ENGINEERS ANALYSIS PROGRAM – LEAP<sup>SM</sup>

A comprehensive system for sampling, analyzing, and monitoring oil performance and equipment condition. Establishes the optimum oil change interval, which gives you the most economical, effective use of LE lubricants and helps in preventive maintenance by detecting unusual wear or contamination before equipment damage occurs.



### LUBRICATION MAINTENANCE PROGRAM: PLANT SURVEYS

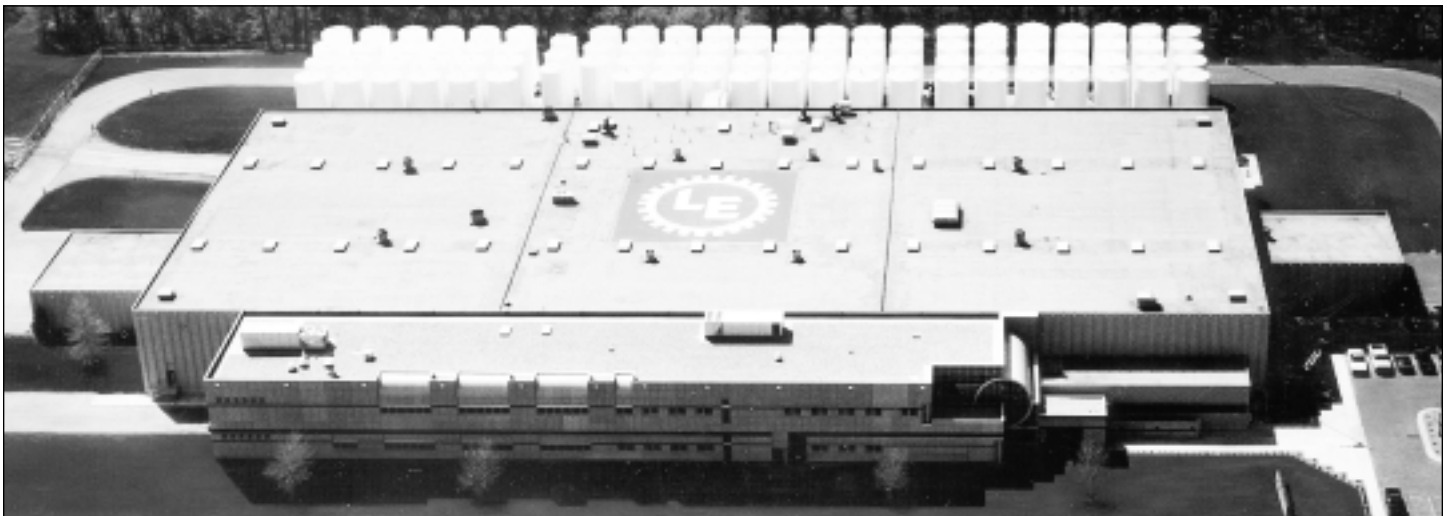
Lubrication Surveys of your Plant are done by a qualified LE representative. This complete survey of your equipment, lubrication points, recommended products, application methods and lube intervals minimizes product misapplication, insures your equipment is properly lubricated, removes the burden of scheduling your lubrication maintenance and assists in product consolidation of lubricants to reduce the number of products in inventory.

