PETRO-CANADA LUBRICANTS

AN HF SINCLAIR BRAND

TECH DATA

LUMINOL™ TRI

HIGH-EFFICIENCY ELECTRICAL INSULATING OIL

INTRODUCTION

LUMINOL™ TRi Outperforms Naphthenic Electrical Insulating Oils

Petro-Canada Lubricants LUMINOL TRi represents a breakthrough in electrical insulating oils technology. Unlike naphthenic mineral oils, LUMINOL TRi uses Petro-Canada Lubricants ultra-pure severely hydrotreated isoparaffinic base oils to help minimize power loss and maximize productivity. These oils contain no corrosive sulphur that may lead to transformer breakdown.

LUMINOL TRi withstands energy spikes and hot and cold weather extremes better than naphthenic electrical insulating oils. LUMINOL TRi's isoparaffinic base oil provides superior heat transfer properties compared to naphthenic oils, helping transformers operate cooler in high ambient temperatures. Thanks to naturally high oxidation stability, LUMINOL TRi resists breakdown and helps provide extended service life. So less money is spent on routine transformer maintenance and fluid top-up, and less time is spent worrying about transformer efficiency.

LUMINOL TRi delivers worry-free, corrosive sulphur-free performance.

Environmental, Health & Safety Benefits

LUMINOL TRi is produced using ultra-refined isoparaffinic base oil. It can help reduce disposal costs and the potential impact of spills, as well as answer possible environmental concerns about transformer oil toxicity. LUMINOL TRi is ultimate biodegradable in natural environments. As well, it has negative gassing tendency and its high flash point help reduce the risk of fire and explosion.

Facts about LUMINOL TRi

LUMINOL TRi is ideal for use in large power and distribution transformers operating at peak capacity as well as free-breathing units, pad mount, and pole mount transformers; for commercial, industrial and institutional applications. LUMINOL TRi is designed for Type II applications.

- LUMINOL TRi meets or exceeds the performance requirements of CAN / CSA-C50-14 (R2018) (Class A and B), ASTM D3487 standards, and DOBLE TOPS specifications.
- LUMINOL TRi meets the CSA-C50-14 (R2018) upgraded oxidation stability Special Requirements for Type IV fluid.
- LUMINOL TRi is approved for applications requiring Hydro One M-104
- LUMINOL TRi meets IEC 60296 General specifications for fully inhibited high grade oil (Type A).

Demonstrated Characteristics Include:

- Excellent heat transfer capability to help enhance transformer performance.
- High dielectric impulse strength to improve performance in the presence of overvoltage conditions.
- Low power-factor (dielectric loss) to reduce thermal runaway under conditions of high electric stress.
- Negative gassing to reduce the risk of failure from hydrogen gas bubbles.
- Full compatibility with existing naphthenic insulating oils, which enhances the performance of the combined oils.
- LUMINOL TRi contains no corrosive sulphur compounds and does not require passivators.
- LUMINOL TRi is colourless.
- Outstanding cold weather performance.
- LUMINOL TRi has a high interfacial tension due to its purity resulting in reduced fluid degradation and lower tendency to form sludge.

TYPICAL PERFORMANCE DATA

Property	Test Method	CSA-C50 CLASS A Type II/IV	ASTM D3487 Type II	LUMINOL TRi
PHYSICAL PROPERTIES				
Appearance	Visual	N/A	Clear & Bright	Clear & Bright
Colour	ASTM D1500	0.5 max	0.5 max	<0.5
Specific Gravity @ 15°C / 59°F	ASTM D4052	0.906 max	0.91 max	0.835
Kinematic Viscosity, cSt @ 100°C / 212°F	ASTM D445	N/A	3.0 max	2.8
Kinematic Viscosity, cSt @ 40°C / 104°F	ASTM D445	10 max	12.0 max	9.2
Kinematic Viscosity, cSt @ 0°C / 32°F	ASTM D445	75 max	76.0 max	53
Kinematic Viscosity, cSt @ -40°C / -40°F	ASTM D445	2500 max	N/A	1230
Pour Point, °C / °F	ASTM D97/ASTM D5950	-46 / -51 max	-40 / -40 max	–60 / -76
Interfacial Tension @ 25°C, dynes/cm	ASTM D971	40 min	40 min	48
Flash Point, °C / °F	ASTM D92	145 / 293 min	145 / 293 min	170 / 338
CHEMICAL PROPERTIES				
Neutralization Number, mg KOH/g Water Content, ppm Corrosive Sulphur	ASTM D974 ASTM D6304 ASTM D1275-15	0.03 max 35 max Not corrosive	0.03 max 35 max Not corrosive	<0.01 <20 Not corrosive
Corrosive Sulphur	IEC 62535			Not corrosive
PCB Content, ppm	ASTM D4059	2 max	Not detectable	Nil
Oxid. Stability, wt.% Sludge @ 72h	ASTM D2440	N/A	0.1 max	<0.01
Oxid. Stability, Neut # mg KOH/g @ 72h	ASTM D2440	N/A	0.3 max	<0.01
Oxid. Stability, wt.% Sludge @ 164h	ASTM D2440	0.05 max	0.2 max	<0.01
Oxid. Stability, Neut # mg KOH/g @ 164h	ASTM D2440	0.2 max	0.4 max	<0.01
Oxid. Stability, wt% Sludge	IEC 61125 C	Types IV: 0.08 max	N/A	<0.02†
Oxid. Stability, Neut # mg KOH/g	IEC 61125 C	Types IV: 1.2 max	N/A	<0.02†
Oxid. Stability, Power Factor @ 90°C / 194°F	IEC 61125 C	Types IV: 0.5 max	N/A	<0.001†
Inhibitor Content, wt.%	ASTM D2668	0.08-0.40	0.08-0.30	0.20
Rotary Pressure Vessel Oxidation Test, minutes	ASTM D2112	195 min	195 min	600
ELECTRICAL PROPERTIES				
Dielectric Breakdown Voltage, @ 60 Hz Disk Electrode, kV	ASTM D877	30 min	30 min	55
Dielectric Breakdown Voltage @ 60 Hz VDE Electrode, 2.03 mm gap, kV	ASTM D1816	24 min†† 56 min†††	35 min†† 56 min†††	44†† 65†††
Dielectric Breakdown Impulse, kV	ASTM D3300	145 min	145 min	>300
Gassing Tendency, µL/min	ASTM D2300	N/A	+30 max	–10
Power Factor @ 60 Hz,100°C / 212°F	ASTM D924	0.005 max	0.003 max	<0.001
Power Factor @ 60 Hz, 25°C / 77°F	ASTM D924	0.0005 max	0.0005 max	<0.0001

The values quoted above are typical of normal production. They do not constitute a specification.
† Test duration: Type IV (500 h).
†† Following transport (unprocessed oil).
††† After filtering, drying and degassification (new processed oil).

Learn more about us: **lubricants.petro-canada.com**
Contact us: **lubecsr@hfsinclair.com**

Committed to the disciplined operation of our business.

CERTIFIED
ISO 9001: 2015
ISO 14001: 2015
IATF 16949: 2016

Petro-Canada Lubricants Inc.
2310 Lakeshore Road W. Mississauga, Ontario, Canada L5J 1K2
lubricants.petro-canada.com

IM-1290E (2023.07)