

Laboratory

UniStar Environment and Research Labs Pvt. Ltd. (Laboratory Division), White House, 1st & 2nd Floor, Plot No. C-5/24, Char Rasta, Vapi, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7753 (in lieu of T-2239, T-2240)

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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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BIOLOGICAL TESTING

I.	WATER			
1.	Drinking water Ground water Surface water Distilled & Demineralized Water (R.O Water)	Presence-Absence (P-A) of Coliform	APHA 23 rd Ed. 2017 9221-D 9-75	Qualitative Present or Absent/100ml
		Standard Total Coliform	APHA 23 rd Ed. 2017 9221-B 9-69 By Fermentation Technique (MPN)	≤1.8 to >1600 MPN index/100ml
		Thermotolarent (Fecal) Coliform	IS 1622:1981 (RA 2014) By Fermentation Technique (MPN)	<2 to 1600 MPN index/100ml
		Total Coliform	APHA 23 rd Ed. 2017 9222-B 9-82 Membrane Filtration procedure (MFT)	≥ 1 C.F.U/100 ml
		Thermotolarent (Fecal) Coliform	APHA 23 rd Ed. 2017 9222-D 9-89 Membrane Filtration procedure (MFT)	≥ 1 C.F.U/ 100 ml
		Total Bacterial Count/ Total Plate Count	APHA 23 rd Ed. 2017 9215-C 9-57 Standard Plate Method	≥ 2 C.F.U/ ml
		E.coli	IS 1622:1981 (RA 2014) By Fermentation Technique (MPN)	<2 to 1600 MPN index/100ml
		Enumeration of E. Coli	IS 15185:2016 Membrane Filtration Technique (MFT)	≥ 1 C.F.U /100 ml

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		Faecal Streptococci/ Enumeration of Enterococci	IS 15186:2002 (RA 2009) Membrane Filtration Technique (MFT)	> 1 C.F.U./ 100 ml
		Pseudomonas aeruginosa	APHA 23 rd Ed. 2017 9213-E 9-51 Membrane Filtration technique (MFT)	> 1 C.F.U /100 ml
		Detection of Salmonella spp.	IS 15187:2016	Qualitative Present or Absent/ 100 ml or 250 ml
		Faecal Streptococci/ Enumeration of Enterococci	IS 1622:1981 (RA 2014) By Fermentation Technique (MPN)	<2 to 1600 MPN index/100ml
II.	ENVIRONMENT AND POLLUTION			
1.	Effluents/ Waste Water (Domestic & Industrial Waste water)	Presence-Absence (P-A) of Coliform	APHA 23 rd Ed. 2017 9221-D 9-75	Qualitative Present or Absent/100ml
		Standard Total Coliform	APHA 23 rd Ed. 2017 9221-B 9-69 By Fermentation Technique (MPN)	≤1.8 to >1600 MPN index/100ml
		Standard Total Coliform	APHA 23 rd Ed. 2017 9222-B 9-82 Membrane Filtration Technique (MFT)	≥ 1 C.F.U /100 ml
		Thermotolerant Fecal Coliform	IS 1622:1981, (RA 2014) By Fermentation Technique (MPN)	<2 to 1600 MPN index/100 ml

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		Thermotolerant Fecal Coliform	APHA 23 rd Ed. 2017 9222-D 9-89 Membrane Filtration Procedure (MFT)	≥ 1 C.F.U./ 100 ml
		Total Bacterial Count/Total Plate Count	APHA 23 rd Ed. 2017 9215-C, 9-57 Standard Plate Method	≥ 2 C.F.U./ ml
		E.Coli	IS 1622:1981 (RA 2014) By Fermentation Technique (MPN)	<2 to 1600 MPN index/100 ml
		Enumeration of E. Coli	IS 15185:2016 Membrane Filtration technique (MFT)	≥ 1 C.F.U /100 ml

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CHEMICAL TESTING

I.	ATMOSPHERIC POLLUTION			
1.	Ambient Air Quality Monitoring	Particulate Matter PM ₁₀	IS 5182 (Part 23):2006 (RA 2017) Gravimetric Method	10 µg/m ³ to 1000 µg/m ³
		Particulate Matter PM _{2.5}	Lab SOP No. UERL/AIR/SOP/11 Issue No:03 Issue Date:01/09/2016 Gravimetric Method	10 µg/m ³ to 200 µg/m ³
		Sulphar Dioxide	IS 5182 (Part 2):2001 (RA 2017)	4 µg/m ³ to 1050 µg/m ³
		Oxides of Nitrogen	IS 5182 (Part 6):2006 (RA 2017)	6 µg/m ³ to 420 µg/m ³
		Lead	IS 5182 (Part 22):2004 (RA 2014) By AAS Method	0.5 µg/m ³ to 10 µg/m ³
		Ammonia	Lab SOP No. UERL/AIR/SOP/05 Issue No:03 Issue Date:01/09/2016	20 µg/m ³ to 400 µg/m ³
		Nickel	IS 5182 (Part 22):2004 (RA 2014) By AAS Method	1 ng/m ³ to 30 ng/m ³
		Arsenic	IS 5182 (Part 22):2004 (RA 2014) By AAS Method	1 ng/m ³ to 20 ng/m ³

