

Testing & Analysis CAPABILITY

OIL, GREASE, FUEL, COOLANT, ADBLUE TESTING CAPABILITY

TESTING & ANALYSIS CAPABILITY

Table of Contents

OIL ANALYSIS	2
GREASE ANALYSIS	4
QUENCHING OIL ANALYSIS	5
THERMIC FLUID ANALYSIS	5
CUTTING OIL ANALYSIS - NEAT	6
CUTTING OIL ANALYSIS - SOLUBLE	6
AD BLUE / DEF/ AUS 32 ANALYSIS	7
COOLANT ANALYSIS	8
DIESEL ANALYSIS	9
BIODIESEL ANALYSIS	10
MARINE FUEL ANALYSIS	11
FURNACE OIL ANALYSIS	12

TESTING & ANALYSIS CAPABILITY

OIL ANALYSIS

Sr. No.	Test Description	ASTM Procedure	IS/ Other method	Sample Qty
1.	Appearance	CTP T 112	CTP T 112	50 ml
2.	ASTM Colour	ASTM D 1500	-	15 ml
3.	Density / Specific Gravity By Hydrometer	ASTM D 1298	IS 1448 (P16)	500 ml
4.	Density / Specific Gravity By Auto Density Meter	ASTM D 4052	-	20 ml
5.	Kinematic Viscosity at 40 deg C	ASTM D 445 ASTM D 7042	IS 1448 (P 25)	50 ml / 20ml
6.	Kinematic Viscosity at 100 deg C	ASTM D 445 ASTM D 7042	IS 1448 (P 25)	50 ml / 20ml
7.	Viscosity Index - Calculation	ASTM D 2270	-	-
8.	Water Content by KF Potentiometric	ASTM E 203 / D 1744	-	50 ml
9.	Water Content by KF Coulometer	ASTM D 6304	-	50 ml
10.	Water Content by KF Coulometer (Method C / Oven Method)	ASTM D 6304 (C)	-	50 ml
11.	Flash Point (COC)	ASTM D 92	IS 1448 (P 69)	75 ml
12.	Total Base Number (HCL Method)	ASTM D 4739	IS 1448 (P 1 sec2)	50 ml
13.	Total Base Number (Perchloric Method)	ASTM D 2896	IS 1448 (P 86)	50 ml
14.	Total Acid Number	ASTM D 664	IS 1448 (P 1 sec1)	50 ml
15.	Total Acid Number (Colorimetric)	ASTM D 974	-	50 ml
16.	i-pH value	ASTM D 7946	-	50 ml
17.	Elemental Analysis by RDE - 24 Elements (Wear, Contaminant & Additive Elements)	ASTM D 6595	-	10 ml
18.	Elemental Analysis by ICP - 24 Elements (Wear, Contaminant & Additive Elements)	ASTM D 5185	-	10 ml
19.	Elemental Analysis by ICP (Additives)	ASTM D 4951	-	10 ml
20.	Copper Strip Corrosion	ASTM D 130	IS 1448 (P15)	50 ml
21.	Particle Count - NAS Value	NAS 1638	-	100 ml
22.	Particle Count - Cleanliness	ISO 4406	-	100 ml
23.	Foaming Tendency & Stability	ASTM D 892	-	500 ml
24.	Air Release Value	ASTM D 3427	-	200 ml
25.	Oxidation Stability / RPVOT / RBOT	ASTM D 2272	-	200 ml
26.	Water Separability (Demulsibility, Emulsion Characteristics)	ASTM D1401	-	100 ml
27.	Rust Preventive characteristics *	ASTM D 665	-	500 ml
28.	Soot Content	ASTM D 7686	-	5 ml
29.	Fuel Dilution Test (Engine Oils)	ASTM D 7593	-	10 ml
30.	PQ Index	ASTM D 8184	-	50 ml
31.	FTIR (Oxidation , Nitration , Sulphation)	ASTM E 2412	-	50 ml

