

Laboratory **Yugantar Bharati Analytical & Environmental Engineering Laboratory,**
Sidroul, P.O.-Namkum, PS.-Namkum, Dist.-Ranchi, Jharkhand

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

Certificate Number **TC-7813**

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Validity **30.08.2018 to 29.08.2020**

Last Amended on **19.11.2018**

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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BIOLOGICAL TESTING

I.	WATER			
1.	Drinking Water, Surface Water, Ground Water	Total Coliform	APHA (22nd Edition 2012) 9221-B	<1.8 to >1600 MPN/100ML
		Fecal Coliform	APHA (22nd Edition 2012) 9221-E	<1.8 to >1600 MPN/100ML
		E.coli	APHA (22nd Edition 2012) 9221-F	<1.8 to >1600 MPN/100ML
		Fecal Streptococci/Enterococcus	APHA (22nd Edition 2012) 9221-B	<1.8 to >1600 MPN/100ML
		Heterotrophic Plate Count (HPC)	APHA (22nd Edition 2012) 9221-B	<1 cfu/ml
II.	POLLUTION AND ENVIRONMENT			
1.	Waste Water, Industrial & Domestic effluent	Total Coliform	APHA (22nd Edition 2012) 9221-B	<1.8 to >1600 MPN/100ML
		Fecal Coliform	APHA (22nd Edition 2012) 9221-E	<1.8 to >1600 MPN/100ML
		E.coli	APHA (22nd Edition 2012) 9221-F	<1.8 to >1600 MPN/100ML
		Fecal Streptococci/Enterococcus	APHA (22nd Edition 2012) 9221-B	<1.8 to >1600 MPN/100ML
		Heterotrophic Plate Count (HPC)	APHA (22nd Edition 2012) 9221-B	<1 cfu/ml

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CHEMICAL TESTING

I.	WATER			
1.	Ground Water, Surface water, Drinking Water, Swimming pool water, Cooling water & Boiler water	Nitrate (NO ₃)	APHA 4500 NO ₃ (B) 23 rd edition 2017	0.1 mg/l to 35.0 mg/l
		Fluoride (F ⁻)	APHA 4500 F(C) 23 rd edition 2017	0.1 mg/l to 5.0 mg/l
		Zinc (zn)	APHA 3111 B 23 rd edition 2017	0.1 mg/l to 5.0 mg/l
		Iron (Fe)	APHA 3111 B 23 rd edition 2017	0.1 mg/l to 10 mg/l
		Conductivity	Method:IS 3025 (Part 14) 2013	5 µs/cm to 2000 ms/cm
		Colour	IS 3025 (Part 4) 1983	5 to 500
		pH value	IS 3025 (Part 11) 2002	2 to 12
		Total Solid (TS)	IS 3025 (Part 15) 2009	2 mg/l to 1000 mg/l
		Total Dissolved Solid (TDS)	IS 3025 (Part 16) 2006	5 mg/l to 1000 mg/l
		Total Suspended Solid (TSS)	IS 3025 (Part 17) 2012	2 mg/l to 1000 mg/l
		Turbidity	IS 3025 (Part 10) 2002	0.1NTU to 100 NTU
		Acidity	IS 3025 (Part 22) 2003	2 mg/l to 1000 mg/l
		Alkalinity	IS 3025 (Part 23) 2003	2 mg/l to 2000 mg/l
		Chloride	IS 3025 (Part 32) 2003	2 mg/l to 1000 mg/l
		Chlorine Residual	IS 3025 (Part 26) 2003	0.07 mg/l to 10mg/l
		Total Hardness	IS 3025 (Part 21) 2009	2 mg/l to 1000 mg/l
	Dissolved Oxygen (DO)	IS 3025 (Part 38) 2003	0.4 mg/l to 12 mg/l	
	Nitrite Nitrogen	IS 3025 (Part 34) 2003	0.01mg/l to 0.025 mg/l	
	Sulphate	IS 3025 (Part 24) 2003	1.0 mg/l to 40 mg/l	
	Bio-Chemical Oxygen Demand (BOD)	IS 3025 (Part 44) 2009	0.2 mg/l to 100 mg/l	

