

Laboratory	Sadekar Enviro Engineers Pvt. Ltd. (Laboratory Division), B-306/307, Plot No. 61, Patel Estate, Old Betim Road, Bardez, Porvorim, Panaji, Goa		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Chemical Testing	Issue Date	30.06.2016
Certificate Number	T-2190	Valid Until	29.06.2018
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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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AT LABORATORY

I. WATER

1.	Surface Water & Ground Water	pH	APHA (22 nd Edition) 4500 H ⁺ B: 2012	1 to 14
		Total Dissolved Solids	APHA (22 nd Edition) 2540 C: 2012	5 mg/l to 40000 mg/l
		Chloride as Cl	APHA (22 nd Edition) 4500 Cl B: 2012	10 mg/l to 20000 mg/l
		Total Hardness as CaCO ₃	APHA (22 nd Edition) 2340 C: 2012	2 mg/l to 10000 mg/l
		Sulphate as SO ₄	APHA (22 nd Edition) 4500 SO ₄ E: 2012	1 mg/l to 5000 mg/l
		Sulfide as S ²⁻	APHA (22 nd Edition) 4500 S ²⁻ F: 2012	1 mg/l to 50 mg/l
		Nitrate as NO ₃	APHA (22 nd Edition) 4500 NO ₃ B: 2012	1 mg/l to 100 mg/l
		Nitrite as NO ₂	APHA (22 nd Edition) 4500 NO ₂ B: 2012	0.01 mg/l to 10 mg/l
		Phosphorus as PO ₄	APHA (22 nd Edition) 4500 P C: 2012	1 mg/l to 1000 mg/l
		Cadmium as Cd	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 10 mg/l
		Lead as Pb	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 10 mg/l
		Zinc as Zn	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 100 mg/l

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	Surface Water & Ground Water	Total Suspended Solids	APHA (22 nd Edition) 2540 D: 2012	1 mg/l to 5000 mg/l
		Phenolic Compounds as C ₆ H ₅ OH	APHA (22 nd Edition) 5530 B-C: 2012	0.02 mg/l to 1.0 mg/l
		Fluoride as F	APHA (22 nd Edition) 4500 F- D: 2012	0.02 mg/l to 50 mg/l
		Turbidity	APHA (22 nd Edition) 2130B: 2012	0.02 NTU to 1000 NTU
		Conductivity	APHA (22 nd Edition) 2510 B: 2012	1 µS/cm to 40000 µS/cm
		Ammonia (Total as NH ₃ – N)	APHA (22 nd Edition) 4500 NH ₃ B C: 2012	0.5 mg/l to 100 mg/l
		Total Alkalinity as CaCO ₃	APHA (22 nd Edition) 2320 B: 2012	1 mg/l to 5000 mg/l
		Free Residual Chlorine	APHA (22 nd Edition) 4500 Cl C: 2012	1.0 mg/l to 50 mg/l
		Arsenic as As	APHA (22 nd Edition) 3114 C: 2012	0.02 mg/l to 5.0 mg/l
		Copper as Cu	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 100 mg/l
		Chromium as Cr	APHA (22 nd Edition) 3111 B: 2012	0.2 mg/l to 100 mg/l
		Calcium as Ca	APHA (22 nd Edition) 3500 Ca: 2012	1 mg/l to 5000 mg/l
		Iron as Fe	APHA (22 nd Edition) 3111 B: 2012	1 mg/l to 100 mg/l
		Nickel as Ni	APHA (22 nd Edition) 3111 B: 2012	1 mg/l to 100 mg/l
		Mercury as Hg	APHA (22 nd Edition) 3112 B: 2012	1 mg/l to 100 µg/l

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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
	Surface Water & Ground Water	Magnesium as Mg	APHA (22 nd Edition) 3500 Mg: 2012	1 mg/l to 5000 mg/l
		Manganese as Mn	APHA (22 nd Edition) 3111 B: 2012	0.05 mg/l to 100 mg/l
		Selenium as Se	APHA (22 nd Edition) 3111 B: 2012	1 µg/l to 100 µg/l
II.	POLLUTION AND ENVIRONMENT			
1.	Waste Water	pH	APHA (22 nd Edition) 4500 H ⁺ B: 2012	1 to 14
		Total Dissolved Solids	APHA (22 nd Edition) 2540 C: 2012	5 mg/l to 40000 mg/l
		Chloride as Cl	APHA (22 nd Edition) 4500 Cl B: 2012	10 mg/l to 20000 mg/l
		Total Hardness as CaCO ₃	APHA (22 nd Edition) 2340 C: 2012	2 mg/l to 10000 mg/l
		Sulphate as SO ₄	APHA (22 nd Edition) 4500 SO ₄ E: 2012	1 mg/l to 5000 mg/l
		Sulfide as S ²	APHA (22 nd Edition) 4500 S ² F: 2012	1 mg/l to 50 mg/l
		Phosphorus as PO ₄	APHA (22 nd Edition) 4500 PO ₄ C: 2012	1 mg/l to 1000 mg/l
		Cadmium as Cd	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 10 mg/l
		Lead as Pb	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 10 mg/l
		Zinc as Zn	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 100 mg/l
		Chemical Oxygen Demand	APHA (22 nd Edition) 5220-B: 2012	4 mg/l to 50000 mg/l

