

Laboratory **SGS India Pvt. Ltd., Oil, Gas & Chemical Laboratory, A-77, Wagle Industrial Estate, Road No. 16, Thane, Maharashtra**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-6842 (in lieu of T-0971, T-3806)**

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Validity **17.12.2017 to 16.12.2019**

Last Amended on **30.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	INDUSTRIAL & FINE CHEMICALS			
1.	Absolute Alcohol/Rectified Spirit/ Ethyl Alcohol	Alkalinity	IS-323-Annex D	1 mg/l to 500 mg/l
		Acidity as Acetic Acid	IS-323-Annex D	1 mg/l to 500 mg/l
		Acetaldehyde	IS-323-Annex B	5 mg/l to 2000 mg/l
		Methanol	IS-323-Annex B	5 mg/l to 2000 mg/l
		Ethyl Acetate	IS-323-Annex B	5 mg/l to 2000 mg/l
		Iso-propanol	IS-323-Annex B	5 mg/l to 2000 mg/l
		n-propanol	IS-323-Annex B	5 mg/l to 2000 mg/l
		Iso- butanol	IS-323-Annex B	5 mg/l to 2000 mg/l
		n- butanol	IS-323-Annex B	5 mg/l to 2000 mg/l
		Acetal	IS-323-Annex B	5 mg/l to 2000 mg/l
		Iso- amyl alcohol	IS-323-Annex B	5 mg/l to 2000 mg/l
		Crotonaldehyde	IS-323-Annex B	5 mg/l to 2000 mg/l
		Furfural	IS-323-Annex B	5 mg/l to 2000 mg/l
		Specific Gravity	ASTM D 4052	0.6000 to 1.000
		Residue On Evaporation	IS-323--Annex E	0.0001 to 10 % m/v
	Ethanol Content	IS-323--Annex B	10% (v) to 100%(v)	
	Alcohol Strength	International Organization of Legal Metrology (OIML-ITS-90)	1 % to 100%v.	
	Permanganate Reaction Time	IS-6613	1 min to 200 min	
	Miscibility with water	IS-323- Annex C	Qualitative (Pass or Fail)	

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II.	PETROLEUM AND PRODUCTS			
1.	LPG/ Propane/ Butane	Composition of Hydrocarbon		
		Ethane	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Propane	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Propylene	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Isobutane	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		N butane	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Iso pentane	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Trans-but-2-ene	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		1 Butene	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Isobutylene	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		Cis but-2 ene	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		N pentane	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
		1,3 Butadiene	ASTM D2163 (2014) / IP 473 / ISO 7941 (1988)	0.01 to 100 %V
2.	Naptha	Specific Gravity	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 to 1.1000
		Density	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 to 1.100 g/ml
		Density	ASTM D4052 / ISO 12185 / IP 365	600 kg/m ³ to 1100.0 kg/m ³

Vivek Vardhan
Convenor

N. Venkateswaran
Program Director

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		Color (Saybolt)	ASTM D 156 / IS 1448: P-14	-16 to + 30
		Copper Corrosion Test	ASTM D 130 / IS 1448: P-15 -(Reaff.1981)	1a to 4c
		Distillation	ASTM D 86 / IS 1448: P-18	Temperature 30 °C to 400 °C Volume % vol. 0-99
		Gross calorific Value	IS-1448/ P:7 / ASTM D 4868	9000 kcal/kg to 11850 kcal/kg
		Nonvolatile Matter	ASTM D 1353 / IS 1448: P-64	0.1 mg/100 ml to 200 mg/100 ml
		Reid Vapor Pressure	ASTM D 323 / IS 1448: P-39 / ISO 3007	1 Psig to 25 Psig.
		Sulphur Content	ASTM D4294 / ISO 8754 / IP 34	0.0017 % to 4.6 % mass
		Sulphur Content	ASTM D5453	1.0 mg/kg to 8000 mg/kg
		Organic Chloride	ASTM D 5808	1 mg/kg to 25mg/Kg
		Total Nitrogen	ASTM D6069	0.2 mg/kg to 2.0 mg/kg
		Total Nitrogen	ASTM D4629	0.3 mg/kg to 100 mg/kg
		Total Nitrogen	ASTM D7184	0.38 mg/kg to 1.2 mg/kg
		MTBE	UOP 960	0.2 mg/kg to 250 mg/kg
3.	Motor Gasoline	Density	ASTM / ISO 12185/ IP 365	600 kg/m ³ to 1100.0 kg/m ³
		Distillation	ASTM D 86 / IS 1448: P-18	Temperature 30 °C to 250 °C Volume % vol. 0-99
		Sulphur Content	ASTM D4294 / ISO 8754/ IP 34	0.0017 % to 4.6 % mass
		Sulphur Content	ASTM D5453	1.0 mg/kg to 8000 mg/kg
		Reid Vapor Pressure	ASTM D 323 / IS 1448: P-39 / ISO 3007	2.1 % to 4.0 %

