

Laboratory Chem-Tech Laboratories Private Limited, Plot No. 22, Parvati Industrial Estate, Pune-Satara Road, Pune, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7695 (in lieu of T-1143) **Page 1 of 16**

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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. LUBRICANTS				
1.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Thermic Fluids, Heat Treatment Oils	Colour	ASTM D 1500-2012 IP 196/97- 2014	0 to 8
2.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Colour & Appearance	CTP 112, Issue No. 1 Issue Dt. 1.6.2016	Qualitative
3.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Kinematic Viscosity @ 40°C	ASTM D 445-2017 a IS 1448 (Part 25) 1976 RA 2013 IP-71 Sec.1/97 ASTM D 7042-2016e3	1 cSt to 460 cSt 1 cSt to 1500 cSt
4.	Lubricating Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Kinematic Viscosity @ 100°C	ASTM D 445-2017 a IS 1448 (Part 25) 1976 RA 2013 IP-71 Sec.1/97 ASTM D 7042-2016e3	1 cSt to 100 cst
5.	Lubricating Oils, Metalworking Oils, Thermic Fluids, Heat Treatment Oils & Fluids	Viscosity Index	ASTM D 2270-2010e1 IS1448 (Part 56) 2013 ISO 2909:2014 IP226/2014	40 to 250

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6.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Initial pH i-pH	ASTM D 7946 - 14	1 to 14
7.	Lubricating Oils	Total Base Number	ASTM D 4739-2017 ASTM D 2896-2015 IS 1448 (Part 1 Sec.2) 2002 RA 2013 IS 1448 (Part 86) 77 RA 2011 IP-276/95 ,2012 IP-139/98-2004 ISO 3771:2011 (RA 2016)	0.001 mg KOH/g to 100 mg KOH/g
8.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Total Acid Number	ASTM D 664-2017 ASTM D 974-2014 e2 IS 1448 (Part 1-Sec 1) 2002 RA 2007 IP139/98-2004 IP177/96, 2013 ISO 6619:1988 (RA 2012)	0.001 mg KOH/g to 50 mg KOH/g
9.	Lubricating Oils, Additives, Transformer Oils, Metalworking Oils & Fluids	Elemental Analysis – Additive, Contaminant & Wear Metals by RDE AES Ag Al Ba B Ca Cr Cd Cu Fe	ASTM D 6595-2017	0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 5000 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg

Sangeeta Negi
Convenor

Mallika Gope
Program Manager

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		Pb Mg Mn Li Mo Ni P K Si Sb Na Sn Ti V Zn		0 to 100 mg/kg 0 to 1500 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 1500 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 100 mg/kg 0 to 1500 mg/kg
10.	Lubricants	Elemental Analysis of Lubricants Ag Al Ba B Ca Cr Cu Fe Pb Mg Mn Li Mo Ni P K Si Sb	ASTM D 5185- 2013e1	0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 9000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 2500 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 3500 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Na Sn Ti V Zn S		0.1 mg/kg to 9000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 1000 mg/kg 0.1 mg/kg to 3500 mg/kg 1 mg/kg to 9000 mg/kg
11.	Lubricating Oils & Fluids, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Copper Strip Corrosion rating	ASTM D 130-2012 IS 1448 (Part 15) 2004 RA 2011 ISO 2160 : 2015 IP-154/2000; 2013	1a to 4c
12.	Lubricating Oils	FTIR – Oxidation / Nitration / Sulphation	ASTM E 2412-2010	0 to 1.00 abs/mm
13.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Water Content – Coulometric	ASTM D 6304 – 16 e1 ISO 12937; 2017 IP-539/06; 2008	10 mg/kg to 25000 mg/kg
14.	Lubricating Oils, Heat Treatment Oils, Thermic Fluids	Crackle Test	CTP-089 Issue No. 1 Issue Dt. 1.6.2016	Positive / Negative
15.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Water Content – Potentiometric	ASTM D 1744 – 2013 ASTM E 203 – 2016 IP-439/01 ISO 10336: 1997 (RA 2013)	200 mg/kg to 1000 mg/kg
16.	Lubricating Oils, Hydraulic Oils, Turbine Oils	Particle Count and Distribution	ISO 4406, 2017 SAE 4059, ASTM D 6786, ASTM D 7619, 2017 NAS 1638	Particles $\geq 4 \mu - 0 - 28$ ISO Code Particles $\geq 6 \mu - 0 - 28$ ISO Code Particles $\geq 14 \mu - 0 - 28$