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		Chemical Oxygen Demand (COD)	IS 3025 (Part 58) 2006	2 mg/l to 400 mg/l
		Oil & Grease	IS 3025 (Part 39) 2003	4 mg/l to 100 mg/l
		Sodium (Na)	Method 3111 Na (B) APHA 23 rd edition 2017	0.01 mg/l to 1000mg/l
		Potassium (K)	Method 3111 K (B) APHA 23 rd edition 2017	0.01 mg/l to 300mg/l
		Chromium (Cr)	Method 3111 Cr (B) APHA 23 rd edition 2017	0.02 mg/l to 10mg/l
		Lead (Pb)	Method 3111 Pb (B) APHA 23 rd edition 2017	0.05mg/l to 15mg/l
		Cadmium (Cd)	Method 3111 Cd (B) APHA 23 rd edition 2017	0.01mg/l to 10mg/l
		Copper (Cu)	Method 3111 Cu (B) APHA 23 rd edition 2012	0.01 mg/l to 10mg/l
		Calcium (Ca)	Method:IS 3025 (Part 40) 2003	2 mg/l to 1000mg/l
		Magnesium (Mg)	Method:IS 3025 (Part 46) 2003	2 mg/l to 1000mg/l
		Nickel (Ni)	Method 3111 Ni (B) APHA 23 rd edition 2017	0.02mg/l to 15mg/l
		Selenium (Se)	Method 3111 S (B) APHA 23 rd edition 2017	0.01 mg/l to 100mg/l
		Arsenic (As)	Method 3114 As (B) APHA 23 rd edition 2017	0.003 µg/l to 10mg/l
		Mercury (Hg)	Method 3112 Hg (B) APHA 23 rd edition 2017	0.003 µg/l to 10mg/l
		Cobalt (Co)	Method 3111 Co (B) APHA 23 rd edition 2017	0.03 mg/l to 10mg/l
II.	ATMOSPHERIC POLLUTION			
1.	Ambient Air/ work zone air	Particulate Matter (PM _{2.5})	US EPA-40 CFR (Part 50) (50.7)	5 µg/m ³ to 200 µg/m ³

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		Respirable Suspended Particulate Matter (RSPM), PM ₁₀	IS 5182 (Part 23) 2006	3.5µg/m ³ to 1000 µg/m ³
		Sulphur dioxide	IS 5182 (Part 02) 2001 (RA 2012)	3µg/m ³ to 700 µg/m ³
		Oxides of Nitrogen	IS 5182 (Part 06) 2006 (RA 2012)	9µg/m ³ to 750 µg/m ³
		Ammonia (NH ₃)	SOP No. YBAEEL/SOP/AIR/01 Issue No.-01 Issue date-04-12-2017	3 µg/m ³ to 700 µg/m ³
		Lead (Pb)	IS 5182 (Part 22) 2004	2.2 µg/m ³ to 1000 µg/m ³
2.	Stationary Source/Stack/Chimney Emission	Particulate Matter (PM)	IS11255 (Part 1) 2009	5 mg/Nm ³ to 1050 mg/Nm ³
		Sulphur Dioxide (SO ₂)	IS 11255 (Part 2) 2009	5 mg/m ³ to 500 mg/Nm ³
		Carbon Monoxide (CO)	IS 13270:1992 (RA 2009)	0.1% to 2 % v/v
		Carbon dioxide (CO ₂)	IS 13270:1992 (RA 2009)	0.1% to 15 % v/v
		Oxygen (O ₂)	IS 13270:1992 (RA 2009)	1% to 21 % v/v
3.	Noise (Ambient/Source/DG)	Ambient Noise, Leq dB(A)	IS 9876:1981 (RA 2007) CPCB method (S.O.50 (E) dated 11.01.2010	23 dB (A) to 131 dB (A)
		DG set Noise dB (A)	IS 9876:1981 (RA 2007) CPCB method (G.S.R 215 (E) dated 15.3.2011	23 dB (A) to 131 dB (A)
		Source/Machine dB (A)	IS 10988:1984. (RA 2010)	34 dB to 134 dB
III.	POLLUTION & ENVIRONMENT			
1.	Waste Water (Industrial/Domestic effluent)	Nitrate (NO ₃)	APHA 4500 NO ₃ (B) 23 rd edition 2017	0.1 to 35.0 mg/l
		Fluoride (F ⁻)	APHA 4500 F(C) 23 rd edition 2017	0.1 mg/l to 5.0 mg/l
		Zinc (zn)	APHA 3111 B 23 rd edition 2017	0.1 mg/l to 5.0 mg/l

