

Laboratory NTPC Energy Technology Research Alliance (NETRA), NTPC Ltd.,
Plot No. E-3, Ecotech-II, Greater Noida, Gautam Budh Nagar,
Uttar Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Discipline Chemical Testing

Issue Date 09.12.2016

Certificate Number T-0303

Valid Until 08.12.2018

Last Amended on -

Page 1 of 5

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	SOLID FUELS			
1.	Coal & Coke	Proximate Analysis Moisture Ash Volatile Matter	IS 1350 (Part 1): 1984 (RA 2013) (Rev. 2) with Amd. 1: 1992, RA: 2013	0.3 % to 25 % 5 % to 60 % 19 % to 55 %
		GCV	IS 1350 (Part 2): 1970, (RA 2015)	2200 kcal/kg to 8900 kcal/kg
2.	Activated Carbon Granular	Iodine No.	IS 2752: 1995 (1999) (Page. 2-3) (Edition 4.1): (2004-10)	200 mg/g to 1000 mg/g carbon
3.	Activated Carbon	Moisture (%)	IS 877: 1989 (Page. 1)	1 % to 10 %
		Ash (%)	IS 877: 1989 (Page. 1) (RA 1999)	1 % to 10 %
4.	Elemental Composition in Coal Ash	MgO	ASTM D 4326-13/ ESG-XRF-01	0.01 % to 10 %
		Al ₂ O ₃		10 % to 35 %
		SiO ₂		35 % to 70 %
		SO ₃		0.01 % to 3 %
		CaO		0.01 % to 30 %
		Fe ₂ O ₃		0.1 % to 20 %

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Convenor

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Last Amended on	-	Page	2 of 5

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II. PLASTIC & RESINS				
1.	Strong Acid Cation And Strong Base Anion Resin	Operating Capacity	ASTM D1782-95 (2009) (Page. 54-59)	SAC 20 g/CaCO ₃ /l resin to 60 g/CaCO ₃ /l resin
			ASTM D3087-91 (2009) (Page. 179-182)	SBA 15 g /CaCO ₃ /l resin to 40 g /CaCO ₃ /l resin
		Total exchange capacity	ASTM D-2187-94 (2009) (Page. 110-128)	SAC 50 g/CaCO ₃ /l resin to 100 g/CaCO ₃ /l resin SBA 10 g/CaCO ₃ /l resin to 75 g/CaCO ₃ /l resin
		Salt splitting capacity	ASTM D-2187-94 (2009) (Page. 110-128)	SAC 50 g/CaCO ₃ /l resin to 100 g/CaCO ₃ /l resin SBA 10 g/CaCO ₃ /l resin to 75 g/CaCO ₃ /l resin
		Moisture retention capacity.	ASTM D-2187-94 (2009) (Page. 110-128)	25 % to 70 %
2.	Weak Acid Cation And Weak Base Anion Resin	Total exchange capacity	IS 7330: 1988 (2004) (Page. 11-13)	WAC 80 g/CaCO ₃ /l resin to 200 g/CaCO ₃ /l resin WBA 20 g/CaCO ₃ /l resin to 80 g/CaCO ₃ /l resin
		Moisture retention	ASTM D-2187-94 (2009) (Page. 110-128)	25 % to 70 %
III. POLLUTION & ENVIRONMENT				
1.	Water Effluents	Heavy Metals, Toxic Metals & Fluoride Copper	APHA (22 nd Edition): 2012 AAS / Flame Mode Method. 3111B/3500-Cu A; Page. 3-71	50 µg/l to 500 µg/l 500 µg/l to 2000 µg/l

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Last Amended on	-	Page	3 of 5

