MP ESTRAMOL N-23

NATURAL ESTER TRANSFORMER OIL (PALM OIL BASE)

Apyree Sdn. Bhd.

Distributed by:

POWER TRANSCOTEQ

Apyree

BUATAN MALAYSIA
MADE IN MALAYSIA

MP ESTRAMOL N-23

NATURAL ESTER TRANSFORMER OIL

Introduction

MP ESTRAMOL N-23 is formulated with over 95% renewable palm-based oils. Its' natural high quality ester properties outperform conventional mineral-based oils, resulting in highly reliable, thermal-efficient and more sustainable transformers.

MP ESTRAMOL N-23 meets the IEC 62770, manufactured from state-of-the art refining processes to offer optimum high performances, cost-effectiveness and sustainable transformer fluid choice.

Features

Superior Reliability – No harmful by-products or sludge is generated from repeated drying of paper insulation, providing extended paper insulation lifespan. Very thermally-stable even at high heat (140°C surface fluid temperature)

Sustainability – Carbon neutral, Zero global warming potential, highly biodegradable, Non-toxic in water, soil and environment

Improved Loading Capacity – Higher loading capacity compared to mineral oil without impacting adversely to transformer lifespan

High Fire Safety – K-Class fluid with higher flash and fire points compared to mineral oil (360°C fire point)

Cost-effectiveness – Allows smaller and more dense transformers designs where cost from building materials can be saved, i.e., steel, copper, aluminium and insulating paper. Immediate savings from spill containment systems or fire remediation can be realised due to K-Class certifications and highly biodegradability

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 N-23

No.	Analysis Parameter	Standard	Reference/Requirement	Results
1	Colour	ISO 2049	-	1.0
2	Appreance (Visual)	IS 16659	Clear free from sediment & suspended matter	Clear free from sediment & suspended matter
3	Density at 20°C (g/cm3)	ISO 12185	1.00 (Max.)	0.915
4	Kinematic Viscosity at 40°C (mm2/s)	ISO 3104	50 (Max)	36.1
5	Kinematic Viscosity at 100°C (mm2/s)	ISO 3104	15 (Max)	5.3
6	Flash Point (°C)	ISO 2719	250 (Min)	300
7	Fire Point (°C)	ASTM D92	300 (Min)	345
8	Breakdown Voltage (kV)	IEC 60156	35 (Min)	73.2
9	Dielectirc Dissipation Factor (DDF) at 90°C (Nos.)	IEC 60247	0.05 (Max)	0.0193
10	Pour Point (°C)	ISO 3016	-10 (Max)	-3
11	Water Content (mg/kg)	IEC 60814	200 (Max)	69.9
12	Neutralization Value (mg KOH/g)	IEC 62021	0.06 (Max)	0.04
13	Oxidation Stability (48H)	IEC 61125C		
	a) Total Acidity (mg KOH/g)	IEC 61125	0.6 (Max)	0.11
	b) Viscosity at 40°C (mm/s2)(%)	ISO 3104	30% Max increased over initial value (Initial: 36.1)	42.44 (17.5%)
	c) DDF at 90°C (Nos.)	IEC 60247	0.5 (Max)	0.0549
14	Potentially Corrosive Sulphur	IEC 62535	Non Corrosive	Non Corrosive
15	Silver Corrosive Sulphur (18H)	DIN 51353	-	Non Corrosive
16	Silver Corrosive Sulphur (48H)	ASTM D1275	-	Non Corrosive
17	Dibenzyl Disulfide (DBDS) (mg/kg)	IEC 62697-1	Below detection limit <5	Not Detected
18	Total Addtives (%)	IEC 60666	Weight fraction 5% Max	<1
19	Polychlorinated Biphenyls (PCBs) (%)	IEC 61619	<2	Not Detected
20	Relative Permitivitty at 20°C	IEC 60247		2.9
21	Dieletric Breakdown Voltage, Impulse Conditions	ASTM D3300-20		
	a) Impulse Test at 25°C for 25.4 mm Gap (kV)		-	131.0
	b) Impulse Behaviour (Lightning & Chop) for Short Gap 3.8 mm (kV)		-	Lightning Condition: 131.4 Chopping Condition: 160.0
22	Nett Calorific Value (MJ/kg)	ASTM 240-02	-	39.615
23	Thermal Conductivity (W/mK)	ASTM D7896	-	0.167
24	Expansion Coefficient (K-1)	ASTM D1903	-	0.000733
25	Specific Heat Capacity at 20°C (J/gK)	ASTM E1269	-	1.79
26	Biodegradability (%)	OECD 301B	-	76.2
27	Winding Paper TUP DSDD degradation status after Ageing - Degree of Polymerization (120°C for 168H)	IEC 60450	-	Before Ageing: 1211 After Ageing: 1168

Dissolved Gas Analysis (DGA) - Before Oil Filling and Oil After Transformer Routine & Temperature Rise Test

			Oil Before Filling	Transformer Oil After Routine & Temperature Rise Test
No.	Test	Reference (Max)	Results	Results
1	Hydrogen (H2) (ppm v/v)	100	Nil	Nil
2	Oxygen (O2) (ppm v/v)	Not specified	166	236
3	Nitrogen (N2) (ppm v/v)	Not specified	488	1104
4	Methane (CH4) (ppm v/v)	120	3	3
5	Carbon Monoxide (CO) (ppm v/v)	350	Nil	3
6	Carbon Dioxide (CO2) (ppm v/v)	2500	19	71
7	Ethylene (C2H4) (ppm v/v)	50	Nil	Nil
8	Ethane (C2H6) (ppm v/v)	65	Nil	10
9	Acetylene (C2H2) (ppm v/v)	1	Nil	Nil
	Total Dissolved Combustible Gasses (TDCG) (ppm v/v)		3	16

No abnormal gas indicated

Stray Gassing Analysis

No.	Test	Reference (Max)	Results
1	Hydrogen (H2) (ppm v/v)	590	109
2	Oxygen (O2) (ppm v/v)	Not specified	2018
3	Nitrogen (N2) (ppm v/v)	Not specified	38580
4	Methane (CH4) (ppm v/v)	120	50
5	Carbon Monoxide (CO) (ppm v/v)	450	314
6	Carbon Dioxide (CO2) (ppm v/v)	1580	938
7	Ethylene (C2H4) (ppm v/v)	8	2
8	Ethane (C2H6) (ppm v/v)	120	108
9	Acetylene (C2H2) (ppm v/v)	0	Nil
	Total Combustible Gasses (TCG) (ppm v/v)		583

No stray gassing indicated in oil after test

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