### BULK TANK PROGRAM

**Bulk Tanks** – These tanks offer space/cost savings for LE customers and eliminate the cost of drum disposal.



### LE's Manufacturing and Technology Center at Wichita, Kansas





Product	Grade		Viscosity, cSt			Flash Point °F (°C)	Pour Point °F (°C)	Timken OK Load Lbs. (Kgs.)	Uses   Specs   Comments
	SAE	ISO	100°C	40°C	VI				
<b>MONOLEC® Industrial Lubricant</b> 300	80W	68	9.3	66	95	405 (208)	-22 (-30)	65 (29.5)	An exceptionally adhesive, non-foaming, extreme pressure (EP) industrial oil with good water separation characteristics. Excellent oil viscosity for general machine applications and gearboxes. Contains MONOLEC®, LE's exclusive wear-reducing additive. Exceeds performance requirements for AGMA 2EP.
<b>ALMASOL® Pure Mineral Gear Lubricant</b> 401	90	220	20.7	238	95	535 (280)	0 (-18)		Mineral gear oil providing the highest level of wear reduction possible without use of extreme pressure (EP) additives. Contains ALMASOL®, LE's exclusive wear-reducing additive, rust and oxidation inhibitors, and metal adhesive additives. Non-foaming. Exceeds performance requirements for AGMA 5 and API GL-1.
<b>ALMASOL® Worm Gear Lubricant</b> 460 680		460 680	38.2 48.3	474 659	115 115	545 (285) 558 (292)	-6 (-21) -6 (-21)		These gear lubricants are designed to protect worm gears and bronze parts. Contains ALMASOL®, and other high quality additives to give excellent lubricity and film strength along with high load carrying ability. 460-AGMA 7C, 680-AGMA 8C.
<b>ALMASOL® Vari-Purpose Gear Lubricant</b> 604 605 606 607 608 609	90  80W 90 140 250	150 320 100 220 460 680	16.4 26.5 12.4 21.0 33.0 45.4	164 339 107 236 472 740	95 95 95 95 95 95	410 (210) 410 (210) 410 (210) 410 (210) 410 (210) 405 (208)	-11 (-24) 0 (-18) -17 (-27) -11 (-24) 5 (-15) 5 (-15)	65 (29.5) 65 (29.5) 65 (29.5) 65 (29.5) 65 (29.5) 65 (29.5)	Formulated for heavy-duty service in transmissions, differentials, and industrial gearing. Contains ALMASOL®, LE's exclusive wear-reducing additive. Has extreme pressure (EP) characteristics; is long lasting. Water resistant and non-foaming. Very adhesive; protects against corrosive wear and can reduce over-heating. Exceeds performance requirements for 606-AGMA 3EP, 604-AGMA 4EP, 607-AGMA 5EP, 605-AGMA 6EP, 608-AGMA 7EP, and 609-AGMA 8EP.
<b>MONOLEC® Gear Lubricant</b> 703 704	80W-90 85W-140		15.1 28.3	156 404	95 95	390 (198) 400 (204)	-17 (-27) 5 (-15)	70 (31.8) 70 (31.8)	Versatile, multi-viscosity EP gear oil which exceeds the demanding requirements of all types of differentials and transmissions in over-the-road and stop-and-go fleets and off-highway equipment, plus industrial gearboxes. Also recommended for Rockwell and Eaton axles and heavily-loaded industrial enclosed gearboxes. Contains MONOLEC®, LE's exclusive wear-reducing additive. Rockwell and Mack approved.
<b>Automatic Transmission Fluid</b> 1107			7.7	34	170	375 (190)	-60 (-51)		A high quality ATF, designed to perform efficiently over a wide temperature range. Non-foaming and highly oxidation resistant. Fully approved by GM as a DEXRON® III fluid and by Ford as a MERCON® fluid. Allison C-4 fluid. Excellent for automotive and industrial applications.
<b>QUINPLEX® White Oil</b> 4010 (H1) 4020 (H1) 4030 (H1)	20 30	46 68 100	5.7 7.4 9.5	43 67 101		370 (188) 390 (198) 410 (210)	-33 (-36) -27 (-33) -22 (-30)		NSF and USDA H1 for food processing equipment. Excellent non-foaming and lubricating characteristics. Use where incidental food contact can occur or where a clean non-staining lubricant is required - Hydraulic systems, slides, guides, chains, valves, compressors. Contains QUINPLEX® and an anti-microbial agent.
<b>QUINPLEX® Synthetic Food Grade Oil</b> 4046		46	7.7	46	125	530 (276)	-65 (-54)		NSF and USDA H1 for food processing equipment. Contains LE's proprietary additive QUINPLEX® and an anti-microbial agent. Superior low temperature performance characteristics.
<b>QUINPLEX® White Gear Lubricant</b> 4090 (H1) 4140 (H1)	90 140	220 460	16.9 28.8	209 427		405 (208) 410 (210)	-6 (-21) -6 (-21)	20 (9.1) 20 (9.1)	NSF and USDA H1 for food processing equipment. Excellent load-carrying, wear-reducing and non-foaming properties. Use in gearboxes where incidental food contact can occur or where a clean non-staining lubricant is desired. Contains QUINPLEX® and an anti-microbial agent.
<b>MONOLEC® Hydraulic Oil</b> 6105 6110 6120 6520		22 46 20 5W-20	4.2 6.8 8.7 6.2	21 47 68 33	95 95 95 135	375 (190) 415 (212) 435 (224) 385 (196)	-33 (-36) -27 (-33) -22 (-30) -44 (-42)		Meets all needs of modern hydraulic equipment: anti-wear qualities, rust and oxidation inhibitors, water resistance, and anti-foaming qualities. High temperature stability, long oil life and uniform power flow. Contains MONOLEC®, LE's exclusive wear-reducing additive.
<b>MONOLEC® Centrifugal Compressor Oil</b> 6260		32	5.4	32	100	430 (222)	-33 (-36)		A high quality compressor oil designed specifically for use in centrifugal air compressors. Formulated with select paraffinic base stocks synergistically blended with additives that offer excellent corrosion protection, superior thermal stability, good water separation, anti-foaming performance and oxidation resistance. Contains MONOLEC® LE's exclusive wear-reducing additive.



