

Laboratory Chandigarh Pollution Testing Laboratory, E-126, Phase-7, Industrial Area, Mohali, Punjab

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6728 (in lieu of T-2081)

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Validity 09.11.2017 to 08.11.2019

Last Amended on 12.01.2018

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.	Ground Water/Surface Water/Drinking Water)	E.Coli	IS 1622:1981, Multiple Tube Dilution Method	Qualitative (Present/absent per/ ml/ 100ml)
		Total coliforms bacteria MPN/100ml	IS 1622:1981(RA 2009) MPN method	<2 to 1600 MPN/100ml
		Standard plate count	IS 1622:1981-3.2	1 to 10 ⁵ cfu/ml
		Yeast & mould	IS 5403 (Part 5): 1976 (RA 2005)	Qualitative (Present/absent/100ml)

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CHEMICAL TESTING

I.	WATER			
1.	Surface/ Ground Water	pH	APHA 23 rd edition-2017, electrometric method 4500 H+B	3 to 12
		Total Dissolved solids	APHA 23 rd edition-2017, gravimetric method 2540 C	1 mg/l to 10000 mg/l
		Total suspended solid	APHA 23 rd edition-2017, gravimetric method 2540 D	1 mg/l to 1000 mg/l
		Specific conductance	APHA 23 rd edition-2017, by conductivity meter, 2510 B	2 µS/cm to 1000 mS/cm
		Turbidity	APHA 23 rd edition-2017, Nephelometric method, 2130 B	0.5 NTU to 100 NTU
		Acidity	APHA 23 rd edition-2017, Titrimetric method, 2130 B	1 mg/l to 500 mg/l
		Total Alkalinity as CaCO ₃	APHA 23 rd edition-2017, Titrimetric method, 2320 B	0 to 1000 mg/l
		Total Hardness as CaCO ₃	APHA 23 rd edition-2017, EDTA Titrimetric method, 2340 C	1 mg/l to 1000 mg/l
		Calcium as Ca	APHA 23 rd edition-2017, EDTA Titrimetric method, 3500 Ca B	1 mg/l to 1000 mg/l
		Magnesium as Mg	APHA 23 rd edition-2017, Calculation method, 3500 B	1 mg/l to 1000 mg/l
		Chloride as Cl	APHA 23 rd edition-2017, Argentometric method 4500 Cl'B	1 mg/l to 10000 mg/l
		Temperature	APHA 23 rd edition-2017, Thermometer, 2550 B	10 °C to 60 °C

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		Sulphate as SO ₄	APHA 23 rd edition-2017, Turbidimetric method, 4500E	1 mg/l to 1000 mg/l
		Fluoride as F	APHA 23 rd edition-2017, SPANDS method, 4500-F D	0.1 mg/l to 2 mg/l
		Silica as SiO ₂	APHA 23 rd edition-2017, Molybdosilicate method, 4500- SiO ₂ C	0.4 mg/l to 25 mg/l
		Colour, Hazen unit	APHA 23 rd edition-2017, Visual Comparison method, 2120 B	5.0 HU to 500 HU
		Phosphate as P	APHA 23 rd edition-2017, SnCl ₂ method 4500P D	0.5 mg/l to 6 mg/l
		Phenols as C ₆ H ₅ OH	APHA 23 rd edition-2017, Chloroform Extraction method, 5530 C, Direct Photometric method 5530 D	0.001 mg/l to 5.0 mg/l
		Ammonical Nitrogen as N	IS-3025(Part-34):1988	Less than 1 mg/l
		Nitrate as NO ₃	APHA 23 rd edition-2017-4500 B, UV Spectrophotometric method	0.5 mg/l to 100 mg/l
		Boron as B	APHA 23 rd edition-2017, curcumin method 4500 B	1 mg/l to 100 mg/l
		Dissolved oxygen	APHA 23 rd edition-2017, Azide modification 4500-O C	0.1 mg/l to 3.0 mg/l
		Sodium as Na	APHA 23 rd edition-2017, flame-photometer method, 3500 Na B	1 mg/l to 10 mg/l
		Potassium as K	APHA 23 rd edition-2017, flame-photometer method, 3500 K B	1 mg/l to 100 mg/l