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		Vapor Lock Index	IS 2796	0.05 % to 1.50 %
		Copper Corrosion Test	ASTM D 130/ IS 1448: P-15	1a to 4c
		Existent Gum	IS 1448 [P:29 / ISO 6246 / ASTM D381	1 mg/100 ml to 10 mg/100 ml
		Potential Gum	ASTM D 873	1 mg/ 100ml to 10 mg/ 100 ml
		Oxidation Stability	ISO 7536 / IP 140 / ASTM D 525	1 min. to 2000 min.
		Olefin Content	ASTM D 1319/ ISO-3837 / P 23	0.3 to 55 %v
		Aromatic Content	ASTM D 1319/ ISO-3837 / P 23	5 to 99 % v
		Organic Chloride	ASTM D 5808	1 mg/kg to 25mg/Kg
		Water Content	ASTM D6304	10 to 2500 mg/kg.
4.	High Speed Diesel /Gas Oil/ HFHSD/ Marine Distillate Fuel	Density	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 to 1.100 g/ml
		Density	ASTM D4052 / ISO 12185/ IP 365	600 kg/m ³ to 1100.0 kg/m ³
		Ash Content	ASTM D 482, IS 1448: P-4 / ISO 6245	0.001 % to 0.180 %wt.
		Ramsbottom Carbon Residue	ASTM D524 / IS-1448-P-8	0.01 % to 1 % mass
		Total Sediment- Potential	ASTM D 4870 / ISO 10307-1	0.01 % to 0.5 % wt.
		Cetane Index	ASTM D 976 /ISO 4264	40.00 to 65.00
		Colour ASTM	ASTM D 1500 (2012) / IS-1448-P-12 / ISO-2049	0.5 to 8
		Copper Corrosion Test	ASTM D 130 / IS 1448: P-15	1a to 4c
		Distillation	ASTM D 86 / IS 1448 : P-18	Temperature 30 °C to 400 °C

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				Volume % vol. 0-99
		Flash Point (PMCC)	ASTM D 93 (2016)/ IS-1448:P-21/ISO 2719	40 °C to 360 °C
		Flash Point (Abel)	IP-170- Method B	19 °C to 70 °C
		Gross calorific Value	IS-1448/ P:7 / ASTM D4868	9000 to 11850 kcal/kg
		Kinematic Viscosity@40 Deg. C.	ASTM D 445/ IS-1448-P-25 / ISO 3104	0.2 cst. to 1000 cst
		Pour Point	ASTM D 97/ IS1448: P-10 /ISO3015	+9°C to -51°C
		Sediment by Extraction	ASTM D 473 /, IS-1448-P-30/ISO 3735(1999)	0.01 % to 0.40 %wt
		Sulphur Content	ASTM D4294 / ISO 8754 / IP 34	0.0017 % to 4.6 % mass
		FAME	ASTM D 7963 /ISO14078/ IP:579	0.04 % to 100 % V
		Appearance	VISUAL	Clear & Bright
		Sulphur Content	ASTM D5453	1.0 mg/kg to 8000 mg/kg
		Water Content	ASTM D 95 / IS-1448-P-40 / ISO 3733	0.05 %V to 25.00 %V
		Water Content	ASTM D6304	10 to 2500 mg/kg.
		PAH	IP 391/ EN 12916	0.1 % to 20%
		Oxidation Stability	ASTM D 2274 /ISO 12205	0.1 mg/100 ml. to 3.0 mg/100 ml
		Cold Filter Plugging Point	ASTM D 6371 / IS1448: P-110 /IP-309- / ISO 116	0°C to -35°C
		Total Contamination	EN-12662	0.1 mg/kg to 100 mg/kg
		HFRR	ASTM D 6079 / ISO EN 12156-1 & 2	100um to 650um
		Total Acidity	ASTM D974 / IS1448:P2	0.02 to 250 mg KOH/gm
		Organic Chloride	ASTM D 5808	1 mg/Kg to 25 mg/Kg
		H2S Content	IP 570 /ASTM D7621	0.4 mg/kg to 15 mg/kg
		Acid Number	ASTM D664 /	0.02 to 50 mg KOH/gm

