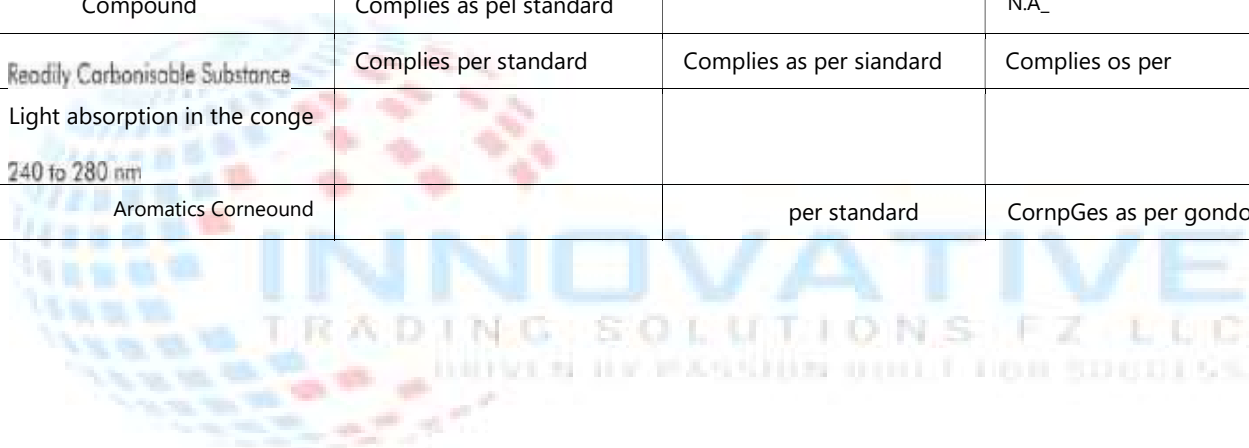


LIGHT LIQUID PARAFFINS

TYPICAL PARAMETER	LIGHT LIQUID PARAFFIN I,P.	LIGHT LIQUID PARAFFIN B.F./EPh	LIGHT LIQUID PARAFFIN
Soybolt			
Odour end taste	Odourless & Tasteless	Odourless raseiless	Odourless & Tasteless
Dynamic Viscosity @ 20°C, mPa.s	25 80		
Kinematic Viscosity @ OOC			Not 53.5
Specific Gravity @ ISOC	0020 0880	0810 0.875	088100.00
Acidity / Alkalinity (Neutrality)	per standard	Comp'ieg as standard	Complies Os per
Solid paraffin	Complies as per standard	Complies as per standard	Compres os per stondwd
Compound	Complies as pel standard		N.A.
Readily Carbonisable Substance	Complies per standard	Complies as per siandard	Complies os per
Light absorption in the conge 240 to 280 nm			
Aromatics Corneound		per standard	CornpGes as per gondord



HEAVY LIQUID PARAFFINS

TYPICAL PARAMETER	HEAVY LIQUID PARAFFIN I.P.	HEAVY LIQUID PARAFFIN	HEAVY LIQUID PARAFFIN u.s.?
colour		+30	+30
Odour/Taste	Odourless Tasteless	Odourless & Tasteless	Odourless Tasteless
Dynamic Viscosity@ 200C, mFós	23C		
Kinematic Viscosity @ 40°C			than 34.5
Specific Gravity@ 25°C	0.860 to 0.904	0.827	0.905
/ Alkalinity	Complies as per standard	Complies	Complies as per standard
Solid Paraffin	Complies as per standard	Complies as standard	Complies as per standard
Sulphur Compound	Complies as per standard		
Roatfil/ Substance	Complies per	Complies as per	Complies vs per standard
Light absorption in the range 240 to 280 nm			
Aromatic Compound		Complies as per standard	Complies as per Standard

Note:

1. The above data is indicated of recent average values only. Minor variations which do not affect performance or quality may be expected in manufacture.
2. Specific requirements shall be custom-made on request
3. Light Liquid Paraffins / White Mineral Oils are manufactured in compliance with I.P., U.S.P., B.P and Eph specifications and conforms to the requirement of US FDA 21 CFR 172.878 (a) & (b)