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		BOD	IS 3025, P-44: 1993,3 Day BOD @ 27°C	2.0 mg/l to 1000 mg/l
		COD	APHA 23 rd edition-2017, Open reflux method, 5220 B	5.0to2000 mg/l
		Oil &grease	APHA 23 rd edition-2017, gravimetric method, 5220 B	1.0 mg/l to100 mg/l
		Free residual chloride as Cl ₂	APHA 23 rd edition-2017, iodometric method, 4500 Cl B	0.1 mg to3.0 mg/l
2.	Drinking Water	pH	APHA 23 rd edition-2017, electrometric method 4500 H+B	3 to 12
		Total Dissolved solids	APHA 23 rd edition-2017, gravimetric method 2540 C	1 mg/l to 10000 mg/l
		Turbidity	APHA 23 rd edition-2017, Nephelometric method, 2130 B	0.5 NTU to100 NTU
		Total Alkalinity as CaCO ₃	APHA 23 rd edition-2017, Titrimetric method, 2320 B	2 mg/l to 1000 mg/l
		Total Hardness as CaCO ₃	APHA 23 rd edition-2017, EDTA Titrimetric method, 2340 C	1 mg/l to 1000 mg/l
		Calcium as Ca	APHA 23 rd edition-2017, EDTA Titrimetric method, 3500 Ca B	1 mg/l to 1000 mg/l
		Magnesium as Mg	APHA 23 rd edition-2017, Calculation method, 3500 B	1 mg/l to 1000 mg/l
		Chloride as Cl	APHA 23 rd edition-2017, Argentometric method 4500 Cl'B	1 mg/l to 10000 mg/l
		Sulphate as SO ₄	APHA 23 rd edition-2017, Turbidimetric method, 4500E	1 mg/l to 1000 mg/l

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		Fluoride as F	APHA 23 rd edition-2017, SPANDS method, 4500-F D	0.1 mg/l to 2 mg/l
		Phenols as C ₆ H ₅ OH	APHA 23 rd edition-2017, Chloroform Extraction method, 5530 C,	0.01 mg/l to 5 mg/l
		Iron as Fe	IS 3025 Part-53 2003 phenanthroline method	0.1 mg/l to 3 mg/l
		Ammonia as total ammonia-N	IS-3025(Part-34):1988	0.5 mg/l to 100 mg/l
		Nitrate as NO ₃	APHA 23 rd edition-2017-4500 B, UV spectrophotometric method	1 mg/l to 100 mg/l
		Free residual chloride as Cl ₂	APHA 23 rd edition-2017, iodometric method, 4500 Cl B	0.1 mg/l to 3 mg/l
3.	Construction Water	pH(25 °C)	IS 3025 (Part 11): 1983	2 to 12
		Chloride(as Cl)	IS 3025 (Part 32): 1988	1 mg/l to10000 mg/l
		Sulphate (as SO ₃)	IS 3025 (Part 24): 1986	1 mg/l to1000 mg/l
		Organic solids (VDS)	IS 3025 (Part 18): 1984 Amd.1	1 mg/l to10000 mg/l
		Inorganic solids (FDS)	IS 3025 (Part 18): 1984 Amd.1	1 mg/l to10000 mg/l
		Acidity	IS 3025 (Part 22): 1986	1 ml to 50 ml (using 0.02 Normal NaOH)
		Alkalinity	IS 3025 (Part 23): 1986	1 ml to 50 ml (using volume of 0.02 Normal H ₂ SO ₄)
		Suspended matter	IS 3025 (Part 17): 1984 (RA 2002) Amd.1	1 mg/l to 1000 mg/l