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				ISO Code NAS 1 to NAS > 12
17.	Engine Oils	Soot Content	ASTM D 7686-2011	0 to 12 % by wt
18.	Lubricating Oils, Synthetic Oils	Identification by FTIR Analysis	ASTM E 1252-2013	NA
19.	Lubricating Oils, Metalworking Oils & Fluids, Heat Treatment Oils	Total Acidity	1448 (Part 2) 2007 RA 2013, ISO 6619: 2012 IP-538/06: 2008	0 to 5 mgKOH/g
20.	Petroleum Products	Refractive Index	ASTM D 1218-2016	1.3300 to 1.5000
21.	Lubricating Oils, Metalworking Fluids	Sulphur Content	ASTM D 4294-2016 e1	0.0017% to 4.6 % by wt
22.	Lubricating Oils, Metalworking Oils & Fluids, Heat Treatment Oils	Flash and Fire Point by Cleveland Open Cup	ASTM D 92-2016b 1448 (Part 69) 2013 ISO 2592:2017 IP-36; 2002	79 °C to 400 °C
23.	Lubricating Oils, Metalworking Oils & Fluids, Heat Treatment Oils	Flash Point (closed) by Pensky-Martens Apparatus	ASTM D 93-2016 a IS 1448 (Part 21) 2012 IP-35/63-2001	40°C to 360 °C
24.	Petroleum Solvents	Flash Point (closed) by Abel Apparatus	IS1448 (Part 20) 1998 RA 2008 IP-170/ 2014 ISO 13736: 2013	(-)15 °C to 70 °C
25.	Lubricating Oils & Fluids, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids, Grease	Water Content by Distillation	ASTM D 95-2013e1 IS 1448 (Part 40) 2015 IP-74- 2014	0.05% to 25 % by Vol
26.	Lubricating Oils & Fluids	Sulphated Ash	ASTM D 874-2013a 1448 (Part 4) 2008	0.005% to 5 % by wt

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			RA 2013 ISO 6245; 2012 IP-163/96; 2012	
27.	Lubricating Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Grease	Ash Content	ASTM D 482 2013 1448 (Part 4) 2008 RA 2013 ISO 6245; 2012 IP-04; 2012	0.001% to 3 % by wt
28.	Thermic Fluid, Quenching Oils	Conradson Carbon Residue of Petroleum Products	ASTM D 189-2014 1448 (Part 122) 2013 ISO 6615: 2014	Nil to 30 % by wt
29.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Pour Point	ASTM D 97-2017 a 1448 (Part 10, Sec 2) 2013, IP 15/95- 2014 ISO 3016:1994 (RA 2014)	(-)-60°C to 35 °C
30.	Lubricating Oils & Fluids, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Insolubles in Pentane, Coagulated Pentane, Toluene, Hexane, Heptane	ASTM D 893-2012 CTP – 015 Issue No. 1, Issue Dt. 1.6.2016	0.003% to 10% by wt
31.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Density, relative density by hydrometer method	ASTM D 1298-2012b IS 1448 (Part 16) 1990 RA 2013 IP 160/99	700 kg/m ³ to 1000 kg/m ³
32.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Density, relative density by auto densitometer	ASTM D 4052-18	700 kg/m ³ to 1000 kg/m ³