TESTING & ANALYSIS CAPABILITY

32.	Parafinic, Naptahlenic and Aromatic Content	ASTM D 3238	-	50 ml
33.	Kinematic Viscosity @ any other temperature (+125 deg C to +10 Deg) and (-40 deg C to RT)	ASTM D 445 ASTM D 7042	IS 1448 (P 25)	30 ml / 20ml
34.	Pour Point	ASTM D 97	IS 1448 (P10)	70 ml
35.	Chlorine Content	ASTM D 4929	-	100 ml
36.	Sulphur Content	ASTM D 4294	IS 1448 (P33)	50 ml
37.	Dynamic Viscosity	ASTM D 7042	-	20 ml
38.	Water Content by Dean & Stark	ASTM D 95	IS 1448 (P 40)	100 ml
39.	Ash Content	ASTM D 482	IS 1448 (P 4)	150 ml
40.	Sulphated Ash	ASTM D 874	IS 1448 (P 4)	150 ml
41.	Insoluble in Pentane/Hexane/Toluene	ASTM D 893	-	50 ml
42.	Conradson Carbon Residue	ASTM D 189	IS 1448 (P122)	50 ml
43.	Sediments by Centrifuge	CTP T 027	-	50 ml
44.	Sediments by Filtration	ASTM D 4055	-	50 ml
45.	Aniline Point	ASTM D 611	IS 1448 (P15)	50 ml
46.	Saponification Value	ASTM D 94	IS 1448 (P55)	50 ml
47.	Analytical Ferrography	ASTM D 7690	-	50 ml
48.	Ferrography - Analytical + Direct Read *	ASTM D 7690	-	50 ml
49.	Noack Volatility*	ASTM D 5800 B/C	-	100 ml
50.	Extreme-Pressure Properties of Lubricating Fluids (Four-Ball Method) *	ASTM D 2783	-	50 ml
51.	Four Ball Wear Scar Test	ASTM D 4172	-	50 ml
52.	Membrane Patch Colorimetry	ASTM D 7843	-	100 ml

Note : The parameters which are marked with a “ * ” will be outsourced

TESTING & ANALYSIS CAPABILITY

GREASE ANALYSIS

Sr. No.	Test Description	Test Method	Sample Qty
1.	Soap or Thickener Type	By ICP OES	5 g
2.	Base oil viscosity @ 40 °C	ASTM D 445	100 g
3.	Drop Point	ASTM D 566	5 g
4.	Worked Cone Penetration 60 strokes	ASTM D 217	1 kg
5.	Worked Cone Penetration upto 1 Lakh strokes	ASTM D 217	1 kg
6.	Copper Corrosion	ASTM D 4048	100 g
7.	Water Content	ASTM D 95 / ASTM D 1744	50 g 10 g
8.	Elemental Analysis by ICP (24 Elements)	ASTM D 7303	5 g
9.	Water Washout Characteristic*	ASTM D 1264	100 g
10.	Oil Separation @ 40°C, 42 Hrs.	IP 121 / ASTM D 1742	100 g
11.	Storage Stability	ASTM D 1742	1 kg
12.	Heat Stability	ASTM D 6184	1 kg
13.	Roll Stability*	ASTM D 1831	500 g
14.	Wheel Bearing leakage tendency*	ASTM D 1263	500 g
15.	Four Ball Weld Load*	ASTM D 2596	50 g
16.	Four Ball Wear Scar Diameter*	ASTM D 2266	50 g
17.	Emcor Rust Test	ASTM D 6138	500 g
18.	Oxidation Stability *	ASTM D 942	120 g
19.	Corrosive Preventive Characteristics	ASTM D 1743	250 g

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TESTING & ANALYSIS CAPABILITY

Quenching Oil Analysis

S.N.	Test Name	Test Method	Sample Qty
1	Cooling analysis curve	ASTM D 6200	1.2 Litre
2	Kinematic Viscosity @40 & 100 deg C	ASTM D 445	50 ml
3	Viscosity index	ASTM D 2270	-
4	Volatile matter at 210 deg. C for 2 hrs	CTP	100 ml
5	Saponification no.	ASTM D 94	50 ml
6	Total Acid Number	ASTM D 664	50 ml
7	Precipitation number	ASTM D 91	50 ml
8	Moisture content	ASTM D 95	50 ml
9	Flash point	ASTM D 92	75 ml
10	PH value	ASTM D 1287	50 ml

Thermic Fluid Analysis

Sr. No.	Test Description	Test Method	Sample Quantity
1	Specific Gravity or Density @ 15 deg c	ASTM D 4052	20 ml
2	Kinematic Viscosity at 40 deg C	ASTM D 7042	50 ml
3	Kinematic Viscosity at 100 deg C	ASTM D 7042	50 ml
4	Viscosity Index - Calculation	ASTM D 2270	-
5	Ash content	ASTM D 482	100 ml
6	Total Acid Number	ASTM D 664	50 ml
7	Flash & Fire Point - COC	ASTM D 92	80 ml
8	Conradson Carbon Residue	ASTM D 189	50 ml
10	Insoluble in Hexane	ASTM D 893	20 ml
11	Insoluble in Toluene	ASTM D 893	20 ml
12	Distillation Recovery - Initial Boiling Point	ASTM D 86	100 ml
13	Water Content - Potentiometer	ASTM E 203	50 ml