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		Iron (Fe)	APHA 3111 B 23 rd edition 2017	0.1 mg/l to 10 mg/l
		Conductivity	IS 3025 (Part 14) 2013	5µs/cm to 2000 µs/cm
		Colour	IS 3025 (Part 4) 1983	5 to 500
		pH	IS 3025 (Part 11) 2002	2 to 12
		Total Solid (TS)	IS 3025 (Part 15) 2009	2 mg/l to 1000 mg/l
		Total Dissolved Solid (TDS)	IS 3025 (Part 16) 2006	5 mg/l to 4000 mg/l
		Total Suspended Solid (TSS)	IS 3025 (Part 17) 2012	2 mg/l to 1000 mg/l
		Turbidity	IS 3025 (Part 10) 2002	1 NTU to 400 NTU
		Acidity	IS 3025 (Part 22) 2003	2 mg/l to 1000 mg/l
		Alkalinity	IS 3025 (Part 23) 2003	2 mg/l to 2000 mg/l
		Chloride	IS 3025 (Part 32) 2003	2 mg/l to 1000 mg/l
		Chlorine Residual	IS 3025 (Part 26) 2003	0.07 mg/l to 10 mg/l
		Total Hardness	IS 3025 (Part 21) 2009	2 mg/l to 2000 mg/l
		Dissolved Oxygen (DO)	IS 3025 (Part 38) 2003	0.4 mg/l to 50 mg/l
		Nitrite Nitrogen	IS 3025 (Part 34) 2003	0.2 mg/l to 50 mg/l
		Sulphate	IS 3025 (Part 24) 2003	0.1 mg/l to 1000 mg/l
		Bio-Chemical Oxygen Demand (BOD)	IS 3025 (Part 44) 2009	0.4 mg/l to 1000 mg/l
		Chemical Oxygen Demand (COD)	IS 3025 (Part 58) 2006	4 mg/l to 10,000 mg/l
		Oil & Grease	IS 3025 (Part 39) 2003	1 mg/l to 100 mg/l
		Sodium (Na)	Method 3111 Na (B) APHA 23 rd edition 2017	0.002 mg/l to 1000 mg/l
		Potassium (K)	Method 3111 K (B) APHA 23 rd edition 2017	0.005 mg/l to 300 mg/l
		Chromium (Cr)	Method 3111 Cr (B) APHA 23 rd edition 2017	0.02 mg/l to 10 mg/l
		Lead (Pb)	Method 3111 Pb (B) APHA 23 rd edition 2017	0.05 mg/l to 15 mg/l
		Cadmium (Cd)	Method 3111 Cd (B) APHA 23 rd edition 2017	0.002 mg/l to 10 mg/l

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		Copper (Cu)	Method 3111 Cu (B) APHA 23 rd edition 2012	0.01 mg/l to 10 mg/l
		Calcium (Ca)	Method:IS 3025 (Part 40) 2003	2 mg/l to 1000 mg/l
		Magnesium (Mg)	Method:IS 3025 (Part 46) 2003	2 mg/l to 1000 mg/l
		Nickel (Ni)	Method 3111 Ni (B) APHA 23 rd edition 2017	0.02 mg/l to 15 mg/l
		Selenium (Se)	Method 3111 S (B) APHA 23 rd edition 2017	0.01 mg/l to 10 mg/l
		Arsenic (As)	Method 3114 As (B) APHA 23 rd edition 2017	0.003 µg/l to 500 µg/l
		Mercury (Hg)	Method 3112 Hg (B) APHA 23 rd edition 2017	0.003 µg/l to 500 µg/l
		Cobalt (Co)	Method 3111 Co (B) APHA 23 rd edition 2017	0.03 mg/l to 10 mg/l
2.	Soil & Waste (Sludge, Slurry)	Exchangeable Potassium	IS 2720 (Part 24) 1976	5 mg/kg to 1000 mg/kg
		Exchangeable Sodium	IS 2720 (Part 24) 1976	5 mg/kg to 1000 mg/kg
		Exchangeable Calcium	IS 2720 (Part 24) 1976	5 mg/kg to 10,000 mg/kg
		Exchangeable Magnesium	IS 2720 (Part 24) 1976	5 mg/kg to 5000 mg/kg
		Sulphate as SO ⁴	IS 2720 (Part 27):1977	5 mg/kg to 1000 mg/kg
		Chloride as Cl	YBAEEL/SOP/Soil/01/00 Issue No.: -01 Issue date: -04-12-2017	5 mg/kg to 1000 mg/kg
		Organic Matter	IS 2720 (Part 22):1972	0.1% to 2 %
		Moisture	IS 2720 (Part 2):1973	0.1 % to 50 %
		pH value	IS 2720 (Part 26):1987	2 to 12
		Electrical Conductivity	IS 14767:2002	(5 to 100000) µmhos/cm
	Phosphorous as p	YBAEEL/SOP/Soil/01/00 Issue No.: -01 Issue date: -04-12-2017	2 to 100 mg/kg	

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		TKN as N	YBAEEL/SOP/Soil/01/00 Issue No.:01 Issue date:-04-12-2017	5.0 mg/kg to 1000 mg/kg
		Iron as Fe	Method 3111 (B), APHA 23 rd edition 2017	1.0 mg/kg to 5000 mg/kg
		Lead as Pb	Method 3111 (B), APHA 23 rd edition 2017	5.0 mg/kg to 1000 mg/kg
		Zinc as Zn	Method 3111 (B), APHA 23 rd edition 2017	0.5 mg/kg to 1000 mg/kg
		Nickel as Ni	Method 3111 (B), APHA 23 rd edition 2017	1 mg/kg to 1000 mg/kg
		Cadmium as Cd	Method 3111 (B), APHA 23 rd edition 2017	2.0 mg/kg to 1000 mg/kg
		Chromium as Cr	Method 3111 (B), APHA 23 rd edition 2017	1.0 mg/kg to 1000 mg/kg
		Copper as Cu	Method 3111 (B), APHA 23 rd edition 2017	0.5 mg/kg to 1000 mg/kg