TRANSFORMER OILS

CHARACTERISTICS	TEST METHOD	AS PER 19335 AS AMENDED		NEW INSULATING OIL
		MIN		
	A representative sample shall be examined in 100 mm thick at 27 °C	The oil shall be clear transparent matter or gad;mgnt		Transaarent, clear and
Density @ 29.5 °C	IS : 1448 (P-16)		0.89	0.840
Kinematic Viscosity 21 °C ,	IS:			
Tension N/m @27°C		0.04		0.048
Flash PMCC °C	IS : 1448 (P-21)			
Pour Point °C	IS : 1448 (P-10)		-6	
Value of Total mg KOH/gm Inorganic acid content	IS : 1448 (P-2)		Nil	0.0009mgKOH/g Nil
Corrosive Sulphur	Anna'	Non Corrosive		Non Corrosive
Electrical Strength (Breakdown Voltage) W(rms) a) New Unfiltered Oil b) After Filtration	6792	30. 60		72
Dielectric Dissipation factor, (Delta)	: 6262		0.002	0.0003
Specific Resistance (Resistivity) a) At 90 °C b) At 27 °C	Ohm-cm	1500 x		300* 13200X
Oxidation Neutralization Total Sludge	Hours @ 100 °C after Oxidation		0.40 0.10	0.091

TRANSFORMER OILS

Ataeroted Agevr,g test 96 115 cc (open uokeg Method) Sp. Resistance @ 27 'C Sp. Resistance Resistiviryl ohm.crn @YO sc Dielectric Dissipation Fodor@ 90 d) Total Acidify, mg/KOH/gm value, Wt	IS: 6103 IS: 61C3 IS: 6262 A ons 12177	 2.5 X 10 ¹² 0.2 X 10 ¹² 0.20 0.05 0.05	61.41 x 10': 0.034 0.035 0.006	
?gtsento of oxidation inhibitor % wt	IS: 13631	The cil shall not con'ain antioxidant		Not present
Wafer Conten' ppm	15: 13367		50 ppm	15 ppm
SK.Value, %	Annex D, IS : 335	B Max		



TRANSFORMER OILS

NEW INSULATING OIL / TRANSFORMER OIL

New Insulating Oil is a premium grade uninhibited Mineral Insulating Oil for Transformers and Switchgears

TEST DESCRIPTION	TEST METHOD	SPECIFICATION LIMITS	TYPICAL VALUES
Appearance	85148-1998	Transparent, bright, colourless liquid free from impurities	clear, bright/ odourless liquid free from suspended impurities
Colour	ASTM D 1500	L 05	
Kinematic Viscosity, mm ² /S (max)			
	ISO 3106		
At 30°C		1800	298
Flash point °C (Min), PMCC		130	150
Point °C	ISO 3016		45
Density g/dm ³ , @ 20°C (Max)	as per 3675	0.895	0.88
Neutralisation Value mg KOH/g		0.01	Nil
Interfacial Tension @ 25°C	ISO 6295	Max	
Corrosive Sulphur	DIN 51353/BS 5680	Non corrosive	Non corrosive
Water Content, Max mg/kg			
Bulk		20	14
Drum		30	22
Anti • Additives (Clause 2.5)	IEC 60666/BS 5984	detectable	Not detectable

TRANSFORMER OILS

Oxidation Stability, h	Oil		
Total	mg Of	1993	
% mass		Method C1	
90		IEC ,	0.5
Break	Vallog, Min	IEC 60156	c.68
Deliverer			20
Treatment	min		50
Dielectric Dissipation 4C at 90 °C and to 60 H:		IEC 60247/61620	70
tendency at SO HI after 120 min,		BS 5797/IEC-60628-A	0.005
Total	content		0.0005
mg/kg, Mar		BS EN 61698	Non detectable
Polycyclic Aromatics % mass, Max			Non detectable
			1.00
			3.00
			0.5