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II.	RESIDUES IN WATER			
1.	Water	Trace metals:		
		Cadmium as Cd	APHA 23 rd edition-2017, AAS method 3030D, 3111 B	0.001 mg/l to 5 mg/l
		Total chromium as Cr	APHA 23 rd edition-2017, AAS method, 3113 B	0.04 mg/l to 5 mg/l
		Nickel as Ni	APHA 23 rd edition-2017, AAS method-3030D, 3111 B	0.01 mg/l to 5 mg/l
		Manganese as Mn	APHA 23 rd edition-2017, AAS method-3030D, 3111 B	0.09 mg/l to 5.0 mg/l
		Lead as Pb	APHA 23 rd edition-2017, AAS method-3030D, 3111 B	0.01 mg/l to 5 mg/l
		Zinc as Zn	APHA 23 rd edition-2017, AAS method-3030D, 3111 B	0.5 mg/l to 20 mg/l
		Iron as Fe	APHA 23 rd edition-2017, AAS method-3030D, 3111 B	0.1 mg/l to 3 mg/l
		Copper as Cu	APHA 23 rd edition-2017, AAS method-3030D, 3111 B	0.04 mg/l to 5 mg/l
III.	POLLUTION & ENVIRONMENT			
1.	Waste Water (Sewage/Effluent)	pH	APHA 23 rd edition-2017, electrometric method 4500-H+B	2 to 12
		Total Dissolved solids	APHA 23 rd edition-2017, gravimetric method 2540 C	1 mg/l to 10000 mg/l

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		Total Suspended Solid	APHA 23 rd edition-2017, gravimetric method 2540 D	1 mg/l to 1000 mg/l
		Specific conductance	APHA 23 rd edition-2017, by conductivity meter, 2510 B	2 µS/cm to 1000 mS/cm
		Dissolved oxygen	APHA 23 rd edition-2017, Azide modification 4500-O C	1 mg/l to 8 mg/l
		Temperature °C	APHA 23 rd edition-2017, Thermometer, 2550 B	1 °C to 100 °C
		Manganese as Mn	APHA 23 rd edition-2017, AAS method -3030d, 3111 B	0.5 mg/l to 10 mg/l
		Nickel as Ni	APHA 23 rd edition-2017, AAS method ,3030D,3111B	0.5 mg/l to 10 mg/l
		Fluoride as F	APHA 23 rd edition-2017, SPANDS method, 4500-FD	0.5 mg/l to 5 mg/l
		Sulphate as SO ₄	APHA 23 rd edition-2017, Turbidimetric method, 4500 SO ₄ E	1 mg/l to 1000 mg/l
		Iron as Fe	IS 3025 Part-53 2003 & C/Phenanthroline	0.5 mg/l to 10 mg/l
		Copper as Cu	APHA 23 rd edition-2017, AAS method ,3111 B	0.5 mg/l to 15 mg/l
		Total Chromium as Cr	APHA 23 rd edition-2017, AAS method, 3113 B	1 mg/l to 20 mg/l
		Hexa Chromium as Cr ⁶⁺	APHA 23 rd edition-2017-3500 Cr B	0.1 mg/l to 5 mg/l
		Dissolve Phosphate as P	APHA 23 rd edition-2017, SnCl ₂ method 4500 P D	1 mg/l to 10 mg/l
		Colour (Treated water)	APHA 23 rd edition-2017, Visual Comparison method, 2120 B	5.0 HU to 500 HU
		BOD, 3 Days @ 27°C	IS 3025 (Part 44): 1993, 3 Day BOD @ 27 °C	2.0 mg/l to 10000 mg/l