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		Ozone	IS 5182 (Part 9):1974 (RA 2014) UV Spectrophotometric Method	5 µg/m ³ to 200 µg/m ³
		Benzene	IS 5182 (Part 11):2006 (RA 2017) Method-1 By GC Method	1 µg/m ³ to 10 µg/m ³
		Benzo(a) pyrene	IS 5182 (Part 12):2004 (RA 2014) By GC Method	0.1 ng/m ³ to 5 ng/m ³
		Chlorine as Cl ₂	IS 5182 (Part 19):1982 (RA 2014) Methyl Orange Method	2 µg/m ³ to 100 µg/m ³
		Carbon Monoxide	IS 5182 (Part 10):1999 (RA 2014) Indicator Tube Method	1 mg/m ³ to 30 mg/m ³
		Chloride Content as Cl	Lab SOP No. UERL/AIR/ SOP/25 Issue No:03 Issue Date:01/09/2016	10 µg/m ³ to 300 µg/m ³
2.	Stack Emission Monitoring	Particulate Matter	IS 11255 (Part 1):1985 (RA 2014)	10 mg/Nm ³ to 500 mg/Nm ³
		Sulphur Dioxide	IS 11255 (Part 2):1985 (RA 2014)	4 mg/m ³ to 1000 mg/m ³
		Oxides of Nitrogen	IS 11255 (Part 7):2005 (RA 2017) Amds.1	5 mg/m ³ to 400 mg/m ³
		Hydrogen Sulphide as H ₂ S	IS 11255 (Part 4):2006 (RA 2017) Titrimetric Method	5 mg/Nm ³ to 100 mg/Nm ³
		Ammonia as NH ₃	IS 11255 (Part 6):1999 (RA 2014) Titrimetric Method	5 mg/Nm ³ to 300 mg/Nm ³

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		Chlorine as Cl ₂	Lab SOP No. UERL/AIR/SOP/31 Issue No:03 Issue Date:01/09/2016	1 mg/Nm ³ to 50 mg/Nm ³
II.	POLLUTION & ENVIRONMENT			
1.	Waste Water, (Raw & Treated Liquid Effluent & Sewage)	Ammonical Nitrogen as N	APHA 23 rd Ed.2017 4500-NH ₃ B 4-114 & C 4-116 IS 3025 (Part 34):1988 (RA 2014) By Titrimetric Method	2 mg/L to 500 mg/L
		Arsenic as As	APHA 23 rd Ed.2017 3114 C 3-40	0.01 mg/L to 10 mg/L
		Biochemical Oxygen Demand (3 days, 27 ^o C)	IS 3025 (Part 44):1993 (RA 2014) Amds.1 Iodometric Method	1 mg/L to 10000 mg/L
		Cadmium as Cd	APHA 23 rd Ed.2017 3111 B 3-20 IS 3025 (Part 41):1992 (RA 2014)	0.003 mg/L to 10 mg/L
		Calcium as Ca & Calcium Hardness as CaCO ₃	APHA 23 rd Ed.2017 3500 B 3-69 EDTA Titrimetric Method	1 mg/L to 5000 mg/L
		Chemical Oxygen Demand	APHA 23 rd Ed.2017 5220-B 5-18 IS 3025 (Part 58):2006 (RA 2017) Open Reflux Method	2 mg/L to 30000 mg/L
		Chloride as Cl	APHA 23 rd Ed.2017 4500-Cl B 4-75 IS 3025 (Part 32):1988 (RA 2014)	1 mg/L to 50000 mg/L