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TRANSFORMER OILS

	PHYSICAL		: 296		Clear, transparent & free from sediment & suspended matter
	Appearance	g/cm ³ Cst.	ISO 3675		0.870
1.		N/m	ISO : 3104	Clear, transparent	8.0
1.1	Density @ 20 °C	°C	ISO : 6295	& free from sediment	900
	Kinematic Viscosity, Max	Mg/Kg	ISO : 2719	& suspended matter	0.050
		°C	IEC : 60814	0.895 Max	148
1.2	Interfacial Tension, at 25 °C			11.0 at 40 °C	8.1
1.3	Flash Point		ISO : 3016	1800 at -30 °C	10.0
	Water Content Bulk		ISO	0.04 Min	-45
1.4	Water Content Drum			130 Min	
1.5	Pour Point			30 Max	
1.6			IEC : 60156	40 Max	
				-45 Max	
	ELECTRICAL				
1.7	Electrical Strength BDV				
	As Delivered		: 60247		
2.	After treatment			30 min	
2.1	Dielectric Dissipation factor (tan delta) at 50Hz, Max	Mg.KOH/gm	IEC : 296	50 min	0.0002
			ISO : 5662	0.005 at 90°	
2.2	CHEMICAL				
	Neutralization Value (Total Acidity)		IEC : 61125		0.003
	Corrosive Sulphur	Mg.KOH/gm			
	Oxidation Stability for 164	%		0.03 Max	Non-Corrosive
3.1	hrs at 100 °C		IEC : 666	Non-Corrosive	
	Neutralization value				
3.3	Total Sludge by mass			0.4 Moe	00B
	Presence of Oxidation Inhibitor			0.1 Max	0.002
3.3.2				0.1 Not detectable	Not detected

REMARKS: Conforms to IEC-296/1982. - II (UNINHIBITED OIL)

WHITE OILS

WHITE OIL 8

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description			Transparent colourlessg Oily
	COlour	Visual	Transparent colourless	
	Densi1Y@ 25 •C, g/ml	ASTM D 156	Oilý liquid +30	+30
	@ 29.5£, g/ml	ASTMD 1298	0.812 - 0.845 0.810 - 0.342	0.819 0.816
	Kinematic Viscosity	ASTM D 445	7 -10cSt	8.5
2,	@ 40 cc			1.476
3.	Refractive Index @ 20 oc	ASTMD 1218		
4.	Sulphur Compound	IS; 7299/1.R	Passes	-39
5.	pour point	ASTM 97	150 MIN	
6.		ASTM 92		
7.	Point			

WHITE OILS

WHITE OIL 12

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description	Visual	Transparent colourless	Transparent colourless
	Colour	D 156	Oily liquid +30	oily liquid +30
2.	Density @ 25 nc.	ASTM D 1298	0.818- 01858	0.824
	@ 29.57C,		0.815 - 0.855	0.821
3.	g/ml	ASTM D 445	10 - 14eSt	12.9
4.	Kinematic Viscosity			
	@ 40 •c	ASTM D 1218		1.476
	Refractive index @ 20	197299,/.?.		Posses
6.	Compound	ASTM D 97	-6 MAX	.24
7.	Pour point oc		160	66
8.	Flash point oc	ASTM D		

WHITE OIL 15

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description		Oily	
	CO'our	Visual	Transparent liquid	Transparent colourless liquid +30
2,	Density@ 25 °C. g/ml @ 29:50C,	ASTMD 156 ASTMD 1298	0.823 • 0.863 0.820 - 0.860	0.838 0.835
4.	Kinematic Viscosity @ 40 •c	ASTM D 445 ASTM D 1218	- CSI	15.5 cSi
5.	RefractiveOndex @ 20°C	IS:7299/I.P. ASTM D 97	Passes	1064
7.	Sulphur Compound	ASTM D 92	-6 MAX	Passes .24
8.	pour Point ac		165 MIN	174
	Flesh point °C			

WHITE OILS

WHITE OIL 20

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description	Visual	Transparent colourless	Transparent colourless
	Colour	ASTM D 156	Oily liquid	oily
2.	Density @ 25 °C, g/ml @ 29.5 °C,	ASTM 1298	+30	+30
	Kinematic	ASTM D	0.826 • 0.883 0.821 - 0.860	0.830 0.827
4.	Viscosity @ 40 °C	ASTM D	19 • 22	20 est
5.	Refractive Index @ 20	1218		1.4765
6.	Compound	IS:7299/1.P		Passes
7.	pour Point °C	ASTM D 97	-6 MAX	-15
8.	Flash point °C	ASTM D 92	MIN	186