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33.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids	Density, relative density by Pyknometer	IS 1448 (Part 32) 1992 RA 2013 IP 189/05	700 kg/m ³ to 1500 kg/m ³
34.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils	Saponification Value	ASTM D 94-2017 IS 1448 (Part 55, Sec 1) 2004 RA 2011 IS 1448 (Part 55, Sec 1) 2004 RA 2011 IP 136/98-2006	0.5 to 400
35.	Lubricating Oils, Transformer Oils, Metalworking Oils & Fluids, Heat Treatment Oils, Thermic Fluids.	Sediments / Insoluble by Filtration	ASTM D 4055-2013	0 to 5 % by wt
36.	Lubricants	Foaming Tendency Stability (Sequence I, II & III)	ASTM D 892- 2013e1	0 to 800ml 0 to 800ml
37.	Lubricants	Demulsibility	ASTM D 1401- 2012e1	At 54 °C 40-40-0(30) to 0-0-80 (30) At 82 °C 40-40-0(60) to 0-0-80 (60)
38.	Engine Oil	Fuel Dilution	ASTM D 7593- 2014	Gasoline: 0 to 5% (m/m) Diesel: 0 to 10% (m/m) Biodiesel: 0 to 10% (m/m)

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39.	Thermic Fluids, Petroleum Solvents	Distillation Recovery	ASTM D 86-2017 IS 1448 (Part 18) 1991 RA 2011 IP 123/11-2014 ISO 3405:2011	Temp: 35 °C to 400 °C Recovery: 1 ml to 100 ml
40.	Lubricants	Organic Chloride	ASTM D 4929- 2017	1 mg/kg to 1000 mg/kg
41.	Grease	Drop Point	ASTM D 2265-2006 IS 1448 (Part 52) 2017 IP 132/96-2004	Up to 316 °C
42.	Grease	Acidity & Alkalinity	IS 1448 (Part 53) 1979 RA 2013 IP37/2015	0 to 1 mgKOH/g
43.	Grease	Copper Corrosion	ASTM D 4048-2016 IP 112/2011-2015	1a to 4c
44.	Grease	Cone Penetration(Worked and unworked)	ASTM D 217-2017 IS 1448 (Part 60) 1994 RA 2011 IP 50/88-2012	85 to 475
45.	Grease	Elemental Analysis Ag Al Ba B Ca Cr Cu Fe Pb Mg Mn Li Mo Ni P K	ASTM D 7303-2017	1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 9000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 9000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 9000 mg/kg 1 mg/kg to 9000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 9000 mg/kg 1 mg/kg to 1000 mg/kg

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		Si Sb Na Sn Ti V Zn S		1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 9000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 1000 mg/kg 1 mg/kg to 3500 mg/kg 1 mg/kg to 9000 mg/kg
II.	PETROLEUM			
1.	Diesel, LDO, Biodiesel, Marine Fuel	Colour & Appearance	CTP 112, Issue No. 1 Issue Dt. 1.6.2016	Qualitative
2.	Diesel, Kerosene, LDO, Biodiesel, Marine Fuel	Kinematic Viscosity @ 40 °C	ASTM D 445-2017 a IS 1448 (Part 25) 1976 RA 2013 IP-71 Sec.1/97 ASTM D 7042-2016e3	1 cSt to 460 cSt 1 cSt to 1500 cSt
3.	Biodiesel, Marine Fuel, Furnace Oil, LSHS	Kinematic Viscosity @ 100 °C	ASTM D 445-2017 a IS 1448 (Part 25) 1976 RA 2013 IP-71 Sec.1/97 ASTM D 7042-2016e3	1 cSt to 100 cSt
4.	Furnace Oil, Marine Residual Fuel, LSHS	Kinematic Viscosity @ 50°C	ASTM D 445-2017 a IS 1448 (Part 25) 1976 RA 2013 IP-71 Sec.1/97 ASTM D 7042-2016e3	10 cSt to 500 cSt 1 cSt to 500 cSt
5.	Diesel, Biodiesel, Marine Fuel	Total Acid Number	ASTM D 664-2017 ASTM D 974-2014 e2 IS 1448 (Part 1-Sec 1) 2002 RA 2007 IP139/98-2004 IP177/96, 2013 ISO 6619:1988 (RA 2012)	0.001 mg KOH/g to 50 mg KOH/g