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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
	Waste Water	Biological Oxygen Demand (at 27 °C for 3 days)	IS 3025 (Part 44): 1993	3 mg/l to 15000 mg/l
		Total Suspended Solids	APHA (22 nd Edition) 2540 D: 2012	1 mg/l to 5000 mg/l
		Oil and Grease	APHA (22 nd Edition) 5520- O & G: 2012	1 mg/l to 1000 mg/l
		Phenolic Compounds as C ₆ H ₅ OH	APHA (22 nd Edition) 5530-B,C: 2012	0.02 mg/l to 100 mg/l
		Fluoride as F	APHA (22 nd Edition) 4500 F- D: 2012	0.02 mg/l to 50 mg/l
		Turbidity	APHA (22 nd Edition) 2130 B: 2012	0.02 NTU to 1000 NTU
		Conductivity	APHA (22 nd Edition) 2510 B: 2012	0.02 µS/cm to 40000 µS/cm
		Ammonia (Total as NH ₃ – N)	APHA (22 nd Edition) 4500 NH ₃ C: 2012	0.5 mg/l to 1500 mg/l
		Total Alkalinity as CaCO ₃	APHA (22 nd Edition) 2320 B: 2012	1 mg/l to 10000 mg/l
		Free Residual Chlorine	APHA (22 nd Edition) 4500 Cl C: 2012	1 mg/l to 50 mg/l
		Arsenic as As	APHA (22 nd Edition) 3114 C: 2012	0.02 mg/l to 5.0 mg/l
		Copper as Cu	APHA (22 nd Edition) 3111 B: 2012	0.1 mg/l to 100 mg/l
		Chromium as Cr	APHA (22 nd Edition) 3111 B: 2012	0.2 mg/l to 100 mg/l
		Calcium as Ca	APHA (22 nd Edition) 3111 Ca B/ 3500 Ca B: 2012	1 mg/l to 5000 mg/l

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2.	Waste Water	Iron as Fe	APHA (22 nd Edition) 3111 B: 2012	1 mg/l to 100 mg/l
		Nickel as Ni	APHA (22 nd Edition) 3111 B: 2012	1 mg/l to 100 mg/l
		Mercury as Hg	APHA (22 nd Edition) 3112 B: 2012	1 µg/l to 100 µg/l
		Magnesium as Mg	APHA (22 nd Edition) 3111 B/ 3500 Ca B: 2012	1 mg/l to 5000 mg/l
		Manganese as Mn	APHA (22 nd Edition) 3111 B: 2012	0.05 mg/l to 100 mg/l
		Selenium as Se	APHA (22 nd Edition) 3112 B: 2012	1 µg/l to 100 µg/l
	Wastes (Solid/Sludge / Sediments / Slurry)	Aluminium as Al	USEPA (3 rd Edition) 7000B Rev.1996	50 mg/kg to 1000 mg/kg
		Arsenic as As		0.02 mg/kg to 10 mg/kg
		Copper as Cu		2 mg/kg to 1000 mg/kg
		Chromium as Cr		4 mg/kg to 1000 mg/kg
		Calcium as Ca		20 mg/kg to 1000 mg/kg
		Cadmium as Cd		2 mg/kg to 200 mg/kg
		Iron as Fe		20 mg/kg to 10000 mg/kg
		Lead as Pb		2 mg/kg to 200 mg/kg
		Nickel as Ni		20 mg/kg to 1000 mg/kg
		Mercury as Hg		0.02 mg/kg to 10 mg/kg
		Magnesium as Mg		20 mg/kg to 1000 mg/kg

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3.	Wastes (Solid/Sludge / Sediments / Slurry)	Manganese as Mn	USEPA (3 rd Edition) 7000B Rev.1996	1 mg/kg to 1000 mg/kg
		Selenium as Se		0.02 mg/kg to 10 mg/kg
		Zinc as Zn		2 mg/kg to 1000 mg/kg
	Soil	pH	IS 2720 (Part 26): 1987	1 to 14
		Electrical Conductivity	IS 14767: 2000	1 µS/cm to 2000 µS/cm
		Organic Matter	IS 2720 (Part 22):1972 (RA 2010)	1 % to 10 %
		Moisture Content	IS 2720 (Part 2): 1973 (RA 2002)	0.1 % to 20 %
		Exchangeable Calcium as Ca	SEE/LD/SOP/SA-33 Date. 01/01/2013	20 mg/kg to 1000 mg/kg
		Exchangeable Magnesium as Mg	SEE/LD/SOP/SA-23 Date. 01/01/2013	20 mg/kg to 1000 mg/kg
		Chloride as Cl	SEE/LD/SOP/SA-19 Date. 01/01/2013	20 mg/kg to 5000 mg/kg
		Sulphate as SO ₄	SEE/LD/SOP/SA-28 Date. 01/01/2013	20 mg/kg to 100 mg/kg
		Available Phosphorus	SEE/LD/SOP/SA-07 Date. 01/01/2013	20 mg/kg to 100 mg/kg
		Aluminium as Al	USEPA (3 rd Edition) 7000B Rev.1996	50 mg/kg to 1000 mg/kg
		Arsenic as As		0.02 mg/kg to 10 mg/kg
		Copper as Cu		2 mg/kg to 1000 mg/kg