Product	Grade		Viscosity, cSt			Flash Point °F (°C)	Pour Point °F (°C)	Timken OK Load Lbs. (Kgs.)	Uses   Specs   Comments
	SAE	ISO	100°C	40°C	VI				
<b>MONOLEC® Rock Drill Lubricant</b>									Engineered especially for pneumatic equipment. Protection against high speeds and shock loads. Anti-rust characteristics keep clearances open and tools in use. Contains MONOLEC®, LE's exclusive wear-reducing additive, and a secondary anti-wear extreme pressure additive which prevents galling and welding under heavy-duty service.
6301		32	5.7	32	95	410 (210)	-22 (-30)	55 (25)	
6303	30	100	11.5	99	95	460 (238)	-11 (-24)	55 (25)	
6305	50	220	19.3	220	95	460 (238)	0 (-18)	55 (25)	
<b>MONOLEC® R &amp; O Compressor/Turbine Oil</b>									For steam-turbo generators, smaller industrial turbines, reciprocating and rotary compressors, vacuum pumps, gear and bearing applications and circulating systems. Contains MONOLEC®, LE's exclusive wear-reducing additive. Offers excellent oxidation resistance. Separates readily from water and protects against corrosive wear. Extremely long lasting in service. Nonfoaming. 6403-AGMA 2, 6404-AGMA 3, 6405-AGMA 4, 6406-AGMA 5, 6407-AGMA 6.
6401		32	5.3	32	95	410 (210)	-22 (-30)		
6402		46	6.7	45	95	420 (216)	-11 (-24)		
6403	20	68	8.6	68	95	435 (224)	-11 (-24)		
6404	30	100	11.4	98	95	460 (238)	5 (-15)		
6405	40	150	14.9	150	95	475 (246)	10 (-12)		
6406	50	220	19.7	226	95	470 (244)	10 (-12)		
6407	60	320	25.1	326	95	475 (246)	10 (-12)		
<b>LOW TOX® Turbine Oil</b>									Low toxicity turbine oil designed with advanced product technology that exceeds the performance of premium turbine oils, yet affords low ecotoxicity to address environmental concerns. Has a low order of toxicity compared to standard commercial turbine oils and biodegradable turbine oil. LE's LOW TOX® Turbine Oils meet or exceed OEM requirements for many generators, turbines and governors.
6411		32	5.4	33	95	400 (204)	-5 (-21)		
6412		46	6.6	46	95	455 (235)	0 (-18)		
6413		68	8.6	66	95	460 (238)	5 (-15)		
6414		100	11.6	102	95	500 (260)	5 (-15)		
<b>MONOLEC® Turbine Oil</b>									A premium-quality rust and oxidation (R&O) and anti-wear (AW) oil designed specifically to meet the performance specifications of mainline turbine manufacturers. For use in mainline turbine generators, circulating oil systems and other long service life applications. Excellent water-separating characteristics. Nonfoaming. Contains MONOLEC®, LE's exclusive wear-reducing additive.
6451		32	5.1	30	95	390 (198)	-22 (-30)		
<b>LOW TOX® Hydraulic Oil</b>									Low toxicity hydraulic oil designed with advanced product technology that gives performance equivalent to premium hydraulic fluids, yet affords low ecotoxicity to address environmental concerns. Has a low order of toxicity compared to standard commercial hydraulic oils and biodegradable hydraulic oils.
6601		32	5.5	32	95	420 (216)	0 (-18)		
6602		46	6.7	44	95	470 (244)	10 (-12)		
6603		68	9.2	69	95	515 (268)	10 (-12)		
6604		100	12.0	97	95	515 (268)	10 (-12)		
<b>MONOLEC® Refrigeration Oil</b>									A special lubricant for use in refrigeration systems and with most refrigerants. Contains MONOLEC® LE's exclusive wear-reducing additive, and special additives to prevent sludge, assure low temperature fluidity, and to provide longer effective oil life.
6723		68	7.0	67		360 (182)	-22 (-30)		
<b>H1 Machine Oil</b>									Developed specifically for use in Manzel Lubrication System of Angelus Seamers. Contains ashless additive technology that provides superior dispersant capabilities to completely suspend water in oil. Superior anti-rust properties. Resists foaming. NSF and USDA H1 for food processing equipment.
6751	40	150	13.1	150	75	405 (208)	-6 (-21)		
<b>MULTILEC® Industrial Oil</b>									A truly multi-functional, heavy-duty R and O (rust and oxidation) and AW (anti-wear) industrial oil suitable for air compressors, hydraulics, bearings, industrial turbines, and R and O gear applications. Compounded with premium paraffinic base stocks for greater lubricity. Outstanding rust and oxidation resistance. Excellent water separation ability. Anti-wear additive for increased gear and bearing life. Formulated to combat acid hydrolysis in rotary screw compressors. Contains MONOLEC®, LE's exclusive wear-reducing additive 6803-AGMA 2, 6804-AGMA 3, 6805-AGMA 4, 6806-AGMA 5, 6807-AGMA 6.
6801		32	5.3	32	95	400 (204)	-27 (-33)		
6802		46	6.7	46	95	415 (212)	-33 (-36)		
6803	20	68	8.7	68	95	425 (218)	-22 (-30)		
6804	30	100	11.3	99	95	435 (224)	-17 (-27)		
6805	40	150	14.9	150	95	435 (224)	-11 (-24)		
6806	50	220	18.9	217	95	425 (218)	-11 (-24)		
6807	60	320	25.0	335	95	420 (216)	-6 (-21)		
<b>MONOLEC® Power Fluid</b>									Formulated for combination hydraulic-gear systems and certain hydraulic transmissions and converters. Allison C-4 Performance. Contains MONOLEC®, LE's exclusive wear-reducing additive. Non-foaming, and rejects water.
7500			9.8	61	130	433 (223)	-33 (-36)		
<b>Power Transmission Fluid</b>									Heavy-duty, high performance power transmission fluids formulated for use in transmissions, final drives, and wet brakes of equipment requiring a fluid that meets the Caterpillar TO-4 or Allison C-4 specifications as well as certain manual transmissions. Manufactured from high quality 100% paraffinic base oils and carefully selected additives. Provides excellent friction properties, gear protection, and resistance to oxidation.
7510	10		6.5	43	95	445 (230)	-22 (-30)		
7530	30		11.9	111	95	485 (252)	-17 (-27)		
7550	50		20.4	241	95	500 (260)	5 (-15)		