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		Chromium (Hexavalent) as Cr ⁶⁺	Argentometric Method APHA 23 rd Ed.2017 3500-Cr B 3-70 Colorimetric UV Spectrophotometric Method	0.05 mg/L to 10 mg/L
		Chromium (Total) as Cr	APHA 23 rd Ed.2017 3111 B 3-20 IS 3025 (Part 52):2003 (RA 2014)	0.05 mg/L to 50 mg/L
		Copper as Cu	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 42):1992 (RA 2014) Amds.1	0.05 mg/L to 50 mg/L
		Dissolved Oxygen	APHA 23 rd Ed.2017 4500-O B 4-144 IS 3025 (Part 38):1989 (RA 2014) By Iodometric Method	0.2 mg/L to 8.0 mg/L
		Iron as Fe	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 53):2003 (RA 2014)	0.10 mg/L to 500 mg/L
		Lead as Pb	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 47):1994 (RA 2014), Amds. 2	0.01 mg/L to 50 mg/L
		Mercury as Hg	APHA 23 rd Ed.2017 3112-B 3-25	0.001 mg/L to 5.0 mg/L
		Nickel as Ni	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 54):2003 (RA 2014)	0.02 mg/L to 50 mg/L

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		Nitrate as NO ₃ ⁻	APHA 23 rd Ed.2017 4500 NO ₃ -B 4-126 UV Spectrophotometric Screening Method	0.1 mg/L to 500 mg/L
		Oil & Grease	IS 3025 (Part 39):1991 (RA 2014) Amds. 2 Liquid-Liquid Partition & Gravimetric Method	2 mg/L to 500 mg/L
		Total Kjeldhal Nitrogen as N (TKN)	APHA 23 rd Ed.2017 4500-NH ₃ B 4-110,C 4-116 & 4500-N _{org} , B 4-139 By Distillation & Titration Method	2 mg/L to 500 mg/L
		pH Value	APHA 23 rd Ed.2017 4500-H ⁺ B 4-95 IS 3025 (Part 11):1983 (RA 2017)	2 to 12
		Phenolic compound as C ₆ H ₅ OH (Without Chloroform extraction)	IS 3025 (Part 43):1992 (RA 2014) Amds. 2 By 4 Aminoantipyrine Method	0.1 mg/L to 50 mg/L
		Phosphate as PO ₄ ⁻	APHA 23 rd Ed.2017 4500-P D 4-163 Stannous Chloride Method	0.1 mg/L to 50 mg/L
		Potassium as K	APHA 23 rd Ed.2017 3500-K B 3-89 Flame Photometric in emission mode Method	1 mg/L to 1000 mg/L
		Sodium as Na	APHA 23 rd Ed.2017 3500-Na B 3-99 Flame Photometric in emission mode Method	1 mg/L to 5000 mg/L

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		Sulphate as SO ₄ ⁻	IS 3025 (Part 24):1986 (RA 2014) Turbidimetric Method	1 mg/L to 5000 mg/L
		Sulphide as S ⁻	APHA 23 rd Ed.2017 4500-S ² C 4-183 & F 4-187 Iodometric Titration Method	0.05 mg/L to 50 mg/L
		Total Dissolved Solids	APHA 23 rd Ed.2017 2540-B 2-69 IS 3025 (Part 16):1984 (RA 2017), Amds.1 Filtration/Gravimetric Method	4 mg/L to 70000 mg/L
		Total Solids (Dissolved & Suspended Solids)	APHA 23 rd Ed.2017 2540 B 2-68 IS 3025 (Part 15):1984 (RA 2014), Amds.1 Gravimetric Method	4 mg/L to 70000 mg/L
		Total Suspended Solids	APHA 23 rd Ed.2017 2540 D 2-70 IS 3025 (Part 17):1984 (RA 2017), Amds.1 Filtration/Gravimetric Method	4 mg/L to 5000 mg/L
		Total Volatile solid (Fixed solid and Volatile Solid)	APHA 23 rd Ed.2017 2540 E 2-71 IS 3025 (Part 18):1984 (RA 2017), Amds.1 Gravimetric Method	4 mg/L to 20000 mg/L
		Zinc as Zn	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 49):1994 (RA 2014), Amds. 1	0.05 mg/L to 50 mg/L

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		Biochemical Oxygen Demand (5 days, 20° C)	APHA, 23 rd Ed. 2017, 5210 B-5-6	1 mg/L to 10000 mg/L
		Fluoride as F	APHA, 23 rd Ed. 2017, 4500F, D-4-90 By SPADNS Spectrophotometer Method	0.2 mg/L to 10 mg/L
		Free Ammonia	IS 3025 (Part 34):1988 (RA 2014)	0.2 mg/L to 100 mg/L as NH ₃ 0.2 mg/L to 100 mg/L as N
		Cyanide as CN	IS 3025 (Part 27):1986 (RA 2014), Amds.1	0.05 mg/L to 5.0 mg/L
		Mixed liquor Suspended Solids (MLSS)	APHA 23 rd Ed. 2017 2540 D 2-70 Filtration/ Gravimetric Method	4 mg/L to 20000 mg/L
		Mixed liquor volatile suspended Solids (MLVSS)	APHA 23 rd Ed. 2017 2540 E 2-71 Gravimetric Method	4 mg/L to 10000 mg/L
2.	Soil	pH Value	IS 2720 (Part 26):1987 (RA 2014), Amds. 1 By pH Meter	2 to 12
		Electric Conductivity	IS 14767:2000 (RA 2016) By Conductivity Meter	1 µs/cm to 10000 µs/cm
		Iron as Fe	EPA 3050B:1996 Analytical Method:7380	1 mg/kg to 1000 mg/kg
		Nickel as Ni	EPA 3050B:1996 Analytical Method:7520	1 mg/kg to 100 mg/kg
		Zinc as Zn	EPA 3050B:1996 Analytical Method:7950	1 mg/kg to 100 mg/kg