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			IP-177/ ISO-6619	
		Cloud Point	ASTM D2500 / ISO 3015	50 °C to -20 °C
5.	Furnace Oil/ Marine Residual Fuel/ CBFS/ LSHS	Density	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 g/ml to 1.100 g/ml
		Specific Gravity	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 to 1.1000
		Ash Content	ASTM D 482, / IS 1448 : P-4 / ISO 6245	0.001 % to 0.180 %wt.
		Asphaltine Content	ASTM D6560 / IP 143	0.5 % m/m. to 30.0 % m/m.
		Heptane Insoluble	ASTM D 3279	0.5 % m/m. to 30.0 % m/m.
		Conradson Carbon Residue	ASTM D 189 / IS-1448- P-122 / ISO 6615	0.01 % to 20.00 %wt
		Copper Corrosion Test	ASTM D 130/ IS 1448: P-15	1a to 4c
		Flash Point (PMCC)	ASTM D 93 / IS-1448: P-21 (2012)/ISO 2719-	40 °C to 360 °C
		Net Calorific Value	IS-1448/ P:7 / ASTM D4868	9000 to 11850 kcal/kg
		Gross calorific Value	IS-1448/ P:7 / ASTM D4868	9000 to 11850 kcal/kg
		Kinematic Viscosity at 50 Deg. C.	ASTM D 445/ IS-1448- P-25 / ISO 3104	0.2 cSt. to 1000 cSt
		Kinematic Viscosity at 100 Deg. C.	ASTM D 445/ IS-1448- P-25 / ISO 3104	0.2 cSt. to 100 cSt
		Acid Number	ASTM D664- / IP-177/ ISO-6619	0.02 to 50 mg KOH/gm
		H2S Content	IP 570 /ASTM D7621	0.4 mg/kg to 15 mg/kg
		Pour Point	ASTM D 97 / IS1448: P-10 /ISO3015	+9°C to -51°C
		Sediment by Extraction	ASTM D 473 /,IS-1448- P-30 /ISO 3735	0.01 % to 0.40 %wt.
		Sulphur Content	ASTM D4294 / ISO 8754 / IP 34	0.0017 % to 4.6 % mass

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		Water Content	ASTM D 95 / IS-1448-P-40 / ISO 373	0.05 %V to 25.00 %V
		Vanadium	IP-501 / ISO-14597	1 mg/kg to 400 mg/kg
		Aluminum	IP-501 / ISO-14597	5 mg/kg to 150 mg/kg
		Silicon	IP-501 / ISO-14597	10 mg/kg to 250 mg/kg
		Zinc	IP-501 / ISO-14597	1 mg/kg to 70 mg/kg
		Phosphorous	IP-501 / ISO-14597	1 mg/kg to 60 mg/kg
		Calcium	IP-501 / ISO-14597	1 mg/kg to 100 mg/kg
		Sodium	IP-501 / ISO-14597	1 mg/kg to 100 mg/kg
		Nickel	IP-501 / ISO-14597	1 mg/kg to 100 mg/kg
		Iron	IP-501 / ISO-14597	1 mg/kg to 60 mg/kg
		CCAI	ISO 8217	600 to 1000
		Carbon Residue (Micro Method)	ASTM D 4530-2016 / ISO 10370	0.01% to 40%
		Total Sediment- Potential	ASTM D 4870 (2014) / ISO 10307-1	0.01 % wt to 0. 5 % wt
		Total Sediment- Aged	ASTM D 4870 (2014) / ISO 10307-2	0.01 % wt to 0. 5 % wt
6.	Petrochemical Products Benzene & Other	Density	ASTM D4052 / ISO 12185 / IP 365	600 kg/m ³ to 1000.0 kg/m ³
		Distillation	ASTM D 1078	Temperature 30 °C to 300 °C Volume % vol. 0-99
		Nonvolatile Matter	ASTM D 1353 IS 1448: P-64	0.1 mg/100 ml to 200 mg/100 ml
		Sulphur Content	ASTM D5453	1.0 mg/kg to 8000 mg/kg
		Total Nitrogen	ASTM D4629	0.3 mg/kg to 100 mg/kg
		Total Nitrogen	ASTM D7184	0.38 mg/kg to 1.2 mg/kg
		Total Nitrogen	ASTM D6069	0.2 mg/kg to 2.0 mg/kg
		Total Nitrogen	ASTM D 5762	40 mg/kg to 10000 mg/kg
		Organic Chloride	ASTM D 5808	1 mg/kg to 25mg/Kg
		Water Content	ASTM D6304	10 mg/kg to 2500 mg/kg

