

Laboratory **Kadam Environmental Consultants, 871/B/3, GIDC Makarpura, Vadodara, Gujarat**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-7099**

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Validity **27.03.2018 to 26.03.2020**

Last Amended on

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**

I.	WATER			
1.	<b>Ground Water, Surface Water &amp; Drinking Water</b>	pH	APHA 23 <sup>rd</sup> Edition 4500-H <sup>+</sup> B	2 to 12
		Conductivity	APHA 23 <sup>rd</sup> Edition 2510 B	1 µmhos/cm to 200 mmhos/cm
		Temperature	APHA 23 <sup>rd</sup> Edition 2550- B	0.5 °C to 90 °C
		Turbidity	APHA 23 <sup>rd</sup> Edition 2130- B Nephelometric Method	0.1 NTU to 500 NTU
		Colour	APHA 23 <sup>rd</sup> Edition 2120 B Visual comparison Method	1 Pt-Co to 250 Pt-Co
		COD	APHA 23 <sup>rd</sup> Edition 5220 B	5 mg/l to 10,000 mg/l
		BOD at 27 °C For 3 days	IS 3025 (Part 44) : 1993 (RA 2014)	2 mg/l to 10000 mg/l
		Total Dissolved Solids	APHA 23 <sup>rd</sup> Edition 2540 C	3 mg/l to 10,000 mg/l
		Total Suspended Solids	APHA 23 <sup>rd</sup> Edition 2540 D	2 mg/l to 10,000 mg/l
		Oil & Grease	APHA 23 <sup>rd</sup> Edition 5520 B	1.0 mg/l to 300 mg/l
		Dissolved Oxygen (D.O)	APHA 23 <sup>rd</sup> Edition 4500 O- C	0.2 mg/l to 10 mg/l
		Acidity	APHA 23 <sup>rd</sup> Edition 2310 B Acidity	5 mg/l to 2500 mg/l
		Alkalinity (Methyl Orange & Phenolphthalein)	APHA 23 <sup>rd</sup> Edition 2320 B Alkalinity	5 mg/l to 2500 mg/l

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		Chloride	APHA 23 <sup>rd</sup> Edition 4500 - Cl <sup>-</sup> B	1.0 mg/l to 10,000 mg/l
		Sulphate	APHA 23 <sup>rd</sup> Edition 4500 - SO <sup>4</sup> E	1.0 mg/l to 10,000 mg/l
		Fluoride	APHA 23 <sup>rd</sup> Edition 4500 - F <sup>-</sup> D	0.05 mg/l to 10 mg/l
		Sodium	APHA 23 <sup>rd</sup> Edition 3500 - Na B	1 mg/l to 3000 mg/l
		Potassium	APHA 23 <sup>rd</sup> Edition 3500 - K B	1 mg/l to 1500 mg/l
		Total Hardness	APHA 23 <sup>rd</sup> Edition 2340 C	2 mg/l to 10,000 mg/l
		Ca. Hardness	APHA 23 <sup>rd</sup> Edition 3500 - Ca B	2 mg/l to 4000 mg/l
		Calcium	APHA 23 <sup>rd</sup> Edition 3500 - Ca B	2 mg/l to 1000 mg/l
		Mg. Hardness	APHA 23 <sup>rd</sup> Edition 3500 - Mg B	2 mg/l to 1000 mg/l
		Magnesium	APHA 23 <sup>rd</sup> Edition 3500-Mg B	2 mg/l to 1000 mg/l
		Amm. Nitrogen	IS 3025 (Part 34): 1988 (RA 2014)	0.05 mg/l to 500 mg/l
		Nitrate	IS 3025 (Part 34): 1988 (RA 2014) (ii)	0.1 mg/l to 100 mg/l
		Phosphate	APHA 23 <sup>rd</sup> Edition 4500 - P C	0.02 mg/l to 100 mg/l
		Boron	APHA 23 <sup>rd</sup> Edition 4500 - B C	0.05 mg/l to 30 mg/l
		Aluminium	APHA 23 <sup>rd</sup> Edition 3500 Al - B	0.2 mg/l to 10 mg/l
		Arsenic	APHA 23 <sup>rd</sup> Edition 3500 As-B	0.01 mg/l to 10 mg/l
		Cadmium	APHA 23 <sup>rd</sup> Edition 3111 B	0.01 mg/l to 10 mg/l