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		COD	APHA 23 rd edition-2017, Open reflux method, 5220 B	5.0 mg/l to 10000 mg/l
		Ammonical Nitrogen as N	IS 3025 (Part 34): 1988	5 mg/l to 100 mg/l
		Total kjeldhal nitrogen as N	IS 3025 (Part 34): 1988 kjeldhal method	1 mg/l to 200 mg/l
		Nitrate as NO ₃	IS 3025 (Part 34): 1988 Chromotropic method	1 mg/l to 100 mg/l
		Boron as B	APHA 23 rd edition-2017, carmine method, 4500 B C curcumin method 4500 B B	0.1 mg/l to 5 mg/l
		Oil & grease	APHA 23 rd edition-2017, gravimetric method, 5220 B	1.0 mg/l to 100 mg/l
		Bio assay test	IS 6582 (Part 1): 1971	Qualitative
		Zinc as Zn	APHA 23 rd edition-2017, AAS method ,3030D, 3111 B	1 mg/l to 20 mg/l
		Lead as Pb	APHA 23 rd edition-2017 AAS method ,3030D, 3111 B	0.1 mg/l to 10 mg/l
		Cadmium as Cd	APHA 23 rd edition-2017, AAS method ,3030,3111 B	0.1 mg/l to 5 mg/l
		Free residual chloride as Cl ₂	APHA 23 rd edition-2017, iodometric method, 4500 Cl B	0.1 mg/l to 3.0 mg/l
2.	Soil	pH	IS 2720 (Part 26): 1987 (RA 2007)	1 to 14
		Conductivity	IS 14767:2000	2 µS/cm to 1000 mS/cm
		Soil texture	Lab SOP no.58 dated 04.08.2010	Qualitative
		Moisture content	IS 2720 (Part 2): 1973 (RA 2010) oven drying method	1 % to 95 %
		Organic matter	IS 2720 (Part 22): 2001	0.1 % to 95 %

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		Bulk density	IS 2720 (Part 3): 1983	1 g/cc to 1.8 g/cc
		Available potassium	Lab SOP no.SP-58	1.0 kg/ha to 100 kg/ha
		Available phosphorus	Lab SOP no.SP-59	1 kg/ha to 100 kg/ha
		Available nitrogen	Lab SOP no. SP-61	10 % to 90 %
IV.	ATMOSPHERIC POLLUTION			
1.	Ambient Air	PM _{2.5}	SP-61, Issue dated 04-08-2012	20 µg/m ³ to 300 µg/m ³
		PM ₁₀	IS 5128 (Part 23): 2006 by gravimetric method	20 µg/m ³ to 800 µg/m ³
		Sulphur dioxide	IS 5182 (Part 2): 2001 (RA 2012) 1 st rev	6 µg/m ³ to 100 µg/m ³
		Nitrogen dioxide	IS 5182 (Part 4): 2006 (RA 2012)	6 µg/m ³ to 100 µg/m ³
		Ozone	IS 5182, (Part 9) (RA:2001)	12 µg/m ³ to 300 µg/m ³
		Ammonia	Lab SOP no.80, dated 04-08-2012	20 µg/m ³ to 70 µg/m ³
2.	Stack Emission	Particulate matter	IS 11255 (Part 1 & Part 3): 1985 (RA 1988) (RA 2009)	5 mg/Nm ³ to 2000 mg/Nm ³
		Sulphur dioxide	IS 11255 (Part 1): 1985 (RA 1988) (RA 2009)	5 mg/Nm ³ to 1000 mg/Nm ³
		Nitrogen dioxide	IS 11255 (Part 7): 2005 (RA 1988) (RA 2012)	2 mg/Nm ³ to 500 mg/Nm ³
		Carbon dioxide	IS 13720:1992 (RA 2009) by Orsat apparatus,	1 % to 20 %
		Fluoride	IS 11255 (Part 5): 1990	0.1 mg/Nm ³ to 1000 mg/Nm ³
		Carbon monoxide	IS 13720:1992	1 % to 95 %
		Oxygen	IS 13720:1992	0.2 % to 20 %

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CHEMICAL TESTING

AT SITE				
I.	ATMOSPHERIC POLLUTION			
1.	Noise Level	Noise level ambient	IS 9989:1981 (RA 2001)	30 Leq dB(A) to 130 Leq dB(A)