TESTING & ANALYSIS CAPABILITY

Cutting Oil Analysis - Neat

Sr. No.	Test Name	ASTM Test Method	Sample Qty
1.	Kinematic Viscosity @ 40 & 100 deg C	ASTM D 445	100 ml
2.	Viscosity index	ASTM D 2270	-
3.	Total Acid Number	ASTM D 664	20 ml
4.	Flash point	ASTM D 91	75 ml
5.	Moisture content	ASTM D 95	100 ml
6.	Flash point	ASTM D 92	75 ml
7.	i-pH value	ASTM D 7946	50 ml
8.	Sulphur Content	ASTM D 4294	30 ml
9.	Elemental Analysis	ASTM D 5185	10 ml
10.	Copper Strip Corrosion	ASTM D 130	50 ml
11.	Rust test *	ASTM D 665	1 litre
12.	Chlorine Content	ASTM D 4929	25 ml
13.	Sediments	ASTM D 4055	50 ml
14.	Ferrography	ASTM D 7680	50 ml
15.	Particle Count	ISO 4406 / NAS 1638	50 ml

Cutting Oil Analysis - Soluble

Sr. No.	Test Name	Test Method	Sample Qty
1.	pH	pH Meter	50 ml
2.	Total Acid Number	ASTM D 664	30 ml
3.	Water Content	Titration	50 ml
4.	Tramp Oil	Acid Split	40 ml
5.	Concentration	Acid Split / Refractometer	40 ml
6.	Bacteria Count	By Kit method	20 ml
7.	Elemental Analysis	ASTM D 5185	10 ml
8.	Hardness	Titration	10 ml
9.	Cast Iron Corrosion	ASTM	200 ml
10.	Chlorine Content	ASTM D 524	50 ml
11.	Conductivity	Conductivity Meter	125 ml
12.	Sediments	ASTM D 4055	50 ml

TESTING & ANALYSIS CAPABILITY

AD Blue / DEF/ AUS 32 ANALYSIS

Sr. No.	Parameter	Method	Sample Qty
1.	Urea content	ISO 22241-2 Annex C	10 ml
2.	Density at 20 °C	ISO 3675 or ISO 12185	500 ml
3.	Refractive index at 20 °C	ISO 22241-2 Annex C	10 ml
4.	Alkalinity as NH ₃	ISO 22241-2 Annex D	50 ml
5.	Biuret	ISO 22241-2 Annex E	50 ml
6.	Aldehydes	ISO 22241-2 Annex F	50 ml
7.	Insoluble matter	ISO 22241-2 Annex G	100 ml
8.	Phosphate (PO ₄)	ISO 22241-2 Annex H	50 ml
9.	Element Analysis	ISO 22241-2 Annex I	100 ml
10	Identity	ISO 22241-2 Annex J	5 ml
11	Insoluble matter	ISO 22241-2 Annex G	100 ml
12	Particle Count	ISO 4406	50 ml
13	Particle Residue Analysis (Insoluble Matter)	ISO 16232	100 ml

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TESTING & ANALYSIS CAPABILITY

COOLANT ANALYSIS

Sr. No.	Test Description - Water Based Engine Coolants	ASTM Method	Sample Qty
1	Colour	ASTM D 1287	5 ml
2	pH	ASTM D 1287	25 ml
3	Total Dissolved Solids	ASTM D 1287	50 ml
4	Chloride Content	ASTM D 3634	50 ml
5	Sulphate Content	ASTM D 5827	50 ml
6	Nitrates	ASTM D 5827	50 ml
7	Total Hardness	CTP T 164	10 ml
8	Conductivity	CTP T 144	25 ml
9	Elemental Analysis (Wear and Corrosion Metals)	ASTM D 6130	10 ml
10	Oxalate Formate Nitrate Nitrite Chloride Bromide Sulphate Phosphate	ASTM D 5827	250 ml

