

<b>Laboratory</b>	<b>Environment Testing Laboratory of Ramans Enviro Services Private Limited, SF-23 &amp; 24, Camps Corner, Prahladnagar, Ahmedabad, Gujarat</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>10.01.2015</b>
<b>Certificate Number</b>	<b>T-2416</b>	<b>Valid Until</b>	<b>09.01.2017</b>
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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I. WATER</b>				
<b>1.</b>	<b>Waste water (Sewage /effluent)</b>	Acidity as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition): 2012 2310 B: Page 2–24	1 mg/L to 1000 mg/L
		Total Alkalinity as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition): 2012 2320 B: Page 2–27	1 mg/L to 1000 mg/L
		Total Hardness as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition): 2012 2340–C: Page 2–37	3 mg/L to 1000 mg/L
		Calcium Hardness as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 3500–Ca: b Page 3–65	3 mg/L to 1000 mg/L
		Chloride as Cl	IS–3025 (Part 32)1988 (RA 2009)	2 mg/L to 1000 mg/L
		Chemical Oxygen Demand	APHA (22 <sup>nd</sup> Edition) : 2012, 5220:B	4 mg/L to 10000 mg/L
		Biochemical Oxygen Demand @ 27 °C for 3 Days	IS–3025 (Part 44) : 1993 (RA 2009)	2 mg/L to 2100 mg/L
		Dissolved Oxygen	IS 3025 (Part 38) : 1989 (RA 2009)	0.5 mg/L to 10 mg/L
		Ammonical Nitrogen as NH <sub>3</sub> –N	APHA (22 <sup>nd</sup> Edition) : 2012 4500–NH <sub>3</sub> C : 4–110	1 mg/L to 50 mg/L
		Oil & Grease	IS 3025 (Part 39) : 1991 (RA 2009)	5 mg/L to 100 mg/L
		Sulphate as SO <sub>4</sub>	APHA(22 <sup>nd</sup> Edition) : 2012 4500–SO <sub>4</sub> –2 E :4–186	1 mg/L to 500 mg/L
		Sodium as Na	APHA(22 <sup>nd</sup> Edition) : 2012 3500–Na B:3–98	2 mg/L to 1000 mg/L
		Potassium as K	APHA (22 <sup>nd</sup> Edition) : 2012 3500–K : 32–88	2 mg/L to 100 mg/L

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Waste water (Sewage/ effluent)</b>	Color	APHA (22 <sup>nd</sup> Edition) : 2012 2120 –C :2–2	5 CU to 500 CU
		pH	IS 3025 (Part 11) : 1983 (RA 2006)	1 to 14
		Turbidity	APHA (22 <sup>nd</sup> Edition) : 2012 2130–B : 2–9	1 NTU to 1000 NTU
		Conductivity	APHA (22 <sup>nd</sup> Edition) : 2012 2510–B	20 µS/cm to 200000 µS/cm
		Temperature	APHA (22 <sup>nd</sup> Edition) : 2012 2550–B :	Ambient to 60 °C
		Total dissolved Solids	IS 3025(Part 16) : 1984 (RA 2009)	2 mg/L to 10000 mg/L
		Volatile Solids	IS 3025 (Part 18) : 1984 (RA 2006)	2 mg/L to 1000 mg/L
		Fixed Solids	IS 3025 (Part 18) : 1984 (RA 2006)	2 mg/L to 10000 mg/L
		Total Suspended Solids	IS 3025(Part 17) : 1984 (RA 2006)	2 mg/L to 1000 mg/L
		Reactive Silica as SiO <sub>2</sub>	IS 3025, (Part 35 ) : 1988 (RA 2009)	1 mg/L to 100 mg/L
		Copper as Cu	APHA (22 <sup>nd</sup> Edition) : 2012 3500 Cu B Neo cuproline method	0.1 mg/L to 5 mg/L
		Hexavalent Chromium as Cr <sup>+6</sup>	IS 3025, (Part 52 ) : 2003 (RA 2009) Diphenyl Carbazide method	0.2 mg/L to 20 mg/L
		Total Chromium as Cr	IS 3025, (Part 52 ) : 2003 (RA 2009) Diphenyl Carbazide method	0.2 mg/L to 20 mg/L