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		Phosphorus as P	IS 10158:1982 (RA 2009) Method B	1 mg/kg to 100 mg/kg
		Copper as Cu	EPA 3050B:1996 Analytical Method:7210	1 mg/kg to 100 mg/kg
		Cadmium as Cd	EPA:1994 Analytical Method:7130	1 mg/kg to 100 mg/kg
		Mercury as Hg	EPA:1994 Analytical Method:7471A	0.1 mg/kg to 10 mg/kg
		Chromium (Total) as Cr	EPA 3050B:1996 Analytical Method 7190	2 mg/kg to 100 mg/kg
		Manganese as Mn	EPA 3050B:1996 Analytical Method 7460	1 mg/kg to 100 mg/kg
		Lead as Pb	EPA 3050B:1996 Analytical Method 7420	1 mg/kg to 100 mg/kg
		% Organic carbon	IS 2720 (Part 22):1972 (RA 2015) Amd. 1	0.5 % to 50 %
		% Organic Matter	IS 2720 (Part 22):1972 (RA 2015) Amd. 1	0.5 % to 50 %
		Available sulphur as $So_4.S$	Lab SOP No. UERL/CHM/LTM/94, Issue No:01 Issue Date:01/09/2016	0.1 mg/kg to 10 mg/kg
		Calcium Carbonate	IS 2720 (Part 23):1976 (RA 2015)	1 % to 20 %
		Available Nitrogen	Lab SOP No. UERL/CHM/LTM/80, Issue No:03 Issue Date:01/09/2016	5 mg/kg to 100 mg/kg
		Total water soluble solids	IS 2720 (Part 21):1977 (RA 2017), Amds. 1	1 % to 50%
		Nitrate Nitrogen	Lab SOP No. UERL/CHM/LTM/68 Issue No:03 Issue Date:01/09/2016 By ISE Method	0.5 mg/kg to 100 mg/kg

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		Fluoride as F	Lab SOP No. UERL/CHM/LTM/69 Issue No:03 Issue Date:01/09/2016 By ISE Method	0.5 mg/kg to 50 mg/kg
		Exchangeable Sodium %	Lab SOP No. UERL/CHM/LTM/104 Issue No:03 Issue Date:01/09/2016	1 % to 10 %
		Texture	Lab SOP No. UERL/CHM/LTM/108 Issue No:03 Issue Date:01/09/2016	Qualitative
		Water Soluble Potassium	Lab SOP No. UERL/CHM/LTM/84 Issue No:03 Issue Date:01/09/2016	5 mg/kg to 1000 mg/kg
		Water Soluble Sodium	Lab SOP No. UERL/CHM/LTM/89 Issue No:03 Issue Date:01/09/2016	5 mg/kg to 1000 mg/kg
		Total Kjeldhal Nitrogen as N	IS 14684:1999 (RA 2014)	2 mg/kg to 1000 mg/kg
		Oil & Grease	EPA 1998, SW-846; Analytical Method 9071B	1 mg/kg to 100 mg/kg
		Sodium Absorption Ratio	Lab SOP No. UERL/CHM/LTM/85 Issue No:03 Issue Date:01/09/2016	1 to 90
		Available Boron	Lab SOP No. UERL/CHM/LTM/78 Issue No:03 Issue Date:01/09/2016	0.5 mg/kg to 10 mg/kg