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		Chromium	APHA 23 <sup>rd</sup> Edition 3500 Cr - B	0.02 mg/l to 10 mg/l
		Copper	APHA 23 <sup>rd</sup> Edition 3111 B & 3500 Cu - B	0.03 mg/l to 10 mg/l
		Iron	APHA 23 <sup>rd</sup> Edition 3111 B & 3500 Fe - B	0.05 mg/l to 10 mg/l
		Lead	APHA 23 <sup>rd</sup> Edition 3111 B	0.02 mg/l to 10 mg/l
		Manganese	APHA 23 <sup>rd</sup> Edition 3111 B & 3500 Mn - B	0.02 mg/l to 10 mg/l
		Nickel	APHA 23 <sup>rd</sup> Edition 3111 B	0.02 mg/l to 10 mg/l
		Phenol	APHA 23 <sup>rd</sup> Edition 5530 D	0.02 mg/l to 15 mg/l
		Zinc	APHA 23 <sup>rd</sup> Edition 3111 B	0.03 mg/l to 10 mg/l
		Sulphide	IS 3025 (Part 29): 1986 (RA 2014)	1 mg/l to 20 mg/l
		Sulfite	APHA 23 <sup>rd</sup> Edition 4500 SO <sub>3</sub> <sup>2-</sup> - B	1 mg/l to 20 mg/l
		Nitrite Nitrogen	IS 3025 (Part-34): 1988 (RA 2014)	0.05 mg/l to 100.0 mg/l
		Sodium	LAB-SOP-138, Issue No-01 Issue Date:-01.01.2015 Based on APHA 23 <sup>rd</sup> Edition	0.01% to 100 %
		Sodium Absorption Ration	LAB-SOP-138 Issue No:-01 Issue Date:-01.01.2015 Based on APHA 23 <sup>rd</sup> Edition	0.01 to 100
		Volatile Solid	APHA 23 <sup>rd</sup> Edition 2540 E & IS 3025 (Part 18): 1984 (RA 2017)	1.0 mg/l to 1000 mg/l

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		Fixed Solid	APHA 23 <sup>rd</sup> Edition 2540 E & IS 3025 (Part 18): 1984 (RA 2017)	1.0 mg/l to 1000 mg/l
		Residual Chlorine	IS 3025 (Part 26): 1986 (RA 2014)	0.1 mg/l to 10 mg/l
		Reactive Silica	APHA 23 <sup>rd</sup> Edition 4500-SiO <sub>2</sub> -D, colorimetric	0.2 mg/l to 20 mg/l
		Selenium	APHA 23 <sup>rd</sup> Edition 3500 SC- C	0.01 mg/l to 10 mg/l
		Vanadium	APHA 23 <sup>rd</sup> Edition 3500-V B	0.002 mg/l to 10 mg/l
		Cobalt	APHA 23 <sup>rd</sup> Edition 3111-B	0.02 mg/l to 10 mg/l
		Molybdenum	APHA 23 <sup>rd</sup> Edition 3111-D	0.05 mg/l to 10 mg/l
		Barium	APHA 23 <sup>rd</sup> Edition 3111-D	0.05 mg/l to 10 mg/l
		Mercury	APHA 23 <sup>rd</sup> Edition 3112-B	0.02 mg/l to 10 mg/l
		Anionic Surfactants as Methylene Blue Active Substances (MBAS)	APHA 23 <sup>rd</sup> Edition 5540-C	0.02 mg/l to 10 mg/l
<b>2.</b>	<b>Waste Water</b>	pH	APHA 23 <sup>rd</sup> Edition 4500-H <sup>+</sup> B	2 to 12
		Conductivity	APHA 23 <sup>rd</sup> Edition 2510 B	1 µmhos/cm to 200 µmhos/cm
		Temperature	APHA 23 <sup>rd</sup> Edition 2550- B	0.5 °C to 90 °C
		Turbidity	APHA 23 <sup>rd</sup> Edition 2130- B Nephelometric Method	0.1 NTU to 500 NTU
		Colour	APHA 23 <sup>rd</sup> Edition 2120 B Visual comparison Method	1 Pt-Co to 250 Pt-Co