Product	Grade		Viscosity, cSt			Flash Point °F (°C)	Pour Point °F (°C)	Timken OK Load Lbs. (Kgs.)	Uses   Specs   Comments
	SAE	ISO	100°C	40°C	VI				
<b>MONOLEC® Two-Cycle Engine Oil</b> 8104			13.7	40		205 (96)	-22 (-30)		A premix formulation which instantly disperses in the fuel even in cold conditions. Contains MONOLEC®, LE's exclusive wear-reducing additive. Burns cleanly and completely and minimizes heat and wear in <u>chain saws, lawn mowers, portable generators, pumps and similar two-cycle powered equipment</u> . Use where SAE 30 or 40 is recommended.
<b>MONOLEC® ULTRA-BLEND Engine Oil</b> 8130	10W-30		12.0	77	145	425 (218)	-33 (-36)		For heavy-duty, long-drain service in diesel and gasoline engines. Designed for effective cold cranking at low ambient temperatures. Made from select synthetic and paraffinic oils for all-weather performance. Contains MONOLEC®, LE's exclusive wear-reducing additive. Exceeds performance requirements for General Motors, Ford, Detroit Diesel and Cummins.
<b>MONOLEC PLUS® Engine Oil</b> 8330 8340	30 40		10.5 13.9	84 136	95 95	460 (238) 505 (262)	-22 (-30) -6 (-21)		Versatile, hard working oil for diesel engines. Made from select paraffinic base oils and contains MONOLEC®, LE's exclusive wear-reducing additive. Exceed requirements for diesel engines calling for API CD quality engine oil and for many natural gas engines.
<b>MONOLEC® GFS Engine Oil</b> 8410 8420 8430 8440 8450	10W 20W 30 40 50		6.1 8.6 11.5 15.6 19.8	32 57 92 146 214	95 95 95 95 95	370 (188) 405 (208) 425 (218) 450 (232) 475 (246)	-33 (-36) -22 (-30) -17 (-27) -11 (-24) 0 (-18)		Formulated for heavy-duty service. Excellent for diesel and gasoline engines. Made from select paraffinic base oil and contains MONOLEC®, LE's exclusive wear-reducing additive. Exceeds performance requirements for Caterpillar, Cummins, Detroit Diesel, Ford and General Motors. For Allison C-4 fluid choose 8410 or 8430.
<b>MONOLEC® SPB™ Engine Oil</b> 8530	5W-30		11.1	70	145	435 (224)	-33 (-36)		Gasoline car engine oil made from a high-quality blend of synthetic and paraffinic base oils, optimized to exceed the energy conserving performance requirements of API SL and ILSAC GF-3 starburst engine oils. Formulated with MONOLEC®, LE's exclusive wear-reducing additive, and additives for gasoline engines. Exceeds performance requirements for Ford, GM and Chrysler.
<b>MONOLEC ULTRA® Engine Oil</b> 8800	15W-40		14.9	109	130	415 (212)	-27 (-33)		For heavy-duty, long-drain service in diesel and gasoline engines. Improves fuel efficiency, reduces wear and provides all-season, all-weather performance. Made from select paraffinic base oils and contains MONOLEC®, LE's exclusive wear-reducing additive. Exceeds performance requirements for Caterpillar, Cummins, Detroit Diesel, Volvo, General Motors and Ford. Meets Allison C-4 requirements.
<b>MONOLEC® EGR Plus Engine Oil</b> 8888	15W-40		14.9	112	130	430 (221)	-17 (-27)		For long drain service in heavy duty diesel engines. Specifically formulated for use in diesel engines equipped with exhaust gas recirculation (EGR) emission systems. Made from select paraffinic base oils. Contains MONOLEC®, LE's exclusive wear-reducing additive. Meets and exceeds manufacturer's performance requirements.
<b>ULTRA RDE OIL</b> 8900	40		14.4	140	95	460 (238)	15 (-9)		Designed for use with silver alloy bearings. For heavy-duty, long-drain service in railroad diesel engines. Improves fuel efficiency, reduces wear and provides the highest degree of engine protection. Made from select paraffinic base oil. Exceeds engine manufacturers' requirements for EMD, GE, Bombardier, and Caterpillar railroad diesel engines.
<b>MONOLEC® Natural Gas Engine Oil</b> 8940	40		13.9	140	95	465 (240)	0 (-18)		Premium quality detergent engine oil for use in natural gas burning engines requiring low ash oil. Provides anti-wear protection and oxidation and corrosion inhibition. Contains MONOLEC®, LE's exclusive wear-reducing additive. Meets the requirements for most large stationary engines using natural gas as fuel.
<b>PYROSHIELD® Syn-Gear Lubricant</b> 9000 9001			655 666		120 120	385 (196) 235 (112)	54 (12) 21 (-6)	70 (31.8) 70 (31.8)	These unique, extremely heavy, synthetic fluid, open gear lubricants have been developed specifically for the ball/grinding mill applications which call for an EP, lead free, nonasphaltic lubricant. Ideal for automatic spray systems. Contains ALMASOL®, LE's exclusive wear-reducing additive. 9001 is 9000 with a USDA H1 diluent for lower temperature pumpability and sprayability.
<b>PYROSHEILD® XH Syn-Gear Lubricant</b> 9010 9011			1176 1176		120 120	385 (196) 218 (103)	59 (15) 32 (0)	90 (41) 90 (41)	Extra high viscosity, 100% synthetic open gear lubricants for kiln and grinding mill applications. Formulated with a unique combination of EP additives and ALMASOL®, LE's exclusive wear-reducing additive. 9011 is 9010 with a USDA H-1 diluent to improve low temperature mobility.