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		Chloride as Cl	Lab SOP No. UERL/CHM/LTM/90 Issue No:03 Issue Date:01/09/2016	5 mg/kg to 1000 mg/kg
		Exchangeable Calcium as Ca ²⁺ plus Magnesium as Mg ²⁺	Lab SOP No. UERL/CHM/LTM/88 Issue No:03 Issue Date:01/09/2016	5 mg/kg to 1000 mg/kg
		Available Potassium	Lab SOP No. UERL/CHM/LTM/93 Issue No:03 Issue Date:01/09/2016	5 mg/kg to 100 mg/kg
		Nitrite Nitrogen	Lab SOP No. UERL/CHM/LTM/97 Issue No:03 Issue Date:01/09/2016 UV Spectrophotometer method	1 mg/kg to 50 mg/kg
		Moisture	Lab SOP No. UERL/CHM/LTM/86 Issue No:03 Issue Date:01/09/2016	2 % to 80 %
		Cation exchange capacity (CEC)	Lab SOP No. UERL/CHM/LTM/79 Issue No:03 Issue Date:01/09/2016	5 meq/100g to 100 meq/100g
3.	Waste (Liquid/Slurry/ Sludge/Solid/ Semi-Solid)	pH Value	EPA 1998, SW-846; Method 9045C 1995	2 to 12
		Moisture	Lab SOP No. UERL/CHM/SOP/135 Issue No:03 Issue Date:01/09/2016	2 % to 80 %

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		Loss on Ignition @ 550 °C	APHA 23 rd Ed.2017, 2540 G	2 % to 80 %
		TCLP (Toxicity Characteristic Leaching Procedure for metal detection)	Lab SOP No UERL/CHM/LTM/65 Issue No:03 Issue Date:01/09/2016	
		Cadmium as Cd	EPA 1998,SW-846; Method 3010A/7130	1 mg/L to 100 mg/L
		Copper as Cu	EPA 1998,SW-846; Method 3010A/7210	1 mg/L to 100 mg/L
		Lead as Pb	EPA 1998,SW-846; Method 3010A/7420	1 mg/L to 100 mg/L
		Nickel as Ni	EPA 1998,SW-846; Method 3010A/7520	1 mg/L to 100 mg/L
		Zinc as Zn	EPA 1998,SW-846; Method 3010A/7950	1 mg/L to 100 mg/L
		Iron as Fe	EPA 1998,SW-846; Method 3010A/7380	1 mg/L to 100 mg/L
		Total Chromium as Cr	EPA 1998,SW-846; Method 3010A/7190	1 mg/L to 100 mg/L
		Manganese as Mn	EPA 1998,SW-846; Method 3010A/7460	1 mg/L to 100 mg/L
		Barium as Ba	EPA 1998,SW-846; Method 3010A/7080A	0.5 mg/L to 100 mg/L
		Chromium as Cr ⁺⁶	EPA 1998,SW-846; Method 7196A 1992	1 mg/L to 100 mg/L
		Arsenic as As	EPA 1998,SW-846; Method 7061A 1992	0.05 to 5.0 mg/kg
		Mercury as Hg	EPA 1998,SW-846; Method 7471A 1994	0.05 to 5.0 mg/Kg
		Cyanide as CN	EPA 1998,SW-846; Method 9010 & 9213	1 to 5.0 mg/Kg

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		Ammonia	Lab SOP No UERL/CHM/LTM/70 Issue No:03 Issue Date:01/09/2016 By ISE Method	1 to 50 mg/kg
		Nitrite Nitrogen	Lab SOP No UERL/CHM/LTM/128 Issue No:03 Issue Date:01/09/2016	1 to 50 mg/kg
		Fluoride as F	Lab SOP No. UERL/CHM/LTM/127 Issue No:03 Issue Date:01/09/2016 By ISE Method	1 to 50 mg/kg
		Calorific Value	IS 1350 (Part 2):2017	200 to 12000 K.cal/g
		Flash Point	EPA 1998, SW-846; Method 1020A 1992	40 to 300°C
III.	WATER			
1	Ground water Surface water Bore Well Potable water	Acidity	IS 3025 (Part 22):1986 (RA 2014) Indicator and Titration Method	2 to 1000 mg/L
		Ammonical Nitrogen as NH ₃ -N	APHA 23 rd Ed.2012 4500 NH ₃ -B 4-114 & C-116 IS 3025 (Part-34):1988 (RA 2014) By Titrimetric Method	2 mg/L to 50 mg/L
		Arsenic as As	APHA 23 rd Ed.2017 3114-C 3-40	0.01 mg/L to 5.0 mg/L
		Bicarbonate	IS 3025 (Part 51):2001 (RA 2017)	4 mg/L to 500 mg/L

