

MP ESTRAMOL LM-23

MODIFIED ESTER TRANSFORMER OIL
(PALM OIL BASE)

Apyree Sdn. Bhd.

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MP ESTRAMOL LM-23

MODIFIED/BLENDED ESTER TRANSFORMER OIL

Introduction

MP ESTRAMOL LM-23 Modified or blended ester transformer oils, derived from palm oil source, offer a range of benefits compared to traditional mineral oils.

More environmentally friendly due to biodegradability and improving transformer efficiency with better cooling. Additionally, with the addition of nanoparticles, can enhance the antioxidant and insulating properties. **MP ESTRAMOL LM-23** meets the IEC 63012 standards.



Environmental Advantages:

Modified ester is biodegradable, reducing environmental impact compared to mineral oils.

Compact Designs & Reduced Manufacturing Cost:

Allow for smaller transformer and reduced cooling surface requirements, leading to more compact and cost-effective designs.

Better Oxidation Stability:

Modified esters can exhibit higher oxidation stability than mineral oils, leading to longer lifespan and reduced maintenance.

Enhanced Insulation Properties:

Modifications like the addition of nanoparticles can improve the dielectric breakdown voltage and overall insulating properties of the oil.

Low Viscosity:

Efficient heat transfer and cooling can help prevent overheating, extending the lifespan of the transformer and reducing the risk of insulation failure.

Application

- Used for Transformer oil and other dielectric-coolant applications
- Enhance protection of Transformer components and prolong asset lifespan

Delivery forms

- 190 kgs metal drum or 950 kgs IBC

Storage

- To be kept in a cool, dry, well-ventilated area away from direct sunlight and moisture.
- Ideally between 15°C - 35°C, to maintain stability and prevent degradation.

Technical Data of MP Estramol LM-23

No.	Analysis Parameter	Standard	Reference/Requirement	Results
1	Appreance (Visual)	ISO 2211	Clear, free from suspended matter and sediment	Clear, free from suspended matter and sediment
2	Density at 20°C (g/cm ³)	ISO 12185	1.00 (Max.)	0.860
3	Kinematic Viscosity at 40°C (mm ² /s)	ASTM D 7042	Category V1 (Max 12)	5.14
4	Flash Point (°C)	ISO 2719	135 (Min)	222
5	Fire Point (°C)	ASTM D92	No Specific Limit	225
6	Breakdown Voltage (kV)	IEC 60156	35 (Min)	88.0
7	Dielectirc Dissipation Factor (DDF) at 90°C (Nos.)	IEC 60247	0.05 (Max)	0.0369
8	Pour Point (°C)	ISO 3016	-25 (Max)	-37
9	Water Content (mg/kg)	IEC 60814	200 (Max)	47.0
10	Neutralization Value (mg KOH/g)	IEC 62021-2	0.06 (Max)	0.02
11	Volume Resistivity DC at 90°C	IEC 60247	No Specific Limit	5.0
12	Oxidation Stability (48H)	IEC 61125C		
	a) Total Acidity (mg KOH/g)	IEC 61125	0.6 (Max)	0.0152
	b) Viscosity at 40°C (mm/s2)(%)	ASTM D 7042	30% Max increased over initial value	1.30
	c) DDF at 90°C (Nos.)	IEC 60247	0.5 (Max)	0.29
13	Oxidation Stability (164H)	IEC 61125C		
	a) Total Acidity (mg KOH/g)	IEC 61125	0.3 (Max)	0.0470
	b) Total Sludge (%)	IEC 61125	0.01 (Max)	0.008
	c) DDF at 90°C (Nos.)	IEC 60247	No Specific Limit	0.543
14	Potentially Corrosive Sulphur	IEC 62535	Non Corrosive	Not corrosive
15	Silver Corrosive Sulphur	DIN 51353	No Specific Limit	Absent

Stray Gassing Analysis

No.	Test	Reference (Max)	Results
1	Hydrogen (H ₂) (ppm v/v)	590	113
2	Oxygen (O ₂) (ppm v/v)	Not specified	23535
3	Nitrogen (N ₂) (ppm v/v)	Not specified	48222
4	Methane (CH ₄) (ppm v/v)	120	5
5	Carbon Monoxide (CO) (ppm v/v)	450	802
6	Carbon Dioxide (CO ₂) (ppm v/v)	1580	551
7	Ethylene (C ₂ H ₄) (ppm v/v)	8	9
8	Ethane (C ₂ H ₆) (ppm v/v)	120	Nil
9	Acetylene (C ₂ H ₂) (ppm v/v)	0	Nil
Total Combustible Gasses (TCG) (ppm v/v)			929

No stray gassing indicated in oil after test



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