Sr. No.	Test Description - Glycol Based Engine Coolants	Test Method	Sample Qty
1	Colour	CTP T 112	5 ml
2	pH	ASTM D 1287	50 ml
3	Total Dissolved Solids	CTP T 093	50 ml
4	Chloride Content	ASTM D 3634	50 ml
5	Sulphate Content	ASTM D 5827	50 ml
6	Reserve Alkanility	ASTM D 1121	25 ml
8	Nitrate Content	ASTM D 5827	50 ml
9	Total Hardness	CTP T 164	50 ml
10	Conductivity	CTP T 144	50 ml
12	Elemental Analysis (Wear and Corrosion Metals)	ASTM D 6130	10 ml

TESTING & ANALYSIS CAPABILITY			
13	Foaming Tendency of Coolants	ASTM D 1881	50 ml
14	ERBP	ASTMD 1120	100 ml
15	Freezing Point	ASTM D 3321	50 ml
16	Water Content KF potentiometer	ASTM E 203	50 ml
18	Glycol Content	By Refractometer	20 ml
17	Glycol Content	By Refractometer	20 ml
18	Oxalate Formate Nitrate Nitrite Chloride Bromide Sulphate Phosphate	ASTM D 5827	250 ml

TESTING & ANALYSIS CAPABILITY

DIESEL ANALYSIS

Sr. No.	Test Description	ASTM Test Method	IS Test Method	Sample qty
1	Acidity, Inorganic	-	IS 1448 (P 2)	30 ml
2	Acidity, Total	-	IS 1448 (P 2)	15 ml
3	Ash Content	ASTM D 482	IS 1448 (P 4)	120 ml
4	Ramsbottom Carbon Residue (10% residue) - RBCR	ASTM D 524	IS 1448 (P 8)	100 ml
5	Cetane Index	ASTM D 4737	-	120 ml
6	Pour Point	ASTM D 97	IS 1448 (P 10)	100 ml
7	Copper Strip Corrosion	ASTM D 130	IS 1448 (P 15)	50 ml
8	Distillation Recovery with IBP / FBP	ASTM D 86	IS 1448 (P 18)	100 ml
9	Flash Point (Abel)	-	IS 1448 (P 20)	80 ml
10	Kinematic Viscosity @ 40 deg C	ASTM D 445 / ASTM D 7042	IS 1448 (P 25)	50 ml
11	Sediment by extraction	ASTM D 473	IS 1448 (P 30)	20 ml
12	Specific Gravity/Density by Hydrometer	ASTM D 1298	IS 1448 (P 16)	500 ml
13	Specific Gravity/Density by Auto Density Meter	ASTM D 4052	-	25 ml
14	Total Sulphur in ppm	ASTM D 4294/ ASTM D 5453*	-	30 ml
15	Water Content	ASTM D 6304	ISO 12937	20 ml
16	Cold Filter Plugging Point	ASTM D 6371	IS 1448 (P 110)	100 ml
17	Lubricity - Wear Scar Diameter *	ASTM D 6079		50 ml
18	Gross Calorific Value	ASTM D 240	IS 1448 (P 6)	10 ml
19	Chlorine Content	ASTM D 4929	-	50 ml
20	Cleanliness Test	-	ISO 4406	100 ml
21	Oxidation Stability	ASTM D 2274	-	400 ml
22	Total Contamination	EN 12662	-	800 ml
23	Chlorine Content	ASTM D 4929		50 ml
24	Density@ 15 degree C	ASTM D 4052	IS 1448 (P 16)/ IS 1448 (P 32)	20 ml
25	Hydrocarbon Type Analysis - Paraffinic, Naphthalenic, Aromatic Content *	ASTM D 1319	-	15 ml
27	Cetane Number *	ISO 5165		2500 ml
28	Cloud Point	ASTM D 2500	-	100 ml
29	Carbon, Hydrogen & Nitrogen Content *	ASTM D 5291		5 ml