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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
			By Calculation Method	
		Biochemical Oxygen Demand (3 days , 27 °C)	IS 3025 (Part 44):1993 (RA 2014), Amds.1 Iodometric Method	1.0 mg/L to 500 mg/L
		Cadmium as Cd	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 41):1992 (RA 2014)	0.003 mg/L to 5.0 mg/L
		Calcium as Ca ²⁺ & Calcium Hardness as CaCO ₃	APHA 23 rd Ed.2017 3500-B 3-69 EDTA Titrimetric Method	1 mg/L to 1000 mg/L
		Carbonate	IS 3025 (Part 51):2001 (RA 2017)	4 mg/L to 500 mg/L
		Carbon dioxide	IS 3025 (Part 61):2008 Titrimetric Method	4 mg/L to 50 mg/L
		Chemical oxygen demand	APHA 23 rd Ed.2017 5220-B 5-18 IS 3025 (Part 58):2006 (RA 2012) Open Reflux Method	2 mg/L to 1000 mg/L
		Chloride as Cl	APHA 23 rd Ed.2017 4500-Cl B 4-75 IS 3025 (Part 32):1988, (RA 2014) Argentometric Method	1 mg/L to 1000 mg/L
		Chromium (Hexavalent) as Cr ⁶⁺	APHA 23 rd Ed.2017 3500-Cr B 3-70 By Colorimetric UV Spectrophotometric method	0.05 mg/L to 5.0 mg/L
		Chromium (Total) as Cr	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 52):2003 (RA 2014)	0.05 mg/L to 10 mg/L

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		Colour	IS 3025 (Part 4):1983 (RA 2017), Amds.1 Visual Comparison Method	5 to 500 Pt-Co Scale
		Copper as Cu	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 42):1992 (RA 2014), Amds. 1	0.05 mg/L to 10 mg/L
		Free Residual Chlorine	APHA 23 rd Ed.2017 4500-Cl, B & G 4-72 IS 3025 (Part 26):1986 (RA 2014), Amds.1 DPD & Titrimetric Method	0.2 mg/L to 10 mg/L
		Dissolved Oxygen	APHA 23 rd Ed.2017 4500-O B 4-144 IS 3025 (Part 38):1989 (RA 2014) By Iodometric Method	0.2 mg/L to 8.0 mg/L
		Electrical Conductivity	IS 3025 (Part 14):2013 By Conductivity Meter	1 µS/cm to 5000 µS/cm
		Fluoride as F	IS 3025 (Part 60):2008 (RA 2013), Amds.1 By ISE Method	0.1 mg/L to 5.0 mg/L
		Iron as Fe	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 53):2003 (RA 2014)	0.1 mg/L to 10 mg/L
		Lead as Pb	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 47):1994 (RA 2014), Amds. 2	0.01 mg/L to 10 mg/L
		Magnesium as Mg	APHA 23 rd Ed.2017 3500-Mg B 3-86	2 mg/L to 500 mg/L

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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
		Manganese as Mn	APHA 23 rd Ed.2017 3500-Mn B 3-20	0.1 mg/L to 10 mg/L
		Mercury as Hg	APHA 23 rd Ed.2017 3112-B 3-25	0.001 mg/L to 2.0 mg/L
		Nickel as Ni	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 54):2003 (RA 2014)	0.02 mg/L to 10 mg/L
		Nitrate as NO ₃ ⁻	APHA 23 rd Ed.2017 4500-NO ₃ B 4-126 By UV Spectrophotometric Screening Method.	0.1 mg/L to 10 mg/L
		Nitrite as NO ₂ ⁻	APHA 23 rd Ed.2017 4500-NO ₂ B 4-124 Colorimetric Method	0.1 mg/L to 10 mg/L
		Odour	IS 3025 (Part 5):2018 Qualitative Method	Qualitative Objectionable/ Unobjectionable
		Oil & Grease	IS 3025 (Part 39):1991 (RA 2014), Amds. 2 By Liquid-Liquid Partition & Gravimetric Method	2 mg/L to 100 mg/L
		Total Kjeldhal Nitrogen as N (TKN)	APHA 23 rd Ed.2017 4500-NH ₃ , B 4-110 C-116 & 4500 N _{org} , B 4-139 By Distillation & Titration Method	2 mg/L to 100 mg/L
		pH Value	APHA 23 rd Ed.2017 4500-H ⁺ B 4-95 IS 3025 (Part 11):1983 (RA 2017) By pH Meter	5 to 12