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6.	Biodiesel, Marine Fuel, Diesel, LDO	Copper Strip Corrosion rating	ASTM D 130-2012 IS 1448 (Part 15) 2004 RA 2011 ISO 2160 : 2015 IP-154/2000; 2013	1a to 4c
7.	Diesel, LDO, Biodiesel, Marine Fuel	Water Content – Coulometric	ASTM D 6304 - 16 e1 ISO 12937; 2017 IP-539/06; 2008	10 mg/mg to 25000 mg/kg
8.	Diesel, Marine Fuel	Particle Count and Distribution	ISO 4406, 2017 SAE 4059, ASTM D 6786, ASTM D 7619, 2017 NAS 1638	Particles $\geq 4 \mu - 0 - 28$ ISO Code Particles $\geq 6 \mu - 0 - 28$ ISO Code Particles $\geq 14 \mu - 0 - 28$ ISO Code NAS 1 to NAS > 12
9.	Diesel, LDO, Biodiesel, Marine Fuel	Total Acidity	1448 (Part 2) 2007 RA 2013, ISO 6619: 2012 IP-538/06: 2008	0 to 5 mgKOH/g
10.	Petroleum Products	Refractive Index	ASTM D 1218-2016	1.3300 to 1.5000
11.	Diesel, LDO, Biodiesel, Furnace Oil, LSHS, Marine Fuels	Sulphur Content	ASTM D 4294-2016 e1	0.0017% to 4.6 % by wt
12.	Biodiesel, Marine Fuel, Furnace Oil, LSHS, Diesel, Kerosene, LDO	Flash Point (closed) by Pensky-Martens Apparatus	ASTM D 93-2016 a IS 1448 (Part 21) 2012 IP-35/63-2001	40°C to 360 °C
13.	Kerosene, Diesel	Flash Point (closed) by Abel Apparatus	IS1448 (Part 20) 1998 RA 2008 IP-170/ 2014 ISO 13736: 2013	(-)15 °C to 70 °C

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14.	Biodiesel, Marine Fuel, Furnace Oil, LSHS, Grease	Water Content by Distillation	ASTM D 95-2013e1 IS 1448 (Part 40) 2015 IP-74- 2014	0.05% to 25 % by Vol
15.	Bio Diesels	Sulphated Ash	ASTM D 874-2013a 1448 (Part 4) 2008 RA 2013 ISO 6245; 2012 IP-163/96; 2012	0.005% to 5 % by wt
16.	Biodiesel, Marine Fuel, Furnace Oil, LSHS, Diesel, Kerosene	Ash Content	ASTM D 482 2013 1448 (Part 4) 2008 RA 2013 ISO 6245; 2012 IP-04; 2012	0.001% to 3 % by wt
17.	Furnace Oils, LSHS	Conradson Carbon Residue of Petroleum Products	ASTM D 189-2014 1448 (Part 122) 2013 ISO 6615: 2014	Nil to 30 % by wt
18.	Diesel, LDO, Biodiesel, Marine Fuel	Pour Point	ASTM D 97-2017 a 1448 (Part 10, Sec 2) 2013, IP 15/95- 2014 ISO 3016:1994 (RA 2014)	(-)60°C to 35 °C
19.	Diesel	Cloud Point	ASTM D 2500- 2017 IP 219/94- 2013	(-)60°C to 35 °C
20.	Furnace Oil, Marine Fuel, Diesel LDO, LSHS	Heat of combustion of liquid hydrocarbon fuel by Bomb calorimeter Method	ASTM D 240-2009 IS 1448 (Part 6) 1984 RA 2013	3000 cal/g to 12000 cal/g
21.	Furnace Oil, Diesel, LDO, LSHS, Marine Fuel	Heat of combustion of liquid hydrocarbon fuel by Calculation	ASTM D 4868-2017 IS 1448 (Part 7) 2004 RA 2011	3000 cal/g to 12000 cal/g
22.	Furnace Oil, LDO, LSHS, Marine Fuel	Sulphur by Bomb Method	ASTM D 129 - 2013 IS 1448 (Part 33) 1991 RA 2013 IP 61; 2014	0.05% to 5 % by wt