Product	Grade		Viscosity, cSt			Flash Point °F (°C)	Pour Point °F (°C)	Timken OK Load Lbs. (Kgs.)	Uses   Specs   Comments
	SAE	ISO	100°C	40°C	VI				
<b>MONOLEC® Synthetic Industrial Oil</b>									These synthetic fluids are intended for use in reciprocating compressors, rotary compressors, vacuum pumps, hydraulic systems, high temperature non-EP gear drives and low temperature fluid power drives. The blend of synthetic base fluids are able to reduce the formation of hard carbon deposits, yet maintains excellent lubricity, water resistance and seal compatibility. Contains MONOLEC®, LE's exclusive wear-reducing additive.
9032		32	6.0	32	130	475 (246)	-71 (-57)		
9046		46	8.0	47	130	480 (248)	-60 (-51)		
9068		68	10.6	69	130	470 (244)	-49 (-45)		
9100		100	14.5	99	130	470 (244)	-44 (-42)		
9150		150	20.1	151	130	470 (244)	-38 (-39)		
<b>MONOLEC® Synthetic Industrial Lubricant</b>									Pure synthetic fluids, designed for use in heavily loaded bearings requiring oil lubrication, found in the calender roll mill bearings used in the textile, plastic, rubber and paper industries. The synthetic base oil provides longer service life through excellent thermal stability and oxidation resistance. Contains MONOLEC®, LE's exclusive wear-reducing additive. Well suited for high-temperature bearings and enclosed gearboxes.
9220		220	26.3	219	140	470 (244)	-27 (-33)		
9320		320	35.5	319	145	470 (244)	-17 (-27)		
9460		460	47.5	459	145	465 (240)	-11 (-24)		
<b>SYNOLEC® Gear Lubricant</b>									Specially formulated, heavy duty synthetic gear lubricant especially suitable for over-the-road and stop-and-go vehicles and off-road equipment in all seasons. Excellent low and high temperature performance. Contains MONOLEC®, LE's exclusive wear-reducing additive. Also for industrial gearboxes.
9920	75W-140		24.8	180	165	370 (188)	-49 (-45)	65 (29.5)	
<b>SYNOLEC® Lubricant</b>									Exceptionally stable pure synthetic oil for chains, conveyors, sealed bearings and similar applications in high temperatures. Dissipates slowly at high temperatures, leaving no residue. Actually cleans off oil deposits. Easy to apply with spray, drip applicator or brush. Rust and oxidation inhibited. Contains MONOLEC®, LE's exclusive wear-reducing additive. Non-EP.
9963	40		14.3	82	180	505 (262)	-30 (-34)		