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	Water Effluents	Iron	Method. 3111B/3500-Fe A; Page. 3-76	50 µg/l to 500 µg/l 500 µg/l to 5000 µg/l
		Lead	Method. 3111B/3500-Pb A; Page. 3-79	50 µg/l to 200 µg/l 200 µg/l to 2000 µg/l
		Zinc	Method. 3111B-3500-Zn A; Page. 3-106	20 µg/l to 200 µg/l 200 µg/l to 1000 µg/l
		Cadmium	Method. 3111B/3500-Cd; Page. 3-64	50 µg/l to 500 µg/l 500 µg/l to 2000 µg/l
		Chromium	Method. 3111B/3500-Cr A; Page. 3-67	50 µg/l to 5000 µg/l 500 µg/l to 5000 µg/l
		Mercury	Method. 3114C/ 3500 Hg; Page. 3-37	50 µg/l to 500 µg/l
		Fluoride	Method No.4500-F D Page. 4-85	100 µg/l to 1000 µg/l
		pH	APHA 4500-H ⁺ (p.4-91 to 4-96)	1 to 13
		Conductivity	APHA (2510) (p.2-52 to 2-55)	1 µs/cm to 1,00,000 µs/cm
		Turbidity	APHA (2130) (p. 2-12 to 2-15)	0.02 NTU to 1000 NTU
		BOD	APHA 5210B (p.5-4 to 5-16)	1 mg/l to 350 mg/l
		COD	APHA 5220D (p.5-16 to 5-21)	3 mg/l to 1500 mg/l
2.	Scale Inhibitors	Percentage Efficiency of Inhibition	NACE-TM 0374: 2007 (P-1 –4)	1 % to 100 %

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Last Amended on - **Page** 4 of 5

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3.	Boiler Tube Internal Deposit	Deposit weight density measurement	ASTM-D-3483 (1999) (P-590 – 592)	1 mg/cm ² to 500 mg/cm ²
4.	Water Samples	Corrosion / Scaling behaviour	IS 3025 & IS 8188: (1999) (P-214 – 218)	LSI (-3) to (+3) RSI 4 to 12
IV. LUBRICANTS				
1.	Lubricating Oil & Fire Resistant Control Fluid	Particle Quantification (PQ) Index	SOP DOC/NETRA/QWI/1001 Issue. 2 & Issue Dated 06/05/2016	0 to 5000 PQ Index Limit of detection : 5 PQ
		Ferrographic Analysis	SOP DOC/NETRA/QWI/1002 Issue. 2 & Issue Dated 06/05/2016	5µm to 200 µm & Limit of detection: 5 µm
		Moisture Content	ASTM D6304: 2016	5 ppm to 10000 ppm Limit of detection: 5 ppm
		Total Acid Number (TAN)	ASTM D974: 2014	(0.01 mg to 2.0 mg) KOH/g of Oil Limits of detection: 0.01 mg KOH/g of Oil
		Kinematic Viscosity	ASTM D445: 2015	0.5 cSt to 100 cSt at 40°C Limit of detection: 0.5 CST
		Color of oil	ASTM D1500: 2012	0.5 CU to 8 CU Limit of detection: 0.5 CU
2.	Lubricating Oil	Copper strip corrosion	ASTM D130: 2012	Qualitative 1a to 4c

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Last Amended on - **Page** 5 of 5

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	Lubricating Oil	Rust Preventive characteristics	ASTM D665: 2014	Qualitative
3.	Insulating Oil	Dissolved Gas Analysis (DGA)	ASTM D 3612: 2009 Method-C	H ₂ , Hydrocarbons: >1 ppm CO, CO ₂ :> 25 ppm N ₂ & O ₂ : >50 ppm
		Moisture Content	ASTM D6304: 2016	5 ppm to 5000 ppm
		Kinematic Viscosity	ASTM D445: 2015	2 cSt to 100 cSt @ 40°C Detection limit -1 cSt
		Total Acidity	ASTM D974: 2016	(0.01 mg to 5.0 mg) KOH/g of Oil Detection Limit- 0.01 mg/g of Oil
		Dielectric Strength (BDV)	IS-6792:2003	2 kV to 100 kV Detection Limit: 2 kV
		Specific Resistance (Resistivity) and Tan Delta	ASTM D924: 2015 ASTM D1169: 2011	SR: 10 ⁹ Ω-cm to 10 ¹⁵ Ω-cm Detection Limit: 10 ⁹ Ω-cm Tan Delta: 0.0005 to 1.000 Detection Limit: 0.0005

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