

Laboratory Vitro Labs, 2-2-647/A/3, 3rd Floor, Sai Baba Nagar Colony, Shivam Road, New Nallakunta, Hyderabad, Telangana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-8184

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Validity 06.12.2018 to 05.12.2020

Last Amended on --

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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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CHEMICAL TESTING

AT LABORATORY				
I.	WATER			
1.	Water/Bore Water/Potable and Domestic Water	Colour	IS 3025 (Part 4): 1983 (RA 2017) APHA 23rd Edition 2017 - 2120 B visual comparison method	1 Hazen Units to 500 Hazen Units
		Odour	IS 3025 (Part 5): 1983 (RA 2017)	Qualitative Agreeable/Not agreeable
		Turbidity	IS 3025 (Part 10): 1984 (RA 2017) APHA 23rd Edition 2017 - 2130 B Nephelometric method	0.1 NTU to 500 NTU
		pH @ 25°C	IS 3025 (Part 11): 1983 (RA 2017) APHA 23rd Edition 2017 - 4500 H+ B Electrometric method	2 to 13
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2017) APHA 23rd Edition 2017 - 2540 C Gravimetric method	1 mg/L to 8000 mg/L
		Calcium as Ca	IS 3025 (Part 40): 1991 (RA 2014) APHA 23rd Edition 2017 - 3500 Ca B EDTA Titrimetric method	0.5 mg/L to 1000 mg/L

Battal Singh
Convenor

N. Venkateswaran
Program Manager

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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
		Chloride as Cl	IS 3025 (Part 32): 1988 (RA 2014) APHA 23rd Edition 2017 -4500 Cl B Argentometric method	1 mg/L to 5000 mg/L
		Fluoride as F	APHA 23rd Edition 2017 - 4500 F D SPADNS Method	0.1 mg/L to 15 mg/L
		Free residual chlorine	IS 3025 (Part 26): 1986 (RA 2014) APHA 23rd Edition 2017 - 4500 – Cl- B Iodometric method	0.1 mg/L to 10 mg/L
		Iron as Fe	IS 3025 (Part 53): 2014 (RA 2009) APHA 23rd Edition 2017 - 3500 Fe- B Phenanthroline method	0.02 mg/L to 5 mg/L
		Electrical conductivity	IS 3025 (Part-14) : 2013 APHA 23rd Edition 2017 - 2510 B	1 to 10,000 μ S/cm
		Nitrate as NO ₃	APHA 23rd Edition 2017 - 4500 – NO ₃ - B Ultraviolet Spectrophotometric screening method	0.1 mg/L to 100 mg/L
		Sulphate (as SO ₄)	IS 3025 (Part 24): 1986 (RA 2014)	5.0 mg/L to 1000 mg/L
		Total Alkalinity as CaCO ₃	IS 3025 (Part 23): 1986 (RA 2014) APHA 23rd Edition 2017 - 2320 B Titration method	1.0 mg/L to 500 mg/L
		Total Hardness as CaCO ₃	IS 3025 (Part 21): 2014 APHA 23rd Edition 2017 - 2340 C EDTA Titrimetric method	1.0 mg/L to 5000 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
		Sodium as Na	IS 3025 (Part 45): 1993 (RA 2014) APHA 23rd Edition 2017 - 3500 Na B Flame Emission method	1.0 mg/L to 500 mg/L
		Potassium as K	IS 3025 (Part 45): 1993 (RA 2014) APHA 23rd Edition 2017 - 3500 K B Flame emission method	1.0 mg/L to 100 mg/L
		Nitrite as NO ₂	IS 3025 (Part 34): 1988 (RA 2009) APHA 23rd Edition 2017 - 4500 NO ₂ B Colorimetric method	0.1 mg/L to 50 mg/L
		Alkalinity to Phenolphthalein	APHA 23rd Edition 2017 - 2320 B Titration method	1 mg/L to 200 mg/L
		Magnesium Hardness (as CaCO ₃)	APHA 23rd Edition 2017 - 3500 Mg B	1.0 mg/L to 1000 mg/L
		Reactive silica as SiO ₂	APHA 23rd Edition 2017 - 4500 SiO ₂ D Heteropoly blue method	0.2 mg/L to 80 mg/L
II.	POLLUTION & ENVIRONMENT			
1.	Liquid Effluents/ Waste Water/ ETP Water/STP Water	Temperature °C	APHA 23rd Edition 2017 - 2550 B	25 °C to 60 °C
		pH value	APHA 23rd Edition 2017 - 4500 H+ B Electrometric method	2 to 13
		Total solids (TS)	APHA 23rd Edition 2017 - 2540 B	5 mg/L to 10000 mg/L
		Total Suspended Solids (TSS)	APHA 23rd Edition 2017 - 2540 D	1 mg/L to 10000 mg/L

