6601-6603 LOW TOX® HYDRAULIC OIL

Designed for use where environmental concerns dictate the use of a very low toxicity hydraulic oil.

Lubrication Engineers' Low Tox Hydraulic Oils offer superior performance in lubrication, with long oil life and excellent wear protection. There is no worry of premature oxidation or failure of the lubricant as there is with most vegetable oil based products. Low Tox Hydraulic Oils are based on USP quality white mineral oils and specially selected additives to provide a low toxicity product with good biodegradability that does not sacrifice lubrication performance or necessitate shortening of lubricant change intervals.

USER BENEFITS:

- Can be used without having to lower the rated pressures of hydraulic equipment.
- Performance superior to conventional AW hydraulic oils with good rust and corrosion protection.
- Exhibits a very low order of toxicity as compared to commercial and biodegradable oils.
- Excellent demulsibility and seal compatibility.
- Resists hydrolysis better than vegetable or synthetic ester based oils.
- Versatility - Available in a number of viscosity grades. Low Tox Hydraulic Oils meet the different requirements of various types of equipment.

6601	**ISO 32**	
6602	**ISO 46**	
6603	**ISO 68**	**SAE 20**

TYPICAL APPLICATIONS:

- Flood Control Structures
- Off-Shore Installations
- Locks on Rivers
- Dredging Equipment
- Forestry/Logging Equipment
- Water/Wastewater Treatment Plants
- Paper Mills
- Mining
- Other applications where low toxicity and minimal environmental impact is desirable.

WHY LOW TOXICITY?

One question confronting scientists in environmental risk assessment is whether it is better for a material to be quickly biodegraded and possess relatively high toxicity or be low in toxicity and biodegrade at a slightly slower rate. Lubrication Engineers believes that the latter option provides the best protection of the environment because it minimizes overall impact on the ecosystem.

LUBRICATION ENGINEERS,® Inc.
LEADERS IN LUBRICANTS
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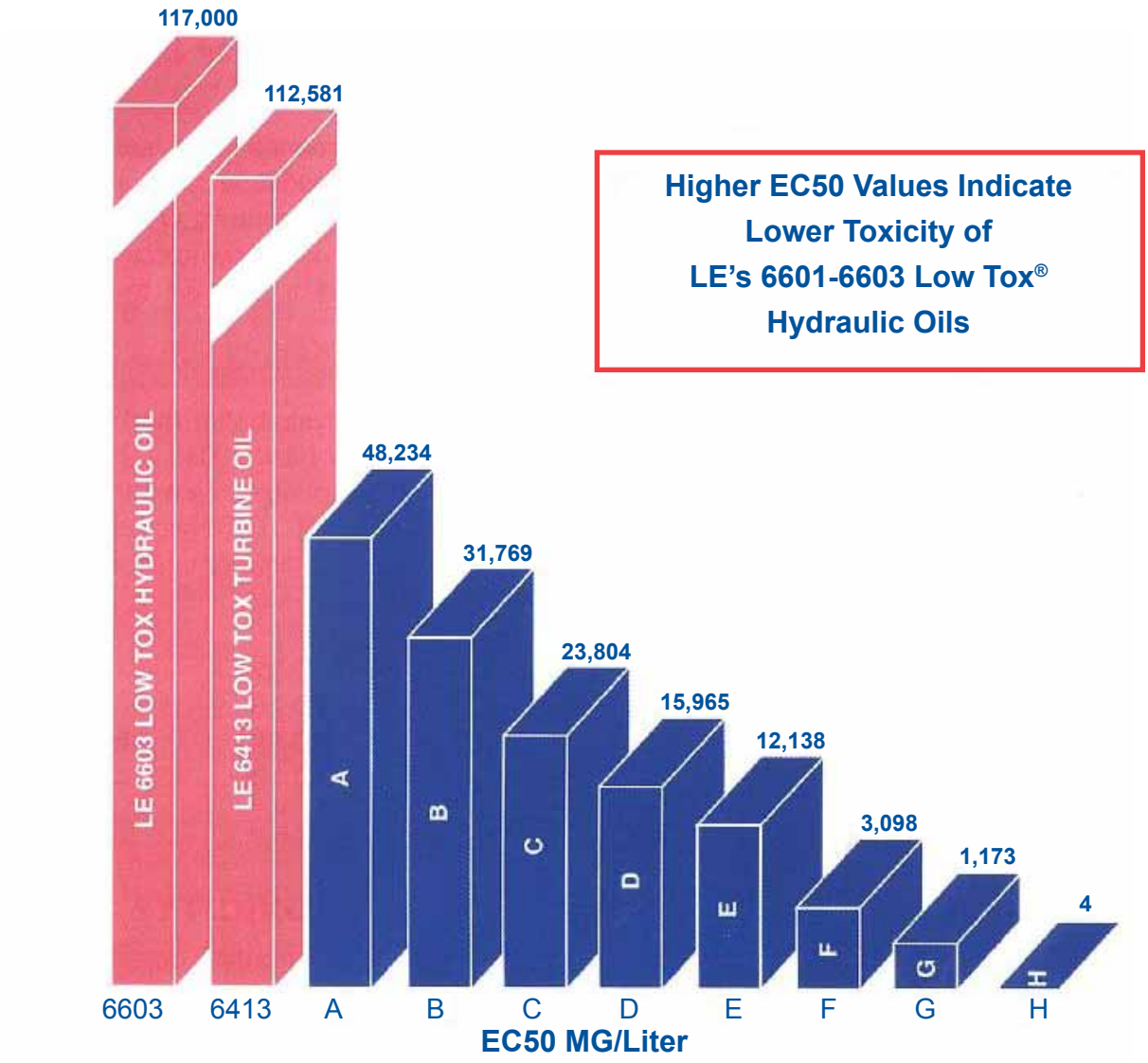
LE operates under an ISO 9001 Certified Quality System.