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23.	Furnace Oil, LDO, LSHS, Marine Fuel	Chlorine Content by Bomb Method	ASTM D 808-16	0.1% to 5 % by wt
24.	Furnace Oils, Marine Fuels, LSHS	Asphaltenes	ASTM D 6560-2012 IS 1448 (Part 22) 1985 RA 2013 IP 143/ 2016	0.1% to 15% by wt
25.	Diesel	Cetane Index	ASTM D 4737-2016	30 to 70
26.	Marine Fuels	CCAI (Calculated Carbon Aromaticity Index)	CTP-094 (Calculation Method) Issue No. 1, Issue Dt. 1.6.2016	750 to 900
27.	Diesel, LDO, Biodiesel, Marine Fuel	Density, relative density by hydrometer method	ASTM D 1298-2012b IS 1448 (Part 16) 1990 RA 2013 IP 160/99	700 kg/m ³ to 1000 kg/m ³
28.	Diesel, LDO, Biodiesel, Marine Fuel	Density, relative density by auto densitometer	ASTM D 4052-18	700 kg/m ³ to 1000 kg/m ³
29.	Diesel, LDO, Biodiesel, Marine Fuel	Density, relative density by Pycnometer	IS 1448 (Part 32) 1992 RA 2013 IP 189/05	700 kg/m ³ to 1500 kg/m ³
30.	Gasoline, Diesel, Marine Fuel	Distillation Recovery	ASTM D 86-2017 IS 1448 (Part 18) 1991 RA 2011 IP 123/11-2014 ISO 3405:2011	Temp: 35 °C to 400 °C Recovery: 1 ml to 100 ml
31.	Fuels	Organic Chloride	ASTM D 4929- 2017	0 mg/kg to 1000 mg/kg
32.	Diesel, Biodiesel	Water and Sediment By Centrifuge	ASTM D 2709-2016	0.05 ml to 100 ml
33.	Diesel, LDO	Carbon Residue by Rams bottom method	ASTM D 524 -2015 1448 (Part 8) 2012 ISO 4262: 2014 IP14/94-2004	0.01% to 5 % by wt

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34.	Diesel, LDO	Sediments by extraction	ASTM D 473-2017 1448 (Part 30) 2013 ISO 3735:2010 IP 53-2014	Nil to 3 % by wt
35.	Diesel , Biodiesel, Marine Fuels	Determination of Cold Filter Plugging Point	ASTM D 6371-2017 IS 1448 (Part 110) 1981 RA 2013 IP 309/2016	(-)20 to + 20 °C
36.	Diesel	Total Contamination	EN 12662	1 mg/kg to 100 mg/kg
37.	Biodiesel	Fatty Acid Methyl Ester (FAME)	EN 14078	1.7% v/v to 22.7 % v/v
38.	Biodiesel	Fatty Acid Methyl Ester (FAME)	EN 14103	Ester Content – 0 to 100% m/m Linoleic Acid - 1% m/m 15% m/m
39.	Biodiesel, Diesel	Elemental Analysis of Fuel Samples Al Cr Cu Fe Pb Mg Mn Li Ca Ba Mo Ni K Na Si V Zn Ag	ASTM D 7111- 2016	0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg 0.1 mg/kg to 10 mg/kg