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		Total Dissolved solids (TDS)	APHA 23rd Edition 2017 - 2540C	1 mg/L to 10000 mg/L
		Oil and Grease	APHA 23rd Edition 2017 - 5520 B (Liquid- Liquid, Partition Gravimetric method)	1 mg/L to 5000 mg/L
		Total Kjeldahl Nitrogen as N	APHA 23rd Edition 2017 - 4500 - Norg - B Macro-Kjeldahl method	0.5 mg/L to 250 mg/L
		BOD at 27 °C for 3 days	IS 3025 (Part-44) : 1993 (Reaffirmed 2009)	2.0 mg/L to 1000 mg/L
		COD	APHA 23rd Edition 2017 - 5220 B Open reflux method	10 mg/L to 10000 mg/L
		Hexavalent Chromium as Cr ⁶⁺	APHA 23rd Edition 2017 - 3500 Cr B colorimetric method	0.1 mg/L to 10 mg/L
		Chloride as Cl	APHA 23rd Edition 2017 - 4500 Cl – B Argentometric method	1 mg/L to 10000 mg/L
		Fluoride as F	APHA 23rd Edition 2017 - 4500 F D- SPADNS Method	0.1 mg/L to 15 mg/L
		Phosphates as P	APHA 23rd Edition 2017 - 4500- P C Vanadomolybd phosphoric acid colorimetric method	0.02 mg/L to 25 mg/L
		Sulphates as SO ₄	APHA 23rd Edition 2017 - 4500 SO ₄ –E Turbidimetric method	5 mg/L to 5000 mg/L
		Sodium as Na	APHA 23rd Edition 2017 - 3500 – Na- B Flame emission method	1.0 mg/L to 2000 mg/L

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		Potassium as K	APHA 23rd Edition 2017 - 3500 - K - B Flame emission method	1.0 mg/L to 2000 mg/L
		Fixed Solids	APHA 23rd Edition 2017- 2540 E Gravimetric method	10 mg/L to 1000 mg/L
		Volatile Solids	APHA 23rd Edition 2017 - 2540 E Gravimetric method	10 mg/L to 1000 mg/L
III	ATMOSPHERIC POLLUTION			
1.	Ambient Air	Particulate Matter (PM ₁₀)	IS 5182 (Part 23): 2006 (RA 2017) By gravimetric method	10 µg/m ³ to 800 µg/m ³
		Particulate Matter (PM _{2.5})	LAB SOP No. VL/HYD/SOP/TM/AIR/03, dt.31.07.2015	10 µg/m ³ to 500 µg/m ³
		Sulphur Dioxide	IS 5182 (Part 2): 2001 (RA 2017)	5 µg/m ³ to 250 µg/m ³
		Nitrogen dioxide (NO ₂)	IS 5182:(Part 6) :2006 (RA 2017)	7 µg/m ³ to 250 µg/m ³
		Carbon Monoxide (CO)	NIOSH 6604 4 th edition, 1996	1.14 mg/m ³ to 114 mg/m ³
		Ozone	IS 5182 (Part 9): 1974 (RA 2014)	2 µg/m ³ to 200 µg/m ³
2.	Stack Emissions	Oxides of Sulphur as SO ₂	IS 11255 (Part 2): 1985 (RA 2014)	5 mg/Nm ³ to 800 mg/Nm ³
		Nitrogen Oxides as NO ₂	IS 11255 (Part 7): 2005 (RA 2017)	6 mg/Nm ³ to 800 mg/Nm ³
		Particulate Matter	IS 11255 (Part 1): 1985 (RA 2014)	1 mg/Nm ³ to 500 mg/Nm ³