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		COD	APHA 23 <sup>rd</sup> Edition 5220 B	5 mg/l to 10000 mg/l
		BOD at 27° C For 3 days	IS 3025 (Part 44) : 1993 (RA 2014)	2 mg/l to 10000 mg/l
		Total Dissolve Solids	APHA 23 <sup>rd</sup> Edition 2540 C	3 mg/l to 10000 mg/l
		Total Suspended Solids	APHA 23 <sup>rd</sup> Edition 2540 D	2 mg/l to 10000 mg/l
		Oil & Grease	APHA 23 <sup>rd</sup> Edition 5520 B	1.0 mg/l to 300 mg/l
		Dissolve Oxygen (D.O)	APHA 23 <sup>rd</sup> Edition 4500 - O C	0.2 mg/l to 10 mg/l
		Acidity	APHA 23 <sup>rd</sup> Edition 2310 B Acidity	2 mg/l to 2500 mg/l
		Alkalinity (Methyl Orange & Phenolphthalein)	APHA 23 <sup>rd</sup> Edition 2320 B Alkalinity	2 mg/l to 2500 mg/l
		Chloride	APHA 23 <sup>rd</sup> Edition 4500 Cl <sup>-</sup> B	1.0 mg/l to 10000 mg/l
		Sulphate	APHA 23 <sup>rd</sup> Edition 4500 SO <sup>4</sup> E	1.0 mg/l to 10000 mg/l
		Fluoride	APHA 23 <sup>rd</sup> Edition 4500 F <sup>-</sup> D	0.05 mg/l to 10 mg/l
		Sodium	APHA 23 <sup>rd</sup> Edition 3500 - Na B	1 mg/l to 3000 mg/l
		Potassium	APHA 23 <sup>rd</sup> Edition 3500 - K B	1 mg/l to 1500 mg/l
		Total Hardness	APHA 23 <sup>rd</sup> Edition 2340 C	2 mg/l to 10,000 mg/l
		Ca. Hardness	APHA 23 <sup>rd</sup> Edition 3500 - Ca B	2 mg/l to 4000 mg/l
		Calcium	APHA 23 <sup>rd</sup> Edition 3500 - Ca B	2 mg/l to 1000 mg/l

**Ruchi Guntuku**  
Convenor

**N. Venkateswaran**  
Program Director

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		Mg. Hardness	APHA 23 <sup>rd</sup> Edition 3500 - Mg B	2 mg/l to 1000 mg/l
		Magnesium	APHA 23 <sup>rd</sup> Edition 3500 - Mg B	2 mg/l to 1000 mg/l
		Amm. Nitrogen	IS 3025 (PP 34): 1988 (RA 2014)	0.05 mg/l to 100 mg/l
		Nitrate	IS 3025 (Part 34) (ii): 1988 (RA 2014)	0.1 mg/l to 100 mg/l
		Phosphate	APHA 23 <sup>rd</sup> Edition 4500 P - C	0.02 mg/l to 100 mg/l
		Boron	APHA 23 <sup>rd</sup> Edition 4500 B - C	0.05 mg/l to 30 mg/l
		Aluminium	APHA 23 <sup>rd</sup> Edition 3500 Al - B	0.2 mg/l to 10 mg/l
		Arsenic	APHA 23 <sup>rd</sup> Edition 3500 As - B	0.01 mg/l to 10 mg/l
		Cadmium	APHA 23 <sup>rd</sup> Edition 3111 B	0.01 mg/l to 10 mg/l
		Chromium	APHA 23 <sup>rd</sup> Edition 3500 Cr - B	0.02 mg/l to 10 mg/l
		Copper	APHA 23 <sup>rd</sup> Edition 3111 B & 3500 Cu - B	0.03 mg/l to 10 mg/l
		Iron	APHA 23 <sup>rd</sup> Edition 3111 B & 3500 Fe - B	0.05 mg/l to 10 mg/l
		Lead	APHA 23 <sup>rd</sup> Edition 3111 B	0.02 mg/l to 10 mg/l
		Manganese	APHA 23 <sup>rd</sup> Edition 3111 B & 3500 Mn - B	0.02 mg/l to 10 mg/l
		Nickel	APHA 23 <sup>rd</sup> Edition 3111 B	0.02 mg/l to 10 mg/l
		Phenol	APHA 23 <sup>rd</sup> Edition 5530 D	0.02 mg/l to 15 mg/l
		Zinc	APHA 23 <sup>rd</sup> Edition 3111 B	0.03 mg/l to 10 mg/l