## Approximate Equivalents

### Kinematic Viscosity to Saybolt Universal Viscosity at 100°F Industrial Fluid Lubricants

Kinematic Viscosity cSt	Equivalent Saybolt Universal Viscosity SUS	Kinematic Viscosity cSt	Equivalent Saybolt Universal Viscosity SUS
2.7	35	31.9	150
4.2	40	34.1	160
5.8	45	36.3	170
7.4	50	38.5	180
8.9	55	40.7	190
10.3	60	43.0	200
11.7	65	47.3	220
13.1	70	51.7	240
14.4	75	56.0	260
15.7	80	60.3	280
16.9	85	64.7	300
18.1	90	70.0	325
19.3	95		
20.5	100		
22.9	110		
25.2	120		
27.4	130		
29.7	140		

To obtain approximate conversions for viscosities higher than those shown, use the following conversion formulas:

SUS = cSt x 4.6  
cSt = SUS / 4.6

## NLGI Grease Consistency Numbers

The National Lubricating Grease Institute has established a grease consistency category based on ASTM D 217 Worked Penetration characteristics. Worked Penetration is defined as the distance that an ASTM cone under a specified load, at 25°C (77°F), penetrates in 5 seconds the smooth surface of a grease sample that has been subjected to 60 strokes in a grease worker.

The greater the number defined in terms of the cone penetration, the softer the grease and the lower the NLGI number. Since the penetration scale is not continuous with the NLGI scale, i.e., there are lapses of 15 tenths of a millimeter between NLGI numbers, it is possible to design greases to fall between NLGI numbers.

When this is done, unofficial half NLGI numbers are sometimes used.

NLGI Consistency Number	ASTM D 217 Worked (60 Strokes) Penetration at 25°C (77°F), Tenths of a millimeter
000	445 to 475
00	400 to 430
0	355 to 385
1	310 to 340
2	265 to 295
3	220 to 250
4	175 to 205
5	130 to 160
6	85 to 115

# Greases

Operating temperature range based on normal lubrication intervals.  
The high temperature can be exceeded if the lubrication interval is significantly reduced.



Product	NLGI Grade	Base	Dropping Point °F (°C)	Operating Temp. °F (°C)	Timken OK Load Lbs. (Kgs.)	Uses   Specs   Comments
<b>ALMASOL® Chain &amp; Cable Lubricant</b>						Penetrates rapidly into <u>chain</u> (pin area); will not sling off easily. Tacky and water resistant. Contains ALMASOL®, LE's exclusive wear-reducing additive. Excellent for <u>gearboxes requiring semi-fluid grease</u> .
451	000	Calcium	180 (82)	-20 to 170 (-29 to 77)		
452	00	Calcium	180 (82)	-20 to 170 (-29 to 77)		
<b>ALMATEK® General Purpose Lubricant</b>						Highly versatile general purpose lubricant for <u>friction and anti-friction bearings, chassis points, and other grease lubricated applications</u> . Contains ALMASOL®, LE's exclusive wear-reducing additive and premium thickeners. Semi-tacky, resists wash out, shock loading and pound out.
1232	2	Lithium	350 (177)	0 to 300 (-18 to 149)		
<b>ALMASOL® High Temperature Lubricant</b>						Contains ALMASOL®, LE's exclusive wear-reducing additive. Recommended where a high temperature grease is required, such as <u>kiln car bearings, oven conveyors, asphalt plants, soot blowers and similar applications</u> .
1250	2 1/2	Inorganic	None	0 to 450 (-18 to 232)		
1251	1	Inorganic	None	0 to 450 (-18 to 232)		
<b>ALMASOL® High Temperature Lubricant</b>						High temperature bearing grease formulated to provide extreme pressure (EP) performance. Contains ALMASOL®, LE's exclusive wear-reducing additive and QUINPLEX® to promote the grease's adhesion and cohesion at elevated temperatures.
1261	1	Proprietary	590 (310)	50 to 550 (10 to 288)	45 (20.4)	
1262	2	Proprietary	600 (316)	50 to 550 (10 to 288)	45 (20.4)	
<b>ALMAPLEX® Industrial Lubricant</b>						Excellent general purpose EP lubricant for industrial or fleet use. Contains ALMASOL®, LE's exclusive wear-reducing additive. Very effective in severe operations caused by moisture or high temperatures. Seals out dirt and water and prevents corrosive wear. Excellent for electric motors. Can be used in central lubrication systems.
1274	1 1/2	Aluminum Complex	450 (232)	-20 to 400 (-29 to 204)	45 (20.4)	
1275	2	Same	450 (232)	-20 to 400 (-29 to 204)	45 (20.4)	
<b>ALMAGARD® Vari-Purpose Lubricant</b>						Multi-functional, EP lubricant for extended service under extreme conditions. Use in <u>all types of vehicles, on and off road, as well as in many in-plant applications</u> . Very tacky, excellent water resistance, will not pound out. Rust and corrosion inhibited. Contains LE's proprietary additives ALMASOL® and QUINPLEX®
3750	0	Lithium Complex	425 (219)	-20 to 350 (-29 to 177)	70 (31.8)	
3751	1	Same	500 (260)	0 to 350 (-18 to 177)	70 (31.8)	
3752	2	Same	540 (282)	20 to 350 (-7 to 177)	70 (31.8)	
<b>QUINPLEX® Food Machinery Lubricant</b>						NSF and USDA H1 for <u>food processing equipment</u> . White, water resistant, resists high temperatures, clings to metal, rust and corrosion inhibited, and mechanically stable. agent. Provides true extreme pressure performance. Contains QUINPLEX® and an anti-microbial. *Also available in aerosol.
4023	0	Aluminum Complex	300 (149)	-15 to 300 (-26 to 149)	35 (15.9)	
4024	1	Same	450 (232)	0 to 350 (-18 to 177)	35 (15.9)	
4025*	2	Same	450 (232)	30 to 370 (-1 to 188)	35 (15.9)	
<b>MONOLEC® Multiplex Lubricant</b>						High quality, lithium complex grease that meets the requirements of the NLGI GC-LB specification. Works well in plain and anti-friction bearings. Has excellent low temperature pumpability. Perfect for use in industrial, fleet and automotive applications calling for an EP grease. Has good mechanical stability, a high dropping point, corrosion resistance and extreme pressure performance. Contains MONOLEC®, LE's exclusive wear-reducing additive.
4622	2	Lithium Complex	510 (266)	-40 to 400 (-40 to 204)	60 (27.2)	
<b>MONOLEC® Industrial Lubricant</b>						Specialized products for <u>centralized lubrication systems</u> and where a medium EP grease is used. Specific operating benefits include water resistance, high heat resistance, low separation or "bleed," excellent mechanical stability, and easily pumpable. Contains MONOLEC®, LE's exclusive wear-reducing additive.
4700	00	Aluminum Complex	375 (191)	-40 to 300 (-40 to 149)	45 (20.4)	
4701	1	Same	450 (232)	-40 to 300 (-40 to 149)	45 (20.4)	
4702	0	Same	425 (219)	-40 to 300 (-40 to 149)	45 (20.4)	