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40.	Fuels & Residual Fuels	Ti Elemental Analysis of Fuel Oil Samples Al Ca Fe Ni Si Na P V Zn	IP 501- 2005	0.1 mg/kg to 10 mg/kg 5 mg/kg to 150 mg/ kg 3 mg/kg to 100 mg/kg 2 mg/kg to 60 mg/kg 1 mg/kg to 100 mg/kg 10 mg/kg to 250 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 60 mg/kg 1 mg/kg to 400 mg/kg 1 mg/kg to 70 mg/kg
41.	Coolants	pH	ASTM D 1287-2011 IS 5759 – 2006	0 to 14
42.	Coolants	Freezing Point by Refract meter	ASTM D 3321-2013	0 to (-)42 °C
43.	Coolants	Boiling Point/ERBP	ASTM D 1120-2017 IS 5759 – 2006	50 °C to 200 °C
44.	Coolants	Reserve Alkalinity	ASTM D 1121-2011 IS 5759 – 2006	0 to 30 ml
45.	Coolants	Specific Gravity	ASTM D 1122-2017 IS 5759 – 2006	1.0 g/cc to 1.5 g/cc
46.	Coolants	Water Content	IS 5759 – 2006, (ANNEX F) KF Method	1.0% to 70 %
47.	Coolants	Foaming	ASTM D 4921-2012 IS 5759 – 2006	0 to 30 ml
48.	Coolant	Chloride Content	ASTM D 3634- 2015	5 mg/kg to 200 mg/kg
49.	Coolants	Elemental Analysis of Coolant Samples Al B Ca Cu Fe	ASTM D 6130- 2017c e1	1 mg/kg to 100 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 100 mg/kg

Laboratory

Chem-Tech Laboratories Private Limited, Plot No. 22, Parvati Industrial Estate, Pune-Satara Road, Pune, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7695 (in lieu of T-1143)

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Pb Mg Mo P Si Na K Sn Zn		1 mg/kg to 100 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 10000 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 2000 mg/kg 1 mg/kg to 10000 mg/kg 1 mg/kg to 10000 mg/kg 1 mg/kg to 100 mg/kg 1 mg/kg to 100 mg/kg
50.	Adblue, DEF, AUS 32	Refractive Index	ISO 22241-2:2006 annex C	1.33 to 1.39
51.	Adblue, DEF, AUS 32	Urea by Refractive index Calculation	ISO 22241-2:2006 annex C	30% to 35 % (m/m)
52.	Adblue, DEF, AUS 32	Alkalinity	ISO 22241-2:2006 annex D	0.1% to 0.5%
53.	Adblue, DEF, AUS 32	Biuret Content	ISO 22241-2:2006 annex E	0.1% to 0.5%
54.	Adblue, DEF, AUS 32	Aldehyde	ISO 22241-2:2006 annex F	0.5 mg/kg to 10 mg/kg
55.	Adblue, DEF, AUS 32	Insoluble Matter	ISO 22241-2:2006 annex G	1 mg/kg to 1000 mg/kg
56.	Adblue, DEF, AUS 32	Phosphate	ISO 22241-2:2006 annex H	0.05 mg/kg to 10 mg/kg
57.	Adblue, DEF, AUS 32	Trace elements Al Ca Cr Cu Fe K Mg Na Ni Zn	ISO 22241-2:2006 annex I	0.02 mg/kg to 10 mg/kg 0.02 mg/kg to 10 mg/kg 0.02 mg/kg to 10 mg/kg 0.02 mg/kg to 10 mg/kg 0.02 mg/kg to 10 mg/kg 0.05 mg/kg to 10 mg/kg 0.05 mg/kg to 10 mg/kg 0.05 mg/kg to 10 mg/kg 0.02 mg/kg to 10 mg/kg 0.02 mg/kg to 10 mg/kg

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
58.	Adblue, DEF, AUS 32	Identity by FTIR	ISO 22241-2:2006 annex J	Qualitative