LE's LOW TOX® Oils Show High EC50 Value in Microtox® Luminescent Bacteria Bioassay Test.

EC 50 Value: Effective concentration measured in milligram of product per liter of water. Tells you the effective concentration of the product being measured and what quantity it takes to reduce bacterial luminescence metabolic activity by 50%. EC Values are applicable to compounds which are not soluble in water, therefore, they are applicable to oils.



Higher EC50 Values Indicate Lower Toxicity of LE's 6601-6603 Low Tox® Hydraulic Oils

Lubrication Engineers' Low Tox Hydraulic and Turbine Oils are less toxic to the environment than conventional and biodegradable products available today. The issue of biodegradability is not the only concern. A further concern is the toxic effect on the environment of a lubricant during the time that biodegradation is taking place. Lubrication Engineers' Low Tox product line is 55% biodegradable in 28 days and has the lowest toxicity of any hydraulic or turbine products on the market today, as shown by the Microtox Luminescent Bacteria Bioassay Test.

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LI30040
Rev. 06-11
6601-6604 Flyer

TECHNICAL DATA BULLETIN

6601-6603 LOW TOX® Hydraulic Oil

LEADERS IN LUBRICANTS

DESCRIPTION:

Low toxicity hydraulic oil designed with advanced product technology that gives performance equivalent to premium hydraulic fluids, yet affords low eco-toxicity to address environmental concerns. Has a low order of toxicity compared to standard commercial hydraulic oils and biodegradable hydraulic oil.

PHYSICAL CHARACTERISTICS—TYPICAL:

	6601	6602	6603
ISO Grade	32	46	68
Gravity, ºAPI	29.3	28.3	28.3
Viscosity,			
SUS @ 100ºF	165.8	227.4	353.2
SUS @ 210ºF	44.4	48.3	56.9
cSt @ 40ºC	32.3	44.3	68.6
cSt @ 100ºC	5.5	6.7	9.2
Viscosity Index	95	95	95
Flash Point, ºF (ºC)	420 (216)	470 (244)	515 (268)
Pour Point, ºF (ºC)	0 (-18)	10 (-12)	10 (-12)
Color	Straw	Straw	Straw

TEST RESULTS:

Copper Strip Corrosion, ASTM D-130, Color Code	1b	1b	1b
Salt Water Rust Test, 48 hrs., ASTM D665B	No Rust	No Rust	No Rust
Rotary bomb Oxidation Test, mins. (typical), ASTM D2272	1,180	1,180	1,180
Demulsibility, ASTM D1401, ml oil-ml water-ml emulsion	40-40-0	40-40-0	40-40-0
(min.)	(5)	(5)	(5)
Microtox Bioassay, EC50, mg/L, min.	>100,000	>100,000	>100,000
Vickers Vane Pump Wear Test, ASTM D2882, Total Wt. Loss	<50 mg	<50 mg	<50 mg
Cincinnati Machine Thermal Stability	Pass	Pass	Pass
Dielectric Strength, ASTM D877, min.	35 kV	35 kV	35 kV

MEETS PERFORMANCE REQUIREMENTS OF:

Vickers Industrial (I-286-S)
Cincinnati Machine – P-70 — 6602
Denison HF-O
Cincinnati Machine – P-69 — 6603
Cincinnati Machine – P-68 — 6603

APPLICATION:

Designed for use where environmental concerns require the use of a very low toxicity hydraulic oil. Applications include hydroelectric facilities, flood control structures, locks, offshore installations, construction equipment, forestry equipment, dredges, water treatment plants, etc.

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