**Sumit Sundriyal**  
Convenor

**N. Venkateswaran**  
Program Manager

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Waste water (Sewage /effluent)</b>	Iron as Fe	APHA (22 <sup>nd</sup> Edition) : 2012 3500 – Fe :B Ortho Phenanthroline Method	0.2 mg/L to 100 mg/L
		Sulphide as S	APHA (22 <sup>nd</sup> Edition) : 2012 4500 – S <sup>-2</sup> : F Iodometric method	1 mg/L to 100 mg/L
		Residual Chlorine as Cl <sub>2</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 4500 – Cl : B Iodometric method	1 mg/L to 100 mg/L
		Fluoride as F	APHA (22 <sup>nd</sup> Edition) : 2012 4500–F <sup>-</sup> : D SPADNS method	0.2 mg/L to 70 mg/L
		Total Phosphate as PO <sub>4</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 4500–P : C Vanadomolybdophosphoric acid method	1 mg/L to 100 mg/L
		Boron as B	APHA (22 <sup>nd</sup> Edition) : 2012 4500–B : C Carminic acid method	1 mg/L to 40 mg/L
		Nickel as Ni	IS 3025,(Part 54) : 2003 (RA 2009) Dimethyl glyoxime method	0.5 mg/L to 25 mg/L
		Nitrate as NO <sub>3</sub> –N	IS 3025 (Part 34 ) : 1988 (RA 2009) Chromotropic acid method	1 mg/L to 100 mg/L
		Zinc as Zn	IS 3025, (Part 49) : (RA 2009) 1994 C Zincon method	0.5 mg/L to 25 mg/L

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>2.</b>	<b>Potable / Domestic /surface and ground water</b>	Acidity as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 2310 B: Page 2–24	1 mg/L to 1000 mg/L
		Total Alkalinity as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 2320 B: Page 2–27	1 mg/L to 1000 mg/L
		Total Hardness as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 2340–C: Page 2–37	3 mg/L to 1000 mg/L
		Calcium Hardness as CaCO <sub>3</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 3500–Ca: b Page 3–65	3 mg/L to 1000 mg/L
		Chloride as Cl	IS 3025 (Part 32)1988 (RA 2009)	2 mg/L to 1000 mg/L
		Chemical Oxygen Demand	APHA (22 <sup>nd</sup> Edition) : 2012 5220:B	4 mg/L to 10000 mg/L
		Biochemical Oxygen Demand @ 27 °C for 3 Days	IS 3025 (Part 44) : 1993 (RA 2009)	2 mg/L to 2100 mg/L
		Dissolved Oxygen	IS 3025 (Part 38) : 1989 (RA 2009)	0.5 mg/L to 10 mg/L
		Ammonical Nitrogen as NH <sub>3</sub> -N	APHA (22 <sup>nd</sup> Edition) : 2012 4500–NH <sub>3</sub> C : 4–110	1 mg/L to 50 mg/L
		Oil & Grease	IS 3025 (Part 39) : 1991 (RA 2009)	5 mg/L to 100 mg/L
		Sulphate as SO <sub>4</sub>	APHA(22 <sup>nd</sup> Edition) : 2012 4500–SO <sub>4</sub> –2 E :4–186	1 mg/L to 500 mg/L
		Sodium as Na	APHA(22 <sup>nd</sup> Edition) : 2012 3 500–Na B:3–98	2 mg/L to 1000 mg/L
		Potassium as K	APHA (22 <sup>nd</sup> Edition) : 2012 3500–K : 32–88	2 mg/L to 100 mg/L
Color	APHA (22 <sup>nd</sup> Edition) : 2012 2120 –C :2–2	5 CU to 500 CU		
pH	IS 3025 (Part 11) : 1983 (RA 2006)	1 to 14		

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	<b>Potable/ Domestic /surface and ground water</b>	Turbidity	APHA (22 <sup>nd</sup> Edition) : 2012 2130–B : 2–9	1 NTU to 1000 NTU
		Conductivity	APHA (22 <sup>nd</sup> Edition) : 2012 2510–B	20 µS/cm to 200000 µS/cm
		Temperature	APHA (22 <sup>nd</sup> Edition) : 2012 2550–B :	Ambient to 60 °C
		Total dissolved Solids	IS 3025(Part 16) : 1984 (RA 2009)	2 mg/L to 10000 mg/L
		Volatile Solids	IS 3025 (Part 18) : 1984 (RA 2006)	2 mg/L to 1000 mg/L
		Fixed Solids	IS 3025 (Part 18) : 1984 (RA 2006)	2 mg/L to 10000 mg/L
		Total Suspended Solids	IS 3025(Part 17) : 1984 (RA 2006)	2 mg/L to 1000 mg/L
		Reactive Silica as SiO <sub>2</sub>	IS 3025, (Part 35 ) : 1988 (RA 2009)	1 mg/L to 100 mg/L
		Copper as Cu	APHA (22 <sup>nd</sup> Edition) : 2012 3500 Cu B Neo cuproline method	0.1 mg/L to 5 mg/L
		Hexavalent Chromium as Cr <sup>+6</sup>	IS 3025, (Part 52 ) : 2003 (RA 2009) Diphenyl Carbazide method	0.2 mg/L to 20 mg/L
		Total Chromium as Cr	IS 3025, (Part 52 ) : 2003 (RA 2009) Diphenyl Carbazide method	0.2 mg/L to 20 mg/L
		Iron as Fe	APHA (22 <sup>nd</sup> Edition) : 2012 3500 – Fe :B Ortho Phenanthroline Method	0.2 mg/L to 100 mg/L