# Greases

Operating temperature range based on normal lubrication intervals. The high temperature can be exceeded if the lubrication interval is significantly reduced.



Product	NLGI Grade	Base	Dropping Point °F (°C)	Operating Temp. °F (°C)	Timken OK Load Lbs. (Kgs.)	Uses   Specs   Comments
<b>PYROSHIELD®</b> 5180 5182 5100 Aerosol	0/2 2 0/2	Synthetic Same	Non-Melt Non-Melt	0 to 450 (-18 to 232) 40 to 450 (4 to 232)	90 (40.8) 90 (40.8)	Revolutionary lubricant developed for the mining industry and open gears which operate in the most severe service. An extreme pressure (EP) lubricant which is lead free, and ideal for open gears, large chains, cables, fifth wheels and various other sliding mechanisms and summer). Contains ALMASOL®, LE's wear-reducing additive. 5180 and 5100 are applied as an NLGI 0, then become an NLGI 2 when diluent evaporates.
<b>SYNTEMP® Synthetic Lubricant</b> 9102	2	Synthetic	None	0 to 400 (-18 to 204)	50 (22.7)	Aerosol synthetic for use on open gears, chains, cables, sprockets, slides, and dozens of other applications. Contains MONOLEC®, LE's exclusive wear-reducing additive. Clean and easy to apply. Very tacky, stays in place. Completely water resistant. Resists high temperatures, won't run and melt.
<b>ALMASOL® SYNTEMP® Lubricant</b> 9901	2	Synthetic	None	30 to 450 (-1 to 232)	45 (20.4)	High temperature EP synthetic grease. Water resistant, will not melt or separate. Withstands high pressures. Contains ALMASOL®, LE's exclusive wear-reducing additive. Recommended for high temperature open gears, sliding surfaces, and low speed plain bearings.

## Applications Chart

Note: A guide for product application. Complete information on the application and other considerations will determine product usage.