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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
		Phenolic compound as C ₆ H ₅ OH (With chloroform extraction)	IS 3025 (Part 43):1992 (RA 2014),Amds.2 By 4 Aminoantipyrine Method	0.01 mg/L to 10 mg/L
		Phosphate as PO ₄ -	APHA 23 rd Ed.2017 4500-P D 4-163 Stannous Chloride Method	0.1 mg/L to 50 mg/L
		Potassium as K	APHA 23 rd Ed.2017 3500-K B 3-89 Flame Photometric in emission mode Method	1 mg/L to 500 mg/L
		Total/Reactive/Colloidal Silica as SiO ₂	APHA 23 rd Ed.2017 4500-SiO ₂ D 4-174 IS 3025 (Part 35):1988 (RA 2014) Hetero Poly Blue Method	0.1 mg/L to 100 mg/L
		Sodium as Na	APHA 23 rd Ed.2017 3500-Na B 3-99 Flame Photometric in emission mode Method	1 mg/L to 500 mg/L
		Sulphate as SO ₄ -	IS 3025 (Part 24):1986 (RA 2014) Turbidimetric Method	1 mg/L to 500 mg/L
		Sulphide as S-	APHA 23 rd Ed.2017 4500-S ² C 4-183 & F 4-187 Iodometric Method	0.05 mg/L to 10 mg/L
		Temperature	IS 3025 (Part 9):1984 (RA 2017) By Thermometer	Ambient to 50 °C
		Total Alkalinity (Phenolphthalein & Methyl orange)	IS 3025 (Part 23):1986 (RA 2014) Amds.2 Indicator and Titration method	4 mg/L to 1000 mg/L

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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
		Total Dissolved Solids	APHA 23 rd Ed.2017 2540-C 2-69 IS 3025 (Part 16):1984 (RA 2017), Amds.1 Filtration/ Gravimetric Method	4 mg/L to 2500 mg/L
		Total Hardness	IS 3025 (Part 21):2009 (RA 2014) EDTA Titrimetric Method	2 mg/L to 1000 mg /L
		Total Solids	APHA 23 rd Ed.2017 2540-B 2-68 IS 3025 (Part 15):1984 (RA 2014), Amds.1 Gravimetric Method	4 mg/L to 2500 mg/L
		Total Suspended Solids	APHA 23 rd Ed.2017 2540-D 2-70 IS 3025 (Part 17):1984 (RA 2017), Amds.1 Filtration/ Gravimetric Method	4 mg/L to 1000 mg/L
		Total volatile solid (Fixed Solid and Volatile solid)	APHA 23 rd Ed.2017 2540-E 2-71 IS 3025 (Part 18):1984 (RA 2017), Amds.1 Gravimetric Method	4 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10):1984 (RA 2017) By Nephelometer Method	0.1 NTU to 200 NTU
		Zinc as Zn	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 49):1994 (RA 2014), Amds.1	0.05 mg/L to 10 mg/L

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2.	Drinking Water	Colour	IS 3025 (Part 4):1983 (RA 2017), Amds.1 Visible Comparison Method	5 to 500 Pt to Co Scale
		Calcium as Ca ²⁺ or Calcium hardness as CaCO ₃	APHA 23 rd Ed.2017 3500-B 3-69 EDTA Titrimetric Method	1 mg/L to 500 mg/L
		Chloride as Cl	APHA 23 rd Ed.2017 4500-Cl B 4-75 IS 3025 (Part 32):1988 (RA 2014) Argentometric Method	1 mg/L to 250 mg/L
		Free Residual Chlorine	APHA 23 rd Ed.2017 4500-Cl B 4-62 IS 3025 (Part 26):1986 (RA 2014), Amds.1 Iodometric Method	0.2 mg/L to 10 mg/L
		Fluoride as F	IS 3025(Part 60):2008 (RA 2013), Amds.1 By ISE Method	0.2 mg/L to 5.0 mg/L
		Iron as Fe	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 53):2003 (RA 2014)	0.1 mg/L to 5.0 mg/L
		Magnesium as Mg	APHA 23 rd Ed.2017 3500-Mg B 3-86	2 mg/L to 500 mg/L
		Nitrate as NO ₃ ⁻	APHA 23 rd Ed.2017 4500-NO ₃ B 4-126 UV Spectrophotometric Screening Method.	0.1 mg/L to 10 mg/L
		Nitrite as NO ₂ ⁻	APHA 23 rd Ed.2017 4500-NO ₂ B 4-124 Colorimetric Method	0.1 mg/L to 10 mg/L