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Potable/ Domestic /surface and ground water</b>	Sulphide as S	APHA (22 <sup>nd</sup> Edition) : 2012 4500 – S <sup>-2</sup> : F Iodometric method	1 mg/L to 100 mg/L
		Residual Chlorine as Cl <sub>2</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 4500 – Cl : B Iodometric method	1 mg/L to 100 mg/L
		Fluoride as F	APHA (22 <sup>nd</sup> Edition) : 2012 4500–F <sup>-</sup> : D SPADNS method	0.2 mg/L to 70 mg/L
		Total Phosphate as PO <sub>4</sub>	APHA (22 <sup>nd</sup> Edition) : 2012 4500–P : C Vanadomolybdophosphoric acid method	1 mg/L to 100 mg/L
		Boron as B	APHA (22 <sup>nd</sup> Edition) : 2012 4500–B : C Carmine method	1 mg/L to 40 mg/L
		Nickel as Ni	IS 3025,(Part 54) : 2003 (RA 2009) Dimethyl glyoxime method	0.5 mg/L to 25 mg/L
		Nitrate as NO <sub>3</sub> -N	IS 3025 (Part 34 ) : 1988 (RA 2009) Chromotropic acid method	1 mg/L to 100 mg/L
		Zinc as Zn	IS 3025, (Part 49) : (RA 2009) 1994 C Zincon method	0.6 mg/L to 25 mg/L

## **II. AIR, GASES & ATMOSPHERE**

<b>1. Ambient air monitoring</b>	SO <sub>2</sub>	IS 5182 (part 2) : 2001 (RA 2006)	4 µg/m <sup>3</sup> to 1050 µg/m <sup>3</sup>
	NO <sub>x</sub>	IS 5182 (part 6) : 2006	6 µg/m <sup>3</sup> to 750 µg/m <sup>3</sup>
	PM 10	IS 5182 (Part 23) : 2006	1 µg/m <sup>3</sup> to 1000 µg/m <sup>3</sup>

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Ambient air monitoring</b>	PM 2.5	SOP/OPN/02 Based on GPCB guidelines-year 2011 and USEPA Quality Assurance Handbook Vol-2(Part 2) : year-2013	4 µg/m <sup>3</sup> to 1000 µg/m <sup>3</sup>
		Ammonia as NH <sub>3</sub>	SOP/OPN/02 Based on CPCB guidelines – volume-1 year 2011 Indo phenol blue method	20 µg/m <sup>3</sup> to 700 µg/m <sup>3</sup>
		Chlorine as Cl <sub>2</sub>	IS 5182 (Part 19) : 1982 (RA 2009)	5 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
<b>2.</b>	<b>Ambient Noise</b>	Noise Level– Leq,Lmax, Lmin,SPL	IS 9989– 1981 (RA 2008)	30 dB to 130 dB
<b>3.</b>	<b>Stack emission monitoring</b>	SOx	IS 11255 (part 2) : 1985 (RA 2009)	3 mg/Nm <sup>3</sup> to 500 mg /Nm <sup>3</sup>
		NOx	IS 11255 (part 7) : 2005	2 mg/Nm <sup>3</sup> to 400 mg /Nm <sup>3</sup>
		PM	IS 11255 (part 1) : 1985 (RA 2009)	1 mg/Nm <sup>3</sup> to 5000 mg/Nm <sup>3</sup>
		Ammonia	IS 11255 (part 6) : 1999 (RA 2009)	10 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
<b>4.</b>	<b>Noise Level Monitoring Diesel Generator</b>	SPL,Insertion loss	IS 9989– 1981 (RA 2008)	30 db(A) to 130 db(A)

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S.No.	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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**SOIL**

1.	Soil	pH	IS 2720,(Part 26) : 1987 (RA 2011)	1 to 14
		Electrical Conductivity	IS 14767-2000	(20 to 200) $\mu$ S/cm & (2 to 200) mS/cm
		Moisture Content	IS 2720, (Part 2) : 1973 (RA 2010)	0.05 % to 50 %
		Water Holding Capacity	SOP/OPN/04-2013 Ref:Soil Chemical Analysis by M.L.Jackson	1.0 % to 50 %
		Cation Exchange capacity	SOP/OPN/04-2013 Ref:Soil Chemical Analysis by M.L.Jackson	0.1 meq/100 g to 100 meq/100gm
		Soluble Sodium	SOP/OPN/04- 2013 Ref:Soil Chemical Analysis by M.L.Jackson	0.01 meq/100g to 100 meq/100gm
		Soluble Potassium	SOP/OPN/04-2013 Ref:Soil Chemical Analysis by M.L.Jackson	0.01 meq/100g to 100 meq/100gm
		Soluble Calcium	SOP/OPN/04-2013 Ref:Soil Chemical Analysis by M.L.Jackson	0.01 meq/100g to 100 meq/100gm
		Soluble Magnesium	SOP/OPN/04-2013 Ref:Soil Chemical Analysis by M.L.Jackson	0.01 meq/100g to 100 meq/100gm

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