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IV.	GASES			
1.	Compressed Gases/ Dry Air	Oxygen as O ₂	SOP REF: VL/HYD/SOP/TM/CAIRN2/03 Dated 31.07.2018	18 % to 23 %
		Carbon Monoxide as CO	SOP REF: VL/HYD/SOP/TM/CAIRN2/03 Dated 31.07.2018	1.14 mg/Nm ³ to 114 mg/Nm ³
		Carbon – Di – Oxide as CO ₂	SOP REF: VL/HYD/SOP/TM/CAIRN2/03 Dated 31.07.2018	1.94 mg/m ³ to 1455 mg/m ³
		Moisture / Water content	SOP REF: VL/HYD/SOP/TM/CAIRN2/04 Dated 31.07.2018	1.9 mg/m ³ to 4600 mg/m ³
		Dew Point	SOP REF: VL/HYD/SOP/TM/CAIRN2/04 Dated 31.07.2018	-70 °C to +10 °C
		Particulate Matter	SOP REF: VL/HYD/SOP/TM/CAIRN2/01 Dated 31.07.2018	0.1 mg/m ³ to 10 mg/m ³
		Oil Mist	SOP REF: VL/HYD/SOP/TM/CAIRN2/02 Dated 31.07.2018	0.01 mg/m ³ to 5.0 mg/m ³
		Nitrogen as N ₂	SOP REF: VL/HYD/ SOP/TM/CAIRN2/03 Dated 31.07.2018	75 % to 80 %
2.	Nitrogen Gas	Oxygen as O ₂	SOP REF: VL/ HYD/ SOP/TM/CAIRN2/03 Dated 31.07.2018	0.1 % to 2 %
		Carbon Monoxide as CO	SOP REF: VL/HYD/SOP/TM/CAIRN2/03 Dated 31.07.2018	1.4 mg/m ³ to 20 mg/m ³

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		Carbon – Di – Oxide as CO ₂	SOP REF: VL/HYD/SOP/TM/CAIRN2/03 Dated 31.07.2018	1.94 mg/m ³ to 969 mg/m ³
		Moisture / Water content	SOP REF: VL/HYD/SOP/TM/CAIRN2/04 Dated 31.07.2018	1.9 mg/m ³ to 4600 mg/m ³
		Dew Point	SOP REF: VL/ HYD/ SOP/ TM/CAIRN2/04 Dated 31.07.2018	-70 °C to +10 °C
		Particulate Matter	SOP REF: VL/HYD/SOP/TM/CAIRN2/01 Dated 31.07.2018	0.1 mg/m ³ to 5 mg/m ³
		Oil Mist	SOP REF: VL/HYD/SOP/TM/CAIRN2/02 Dated 31.07.2018	0.01 mg/m ³ to 5 mg/m ³
		Nitrogen as N ₂	SOP REF: VL/HYD/SOP/TM/CAIRN2/03 Dated 31.07.2018	95 % to 99 %

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CHEMICAL TESTING

AT SITE				
I.	ATMOSPHERIC POLLUTION			
1.	Stack Emissions	Temperature	VL/HYD/SOP/STACK/TM/05, Issue No. 01, Issue Date: 30-11-2016	35 °C to 600 °C
		Carbon Dioxide	VL/HYD/SOP/AIR/TM/08 Issue Date 22.10.2017	0.1 % to 20 %
		Carbon Monoxide	VL/HYD/SOP/AIR/TM/09 Issue Date 22.10.2017	1.14 mg/Nm ³ to 114 mg/Nm ³
2.	Ambient Noise	Sound Pressure Level	SOP/EQ/18 Dated 31.07.2018	30 dB(A) to 110 dB(A)

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