Temperature	Speed	BEARINGS	BEARINGS	CENTRAL LUBE SYSTEMS	
		Heavy Load	Normal/Light Load	Heavy Load	Normal/Light Load
Low Below 32°F (0°C)	High Normal/Low	1274/4622/4700/4701/4702 1274/3750/3751/4622/4701/4702	1232/4024/4622 4700/4701/4702/4024/4622	4700/4701/4702 4700/4701/4702	4700 4023/4700
Normal 32° - 250°F (0° - 121°C)	High Normal/Low	1274/1275/4622/4701/4702 3751/3752/4622/9901	1232/4622 1232/4024/4025/4622	4622/4700/1274/1275/4701/4702 1275/4622/4700/4701/4702	4700/4701/4702 4700/4701/4702/4023
High Above 250°F (121°C)	High Normal/Low	1274/1275/4622/4701 3751/3752/4622/9901	1232/1250 1232/1250/4024/4025	4622/4701/1274/1275 4622/4701/1274/1275	4701/1274/1275 4023/4701/1274/1275
Very High Up to 550°F (288°C)	Normal/Low	1261/1262	1261/1262	-	-



## Additional Products

**MONOLEC® Wire Rope Lubricant** 2001  
A penetrating type lubricant providing superior load carrying capacity and corrosion resistance. Contains petroleum solvent to enhance penetration to the core. When solvent evaporates a thin film of heavy bodied oil remains to protect and lubricate each strand. Contains MONOLEC®, LE's exclusive wear-reducing additive. Available in aerosol and bulk.

**ALMASOL® Wire Rope Lubricant** 2002  
A coating type lubricant that provides a self healing film to reduce wear and fretting corrosion. Contains a petroleum solvent to enhance penetration. Resistant to fresh and salt water wash-off and excellent rust preventative for steel parts. Contains ALMASOL®, LE's exclusive wear-reducing additive. Available in aerosol and bulk.

**MONOLEX® Penetrating Oil & Lubricant** 2059  
All-purpose penetrating oil quickly dissolves most rust, gum and varnish, freeing "frozen" parts. Contains MONOLEC®, LE's exclusive wear-reducing additive. Leaves a tough film of lubricant. Acts as a rust and corrosion preventative on metal surfaces. Available in handy aerosol and in bulk.

**NUTRIGENT Industrial Cleaner** 2100  
A liquid, highly concentrated synthetic industrial detergent. Non-flammable, contains no abrasives, yet is remarkably effective for heavy-duty cleaning. Dilutes with water or solvents. USDA A1

**ALMASOL® Oven Chain Lubricant** 2700  
An oven chain lubricant that penetrates completely into the pins and bushings of the chain and has the ability to withstand heat without oxidizing up to 900°F (482°C). Should be applied at temperatures below 140°F (60°C). Ideal for baking industry. Contains ALMASOL®, LE's exclusive wear-reducing additive.

**ALMASOL® High Temperature Chain Lubricant** 2799  
Premium grade, high temperature chain lubricant containing ALMASOL®, LE's exclusive wear-reducing additive and other sub-micron lubricating solids dispersed in a special high temperature synthetic carrier. For application to hot chains at 250°F (121°C) to 475°F (246°C). Used as directed, carrier penetrates to all moving parts, leaving a protective film of lubricating solids as it cleanly volatilizes without residue or fogging at high temperatures. Will not gum or char, offering maximum migration into chain pins. Reduces frictional drag without building up hard deposits.

**QUINPLEX® H1 Penetrating Oil & Lubricant** 4059

Outstanding aerosol food grade penetrating oil and lubricant. Works quickly to dissolve rust and free-up frozen parts. Rapidly penetrates and leaves a heavy lubricant film for further lubrication and corrosion prevention. Formulated from USP Grade mineral oils and other USDA H1 components. Contains LE's proprietary additive, QUINPLEX®. Use in any area where a penetrating and lubricating oil suitable for incidental food contact is required. This includes bottling and canning equipment, food processing machinery, slides, cams, chains and other machine surfaces. NSF and USDA H1.

**ALMASOL® Dry Film Lubricant** 9200

A unique air cure dry film aerosol lubricant. Offers 2-5 times longer wear life than competitive dry film lubricants at -100°F (-73°C) to 650°F (343°C) operating temperatures. Designed primarily for use where permanent lubrication with exceptional long wear life and low frictional properties is desired and oil and grease cannot be used. Contains ALMASOL®, LE's exclusive wear-reducing additive.

## Fuel Supplements

**L-X® Heavy-Duty Chemical Supplement** 2300

Power-releasing fuel and oil supplement for all internal combustion engines. A carefully selected combination of oils and chemicals; cleans internal engine parts, prevents carbon and gum deposits on rings, plugs, injectors, pistons, valves, carburetors and PCV valves, reduces friction and wear; reduces fuel consumption; increases power through more complete combustion.

**BTU+ Diesel Fuel Improvers** 2410  
2420  
2430

Improves lubricity, keeps filters and injectors clean, inhibits gum and sludge formation, disperses and removes water from fuel. Improves combustion, helps EGR system performance, retards rust and corrosion, and protects fuel in cold temperatures. Concentrated formula. Add to storage or engine tank to preserve fuel quality and improve engine performance.



Your Local Representative