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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
		Odour	IS 3025 (Part 5):2018 Qualitative Method	Qualitative Agreeable/ Not Agreeable
		pH value	APHA 23 rd Ed.2017 4500-H ⁺ B 4-95 IS 3025 (Part 11):1983 (RA 2017) By pH Meter	5 to 12
		Sodium as Na	APHA 23 rd Ed.2017 3500-Na B 3-99 Flame Photometric in emission mode Method	1 mg/L to 100 mg/L
		Sulphate as SO ₄ ⁻	IS 3025 (Part 24):1986 (RA 2014) Turbidimetric Method	1 mg/L to 250 mg/L
		Sulphide as S ⁻	APHA 23 rd Ed.2017 4500-S ²⁻ C 4-183 & F 4-187 Iodometric Method	0.05 mg/L to 10 mg/L
		Total Alkalinity	IS 3025(Part 23):1986 (RA 2014), Amds. 2 Titration Method	4 mg/L to 500 mg/L
		Total dissolved Solid	APHA 23 rd Ed.2017 2540-C 2-69 IS 3025(Part 16):1984 (RA 2017), Amds.1 Filtration/ Gravimetric Method	4 mg/L to 2500 mg/L
		Turbidity	IS 3025 (Part 10):1984 (RA 2017) By Nephelometer Method	0.1 NTU to 100 NTU
		Total Kjeldhal Nitrogen as N (TKN)	APHA 23 rd Ed.2017 4500-NH ₃ B 4-139 & C-116 IS 3025 (Part 34):1988 (RA 2014)	2 mg/L to 10 mg/L

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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
			By Distillation & Titrimetric Method	
		Total Hardness	IS 3025 (Part 21):2009 (RA 2014) EDTA Titrimetric Method	2 mg/L to 1000 mg/L
		Zinc as Zn	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 49):1994 (RA 2014), Amds. 1	0.05 mg/L to 10 mg/L
		Lead as Pb	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 47):1994 (RA 2014), Amds. 2	0.01 mg/L to 10 mg/L
		Cadmium as Cd	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 41):1992 (RA 2014)	0.003 mg/L to 5.0 mg/L
		Manganese as Mn	APHA 23 rd Ed.2017 3500-Mn B 3-20	0.1 mg/L to 10 mg/L
		Mercury as Hg	APHA 23 rd Ed.2017 3112-B 3-25	0.001 mg/L to 2.0 mg/L
		Arsenic as As	APHA 23 rd Ed.2017 3114-C 3-40	0.01 mg/L to 2.0 mg/L
		Copper as Cu	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 42):1992 (RA 2014), Amds. 1	0.05 mg/L to 10 mg/L
		Chromium (Total) as Cr	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 52):2003 (RA 2014)	0.05 mg/L to 5.0 mg/L
		Cyanide as CN	IS 3025 (Part 27):1986 (RA 2014), Amds.1	0.05 mg/L to 2.0 mg/L

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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
		Phenol (With chloroform extraction)	IS 3025 (Part 43):1992 (RA 2014),Amds.2 Aminoantipyrine Method	0.01 mg/L to 5.0 mg/L
		Nickel as Ni	APHA 23 rd Ed.2017 3111-B 3-20 IS 3025 (Part 54):2003 (RA 2014)	0.02 mg/L to 10 mg/L
3.	Reagent Grade Water	Specific conductivity @ 25 °C	IS 3025 (Part 14):2013 By Conductivity Meter	1 µS/cm to 100 µS/cm
		pH at 25°C	APHA 23 rd Ed.2017 4500-H ⁺ B 4-95 IS 3025 (Part 11):1983 (RA 2017) By pH Meter	5 to 10
		Total solids or Non Volatile residue at 105°C	APHA 23 rd Ed.2017 2540-B 2-68 IS 3025 (Part 15):1984 (RA 2014) Amds.1 Gravimetric Method	1 mg/L to 100 mg/L
		Silica as SiO ₂	APHA 23 rd Ed.2017 4500-SiO ₂ D 4-174 IS 3025 (Part 35):1988 (RA 2014) Hetero Poly Blue Method	0.1 mg/L to 50 mg/L
		Colour retention of KMnO ₄ at 27°C	Annex A of IS 1070:1992 (RA 2013)	10 minutes to 60 minutes

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<u>CHEMICAL TESTING</u>				
<u>AT SITE</u>				
1.	POLLUTION AND ENVIRONMENT			
1.	Stack Emission	Oxygen (O ₂)	Lab SOP No. UERL/AIR/SOP/18 Issue No:03 Issue Date:01/09/2016	1 % to 22 %
		Carbon Monoxide (CO)	Lab SOP No. UERL/AIR/SOP/18 Issue No:03 Issue Date:01/09/2016	1 ppm to 1000 ppm
		Carbon Dioxide (CO ₂)	Lab SOP No. UERL/AIR/SOP/18 Issue No:03 Issue Date:01/09/2016	1 % to 18 %
		Hydro Carbon (HC)	Lab SOP No. UERL/AIR/SOP/18 Issue No:03 Issue Date:01/09/2016	10 ppm to 21000 ppm
2.	Noise	Noise Ambient	IS 9989:1981 (RA 2014)	34 dB to 130 dB
		Source Noise (D.G.Sets)	IS 4758:1968 (RA 2017)	34 dB to 130 dB