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		Colour, Pt-Co	ASTM D 1209	0 to 500
		Colour	ASTM D 5386	0 to 100
III.	LUBRICANTS			
1.	Lubricating oil/ Hydraulic oil/ Base oil/ gear oil/ Engine oil/ Transmission oil	Vanadium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Aluminum	ASTM D5185	1 mg/kg to 15000 mg/kg
		Silicon	ASTM D5185	1 mg/kg to 15000 mg/kg
		Zinc	ASTM D5185	1 mg/kg to 15000 mg/kg
		Phosphorous	ASTM D5185	1 mg/kg to 15000 mg/kg
		Calcium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Sodium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Nickel	ASTM D5185	1 mg/kg to 15000 mg/kg
		Iron	ASTM D5185	1 mg/kg to 15000 mg/kg
		Copper	ASTM D5185	1 mg/kg to 15000 mg/kg
		Cadmium	ASTM D5185	1 mg/kg to 15000 mg/kg
		lead	ASTM D5185	1 mg/kg to 15000 mg/kg
		Potassium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Magnesium,	ASTM D5185	1 mg/kg to 15000 mg/kg
		Barium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Boron	ASTM D5185	1 mg/kg to 15000 mg/kg
		Chromium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Manganese	ASTM D5185	1 mg/kg to 15000 mg/kg
		Mobaldium	ASTM D5185	1 mg/kg to 15000 mg/kg
		Strontium	ASTM D5185	1 mg/kg to 15000 mg/kg
	Titanium	ASTM D5185	1 mg/kg to 15000 mg/kg	
	Silver	ASTM D5185	1 mg/kg to 15000 mg/kg	
	Insoluble	ASTM D893	0.01 % to 20%	
	Acid Number	ASTM D974 / IP-139 / ISO-6618	0.02 to 250 mg KOH/gm	
	Acid Number	ASTM D664 /	0.02 to 250 mg KOH/gm	

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			IP-177/ ISO-6619	
		Base Number	ASTM D2896 / ISO 3771/ IP 276-95	1 to 400 mg KOH/gm
		Base Number	ASTM D 4739/ IP 417	1 to 400 mg KOH/gm
		Ash Content	ASTM D 482 / IS 1448: P-4 / ISO 6245	0.001 % to 15 %
		Copper Corrosion Test	ASTM D 130 / IS 1448: P-15	1a to 4c
		Pour Point	ASTM D 97 / IS1448:P-10 (2012) /ISO3015	+9°C to -51°C
		Saponifiable Matter	IP 284	0.1 % to 90 % m/m
		Sulfated Ash	IP 163 /ASTM D874/ ISO 3987	0.005 % to 15%
		Sulfur	ASTM D4294 / ISO 8754/ IP 34	0.0017 % to 5 % wt.
		Water Content	ASTM D6304	0.02 to 250 mg KOH/gm
		Acid Number	ASTM D664 / IP-177/ ISO-6619	0.02 to 250 mg KOH/gm
		Base Number	ASTM D2896 / ISO 3771/ IP 276-95	1 to 400 mg KOH/gm
		Base Number	ASTM D 4739/ IP 417	1 to 400 mg KOH/gm
		Ash Content	ASTM D 482, IS 1448: P-4 / ISO 6245	0.001 % to 15 %
		Copper Corrosion Test	ASTM D 130/IS 1448: P-15 -	1a to 4c
		Color ASTM	ASTM D 1500 / IS-1448- P-12 (2013) / ISO-2049	0.5 to 8
		Density	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 g/ml to 1.100 g/ml
		Density	ASTM D4052 / ISO 12185/ IP 365	600 kg/m ³ to 1100.0 kg/m ³
		Specific Gravity	ASTM D 1298 /IS-1448: P-16 / ISO 3675	0.6000 to 1.1000
		Specific Gravity	ASTM D4052 / ISO 12185 /	0.6000 to 1.000