TESTING & ANALYSIS CAPABILITY

Biodiesel Analysis

Sr. No	Test Description	ASTM Method	EN / ISO Method	Sample Quantity
1.	Specific Gravity/ Density by Hydrometer	ASTM D 1298		500 ml
2.	Specific Gravity /Density by Auto Density Meter	ASTM D 4052	ISO 12185	20 ml
3.	Kinematic Viscosity at 40 deg C	ASTM D 445 / ASTM D 7042	ISO 3104	50 ml
4.	Carbon Residue, RBCR (On whole)	ASTM D 524	ISO 10370	100 ml
5.	Sulphur Content in ppm	ASTM D 4294		25 ml
6.	Sulphated Ash	ASTM D 874	ISO 3987	100 ml
7.	Water Content	ASTM D 6304	ISO 12937	25 ml
8.	Sediments	By Centrifuge		100 ml
9.	Copper Strip Corrosion	ASTM D 130	ISO 2160	50 ml
10.	Total Acid Number	ASTM D 664		25 ml
11.	Total Contamination		EN 12662	800 ml
12.	Ester Content (FAME Content)		EN 14103	10 ml
13.	Phosphorus	ASTM D 7111		50 ml
14.	Sodium	ASTM D 7111		
15.	Potassium	ASTM D 7111		
16.	Calcium	ASTM D 7111		
17.	Magnesium	ASTM D 7111		
18.	Iodine Value	EN14104		100 ml
19.	Oxygen Content *	CTP T	EN 14111	10 ml
20.	Gross Calorific Value	ASTM D 240		10 ml
21.	Lubricity *	ASTM D 6078		50 ml
22.	Flash Point (PMCC)	ASTM D 93		80 ml
23.	Oxidation Stability	EN14112	EN14112	400 ml
24.	Methanol Content & Ethanol Content *	EN 14110	EN14110	10 ml
25.	Total Glycerol, Free Glycerol *	ASTM D 6584		10 ml

TESTING & ANALYSIS CAPABILITY

MARINE FUEL ANALYSIS

Sr. No.	Test Description	ISO & IP Method	ASTM Method	Sample qty
1.	Density, Hydrometer method	ISO 3675	ASTM D 1298	500 ml
2.	Density, Oscillating U-tube	ISO 12185	ASTM D 4052	200 ml
3.	Kinematic Viscosity	ISO 3104	ASTM D 445 ASTM D 7042	50 ml
4.	Flash Point, Pensky-Martens	ISO 2719	ASTM D 93	80 ml
5.	Cloud Point	ISO 3015	ASTM D 2500	50 ml
6.	Pour Point	ISO 3016	ASTM D 97	50 ml
7.	Water Content	ISO 3733	ASTM D 95	100 ml
8.	Cetane index	ISO 4264		
9.	Ash content	ISO 6245	ASTM D 482	50 ml
10.	Sulphur content by ED XRF	ISO 8754	ASTM D 4294	50 ml
11.	Total sediment	ISO 10307 - 1		50 ml
12.	Carbon residue - Micro Method	ISO 10370		100 ml
13.	Lubricity (HFRR) *		ASTM D 6078	40 ml
14.	Oxidation stability	ISO 12205	ASTM D 2274	400 ml
15.	Water content, Karl Fischer titration	ISO 12937	ASTM D 1744	50 ml
16.	Elemental Analysis - Aluminium, Silicon, Vanadium, Nickel, Iron, Calcium, zinc and Sodium in residual fuel oil	IP 470		100 ml
17.	Acid Number		ASTM D 664	25 ml

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TESTING & ANALYSIS CAPABILITY

FURNACE OIL ANALYSIS

Sr. No.	Test Description	IS Method	ASTM Method	Sample Qty in ml
1	Density at 15 deg C	IS 1448 (P 32)	ASTM D 4052	50 ml
2	Kinematic Viscosity at 50 deg C	IS 1448 (P 25)	ASTM D 445	50 ml
3	Kinematic Viscosity at 100 deg C	Is 1448 (P 25)	ASTM D 445	50 ml
4	Flash Point (PMCC)	Is 1448 (P 21)	ASTM D 93	75 ml
5	Water Content Dean & Stark	Is 1448 (P 40)	ASTM D 95	100 ml
6	Ash Content	Is 1448 (P 4)	ASTM D 482	50 ml
7	Conradson Carbon Residue	IS 1448 (P 122)	ASTM D 189	50 ml
8	Inorganic Acidity	IS 1448 (P 2)	IS 1448 (P2)	25 ml
9	Sediments	CTP	CTP	25 ml
10	Asphaltenes	IS 1448 (P 22)	ASTM D 6560	50 ml
11	Metal content - Per Metal	-	IP 501	50 ml
12	Pour point	IS 1448 (P 10 Sec2)	ASTM D 97	50 ml
13	Gross Calorific value	IS 1448 (P 6)	ASTM D 240	10 ml
14	Net Calorific value	IS 1448 (P 6)	-	10 ml
15	Sulphur Content	IS 1448 (P 33)	ASTM D 4294	25 ml
16	Hydrogen Content	IS 1448 (P 6)	Calculation Meth.	-