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	Soil	Chromium as Cr	USEPA (3 rd Edition) 7000B Rev.1996	4 mg/kg to 1000 mg/kg
		Calcium as Ca		20 mg/kg to 1000 mg/kg
		Cadmium as Cd		2 mg/kg to 200 mg/kg
		Iron as Fe		20 mg/kg to 10000 mg/kg
		Lead as Pb		2 mg/kg to 200 mg/kg
		Nickel as Ni		20 mg/kg to 1000 mg/kg
		Mercury as Hg		0.02 mg/kg to 10 mg/kg
		Magnesium as Mg		2 mg/kg to 1000 mg/kg
		Manganese as Mn		1 mg/kg to 1000 mg/kg
		Selenium as Se		0.02 mg/kg to 10 mg/kg
		Zinc as Zn		2 mg/kg to 1000 mg/kg

III. ATMOSPHERIC POLLUTION

1.	Ambient Air	PM ₁₀	IS 5182 (Part 23): 2006	1 µg/m ³ to 1000 µg/m ³
		PM _{2.5}	SEE/LD/SOP-AA-04, Issue. 01, Date 01/01/2013	1 µg/m ³ to 1000 µg/m ³
		Sulphur dioxide SO ₂	IS 5182 (Part 2): 2001 (RA 2006)	3 µg/m ³ to 1000 µg/m ³
		Nitrogen dioxide (NO ₂)	IS 5182 (Part 6): 2006	6 µg/m ³ to 420 µg/m ³
		Ammonia (NH ₃)	APHA Methods of Air Sampling and analysis, (3 rd Edition): 1974, Method No. 401	20 µg/m ³ to 700 µg/m ³

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	Ambient Air	Lead as Pb	IS 5182 (Part 22): 2004	0.10 µg/m ³ to 10 µg/m ³
		Benzene (C ₆ H ₆)	IS 5182 (Part 11): 2006	1 µg/m ³ to 500 µg/m ³
		Arsenic (As)	SEE/LD/SOP/AA-09, Issue. 01, Date 01/01/2013	5 ng/m ³ to 100 ng/m ³
		Nickel(Ni)	SEE/LD/SOP/AA-09, Issue.01, Date.01/01/2013	5 ng/m ³ to 100 ng/m ³
		Ozone (O ₃)	APHA Methods of Air Sampling and analysis , (3 rd Edition): 1974, Method No. 411	20 µg/m ³ to 1000 µg/m ³
		Benzo(α)Pyrene	IS 5182 (Part 12): 2004 (RA 2009)	2 ng/m ³ to 500 ng/m ³
2.	Stack Emission	Particulate matter	IS 11255 (Part 1/Sec III): 1985 (RA 2009)	1 mg/Nm ³ to 5000 mg/Nm ³
		Ammonia (NH ₃)	IS 11255 (Part 6): 1999 (RA 2003)	5 mg/Nm ³ to 500 mg/Nm ³
		Oxides of Nitrogen (NO _x)	IS 11255 (Part 7): 2005	2 mg/Nm ³ to 400 mg/Nm ³
		Sulphur Dioxide (SO ₂)	IS 11255 (Part 2): 1985 (RA 2003)	3 mg/Nm ³ to 500 mg/Nm ³

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<u>AT SITE</u>				
I.	ATMOSPHERIC POLLUTION			
1.	Ambient Air	Carbon monoxide CO	SOP No. SEE/LD/SOP-AA-10 Issue.01, Date.01/01/2013	0 to 23 mg/m ³
2.	Stack	Carbon monoxide	SOP No. SEE/LD/SOP-AA-10 Issue.01, Date.01/01/2013	1 mg/m ³ to 5000 mg/m ³
		Carbon dioxide (CO ₂)	SEE/LD/SOP-AA-31 Issue. 1, Date. 01/01/2013	0 to 20 %
		Oxygen (O ₂)	SEE/LD/SOP-AA-31 Date. 01/01/2013	0 to 25 %
3.	Noise Levels	Ambient Noise Leq dB(A)	IS 9989: 1981 (RA 2001)	30 dB to 134 dB
-X-X-X-X-X-X-X-X-X-X-X-X-				