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			IP 365	
		Flash Point (PMCC)	ASTM D 93 / IS-1448: P-21 / ISO 2719	40 °C to 360 °C
		Kinematic Viscosity at 40 Deg. C.	ASTM D 445/ IS-1448- P-25 / ISO 3104	0.2 cSt. to 2000 cSt
		Kinematic Viscosity at 100 Deg. C.	ASTM D 445/ IS-1448- P-25 / ISO 3104	0.2 cSt to 100 cSt
		Viscosity Index	ASTM D 2270 / P: 56	35 to 200
		Cold Filter Plugging Point	ASTM D 6371/ IS1448: P-110(2013 re app.) / IP-309 / ISO	0°C to - 35°C
		Demulsification Number	IP 19 /ASTM D1401	40/40/0 to 80/0/0
		Air release value	ASTM D 3427	0.1 MIN to 30 MIN
		Conradson Carbon Residue	ASTM D 189/ IS-1448- P-122 (2013)/ ISO 6615	0.01 % to 20.00 %wt.
		Diesel fuel Diluent	ASTM D3524	0.1% to 30%
		Gasoline diluent	ASTM D3525	0.1% to 30%
		Particle count	ISO 4406	4 microns to 70 micron
		Total Nitrogen	ASTM D 5762	40 mg/kg to 10000 mg/kg
		Total Nitrogen	ASTM D4629	0.3 mg/kg to 100 mg/kg
		Foaming Characteristics	ASTM D 892/ IP 146	Seq 1 2 3 Tendency -0 to 800 ml Stability- 0 to 800 ml
		Glycol	ASTM E 2412	0 to 0.02 Abs/mm
		Nitration	ASTM E 2413	0 to 0.02 Abs/mm
		Oxidation	ASTM E 2414	0 to 0.02 Abs/mm
		Soot Content	ASTM E 2415	0 to 15 %.
		Organic Chloride	ASTM D 5808	1 mg/Kg to 25 mg/Kg
		Organic Chloride	ASTM D 4929 B	2 mg to 25 mg
		Total Contamination	EN-12662	0.1 mg/kg to 100 mg/kg
		Automated Particle Counting	NAS 1638	1 NAS to 12 NAS

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ELECTRICAL TESTING

I.	ELECTRICAL MATERIALS			
a.	Liquid Dielectric Material			
1.	Transformer Oil	Electrical Strength Break down Voltage	ASTM D 877 /IEC60156/ IS 6792	10 to 100kV
		Dissipation Factor @ 90 Deg. C & @ 27 Deg. C	ASTM D 924 /IEC 60247/ IS 6262	0 to 0.5 %
		Interfacial Tension @ 27 Deg. C	ASTM D 971 /ISO 6295 / IS 6104	0 to 100 mN/m
		Corrosive Sulphur	ASTM D 1275 /ISO 5662 /IS 335/IEC 62535	Qualitative
		Dissolved Gas Analysis	ASTM D 3612-C /IEC 61181 /IS 10593 /IS 9434/IEC 60599	For O2, N2 MDL 10 mg/kg For H2, CO, CO2, CH4, C2H2, C2H4, C2H6, C3H8 MDL 1 mg/kg.
		Furan Analysis	ASTM D 5837 /IEC 61198	0.01mg/kg to 1000 mg/kg
		Poly Chlorinated Biphenyl content	ASTM D 4059 /IEC 61619	0.03 mg/kg to 1000 mg/kg
		Gassing Tendency	ASTM D 2300 /IEC 60628-A	0 to 30 microliter /min
		Aniline Point	ASTM D 611	25 °C to 170 °C
		Neutralization Value -Total Acidity	ASTM D 664 /IS 1448: P2/ IEC 62021-1&2	0.0001 mg/KOH to 10 mg/KOH
		Oxidation Stability Sludge content	ASTM D 2440 / IEC 60666 /IS 1866	Minimum 0.005% to 10 % wt
		Oxidation Stability Neutralization Value	ASTM D 664 / IEC 62021-1&2 /IS 1866	0.02 to 250 mg KOH/gm
		Anti Oxidant Additives (Oxidation Inhibitor)	ASTM D 4768 / IEC 60666 /IS 13631	0.03% to 0.5%
		Water Content	ASTM /D6304-A/	1mg/kg to 200 mg/kg

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number

TC-6842 (in lieu of T-0971, T-3806)

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Validity

17.12.2017 to 16.12.2019

Last Amended on 30.01.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC 60814 /IS 13567	
		Specific Resistivity @ 90 Deg. C & @ 27 Deg. C	D1169 /IEC 60247 /IS 6103	Min 0.1 X 10 ⁶ to 1 x 10 ¹⁴ Ohm .cm
		Pour Point	ASTM D 97 /IS1448:P-10 / ISO3015	+9°C to -51°C
		Appearance	IS 335	Qualitative
		Density	ASTM D4052 /ISO EN 12185 /IP 365 /IS 1448	0.800g/ml to 0.900g/ml
		Flash Point	ASTM D 93 /IS-1448:P-21 / ISO 2719/	40 °C to 360 °C
		Kinematic Viscosity at 40 Deg. C.	ASTM D 445 (2017)/ IS-1448-P-25 (1975) / ISO 3104(1994)/ IS 1866/IS 335	0.2 cSt. to 2000 cSt
		Total Sulphur Content	ASTM D4294 or ASTM D2622/ISO 14596/ IP 373/IS335	0.01 %wt to 4.6 % mass
		Potentially Corrosive Sulphur	IEC 62535/ IS 16310/ IS 335	Qualitative

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