WHITE OIL 32

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description		Transpa rent colouriess oily	Oily
	COtour			'fronsporent liquid
	Density @ 25 "C, g,/rnl	ASTM D 156		+30
2,	@ 29.50C, g/ml	ASTM D 1298	0.828 -0.868 0.825 - 0.865	0.850 0.847
	Kinematic Viscosity	ASTM D 445	30 -33 cst	32 cst
4,	@ 40 oc			1.4765
5,	Refractive ndex @ 20°C	ASTMD 1218		Passes
6,	Sulphur Compound	IS:7299/l.p		.18
7.	Pour Point oc	ASTM. 97	- 6 MAX	210
8,	Flash Point °C	ASTM D 92	200	

WHITE OILS

WHITE OIL 50

NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description		Transparent colorless oily liquid	Oily
	@ 25		0.828 - 0.873	Transparent liquid
	@ 29 sec, g/ml	ASTM D 156	0.825 - 0.870	+30
	Viscosity	ASTM D 1298	48 - 54 cSt	0.838
	@ 40 °C			0.835
3.	Refractive Index@ 20°C	ASTM D 445	Passes -6 MAX	1.477
4.		ASTM 01218		
	Sulphur Compound	IS: 7299/I.P.		.18
6.	pour point pc	ASTM D 97		240
7.	Flash point	ASTM D 91		

OILS

WHITE OIL 68

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
	Description	Visual	Transparent colourless	Transparent colourless
	Colour	ASTM D 156	Oil'y	oil'y liquid
	Density @ 25 oc.	ASTM D 129B	4 30	
2.	giml @ 29.50C,	ASTM b 445	0.848 • 0.880 0.845 - 0.880	0.856 0.853
	Kinematic Viscosity	ASTM D	65 . 75 cst	70 est
4.	Refractive Index	1218		1.4775
5.	Compound	IS9299/LP.		
6.	pour Point oc	ASTM D 97		-15
7e.	Flash •C	ASTM D 92	220	246

WHITE OILS

WHITE OIL 100

SR. NO	TESTS	METHOD	RANGE	TYPICAL VALUES
2.	Description	Visual		Transparent colourless oily liquid
4.	Colour	ASTM D 156	Transparent colourless oily liquid 430	
5.	@ 25 g/ml	ASTM D 1298	0.853 . 0.880	0.857
6.	@ 29.50C, g/ml	ASTM D 445	0.850 - 0.880	0.854
7.	Kinematic Viscosity @ 40 -c		95 . 1050t	100 cst
8.	Refractive index @ 20°C	ASTM D 1218	Passes	1,4775
	Sulphur Compound	IS:7299/I.P	MAX	
	Point	ASTM D97	240	-12
	Flash point	ASTM D 92		•248

OILS

WHITE OIL LIGHT

SR. NO	TESTS	TYPICAL VALUES
	Description	Transparent Oily Liquid
	Solubility	Insoluble in water & alcohol, soluble in ether and chloroform
	Density@ 25 g/rnl	0.810 0.860
	Kinematic Viscosity@	CSI to 40
2.	400C	Below zero
3.	Cloud Point oc pour	.9 MAX
4.	Point oc	150
5.		
6.		
7.	Flash Point0C	

WHITE OILS

WHITE OIL HEAVY

S.	TESTS	TYPICAL VALUES
	Description	Transparent Oily Liquid
	Solubility	Insoluble in water & alcohol, soluble in ether and chloroform
2.	Density @ 25 g/ml	0.845 to 0.880
3.	Kinematic Viscosity @40bC	40 'St to 120 \$1 Below zero -9 MAX
4.	Cloud Point oc	180 MIN
5.	Pour PointOC	
6.	Flash Point OC	
7.		

1. The sample complies with the prescribed standards Of quality.

2. The methods Used were ASTM.