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		Sulphide	IS 3025 (Part 29): 1986 (RA 2014)	1 mg/l to 20 mg/l
		Sulfite	APHA 23 <sup>rd</sup> Edition 4500 SO <sub>3</sub> <sup>2-</sup> - B	1 mg/l to 20 mg/l
		Nitrite Nitrogen	IS 3025 (Part-34): 1988 (RA 2014)	0.05 mg/l to 100.0 mg/l
		Sodium %	LAB-SOP-138 Issue No:-01 Issue Date:-01.01.2015 Based on APHA 23 <sup>rd</sup> Edition	0.01 % to 100 %
		Sodium Absorption Ration	LAB-SOP-138 Issue No:-01 Issue Date:-01.01.2015 Based on APHA 23 <sup>rd</sup> Edition	0.01 to 100
		Volatile Solid	APHA 23 <sup>rd</sup> Edition 2540 E & IS 3025 (Part 18) 1984 (RA 2017)	2.0 mg/l to 1000 mg/l
		Fixed Solid	APHA 23 <sup>rd</sup> Edition 2540 E & IS 3025 (Part 18) 1984 (RA 2017)	2.0 mg/l to 1000 mg/l
		Residual Chlorine	IS 3025 (Part 26): 1986 (RA 2014)	0.1 mg/l to 10 mg/l
		Mixed Liquor Suspended Solid	IS 3025 (Part 18): 1984 (RA 2017)	2 mg/l to 10000 mg/l
		Mixed Liquor Volatile Suspended Solid	IS 3025 (Part 18): 1984 (RA 2017)	2 mg/l to 10000 mg/l
		Reactive Silica	APHA 23 <sup>rd</sup> Edition 4500-SiO <sub>2</sub> -D, Colorimetric	0.4 mg/l to 20 mg/l
		Selenium	APHA 23 <sup>rd</sup> Edition 3500 SC - C	0.01 mg/l to 10 mg/l
		Vanadium	APHA 23 <sup>rd</sup> Edition 3500-Co	0.002 mg/l to 10 mg/l

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		Cobalt	APHA 23 <sup>rd</sup> Edition 3111-B	0.02 mg/l to 10 mg/l
		Molybdenum	APHA 23 <sup>rd</sup> Edition 3111-D	0.05 mg/l to 10 mg/l
		Barium	APHA 23 <sup>rd</sup> Edition 3111-D	0.05 mg/l to 10 mg/l
		Mercury	APHA 23 <sup>rd</sup> Edition 3112-B	0.02 mg/l to 10 mg/l
		Anionic Surfactants as Methylene Blue Active Substances (MBAS)	APHA 23 <sup>rd</sup> Edition 5540-C	0.02 mg/l to 10 mg/l
		Bio-assay	IS 6582 (Part 2): 2001 (RA 2007)	0 to 100 %
<b>II.</b>	<b>ATMOSPHERIC POLLUTION</b>			
<b>1.</b>	<b>Ambient air</b>	PM <sub>10</sub>	IS 5182 (Part 23): 2006 (RA 2017)	10 µg/m <sup>3</sup> to 1000 µg/m <sup>3</sup>
		SO <sub>2</sub>	IS 5182 (Part 2): 2001 (RA 2017)	3.75 µg/m <sup>3</sup> to 120 µg/m <sup>3</sup>
		NO <sub>x</sub>	IS 5182 (Part 6): 2006 (RA 2017)	6 µg/m <sup>3</sup> to 120 µg/m <sup>3</sup>
		Ozone	IS 5182 (Part 9): 1974 (RA 2014)	1 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Chlorine	IS 5182 (Part 19): 1982 (RA 2014)	1.0 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Carbon disulphide	IS 5182 (Part 20): 1982 (RA 2009)	3.0 µg /m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Fluoride	IS 5182 (Part 13): 1991 (RA 2014)	1.0 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Ammonia	LAB-SOP-109 Issue No:-01 Issue Date:-01.07.2015	10 µg/m <sup>3</sup> to 500 µg/m <sup>3</sup>



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		Lead	IS 5182 (Part 22): 2004 (RA 2014)	1 µg/m <sup>3</sup> to to 100 µg/m <sup>3</sup>
		H <sub>2</sub> S	IS 5182 (Part 7): 1973 (RA 2014)	1 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Nickel	LAB-SOP-113 Issue No:-01 Issue Date:-01.07.2015	1 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Arsenic	LAB-SOP-114 Issue No:-01 Issue Date:-01.07.2015	5 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		Benzene Toluene and Xylene (BTX)	IS 5182 (Part 11): 2006 (RA-2017)	Benzene: 1 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup> Toluene: 1 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup> Xylene: 1 µg/m <sup>3</sup> to 100 µg/m <sup>3</sup>
		PM <sub>2.5</sub>	LAB-SOP-111 Issue No:-01 Issue Date:-01.01.2015	2.0 µg/m <sup>3</sup> to 500 µg/m <sup>3</sup>
<b>2.</b>	<b>Stack Emission</b>	PM	IS 11255 (Part 1): 1985 (RA 2014)	5 mg/Nm <sup>3</sup> to 1000 mg/Nm <sup>3</sup>
		SO <sub>2</sub>	IS 11255 (Part 2): 1985 (RA 2014)	4 mg/Nm <sup>3</sup> to 2000 mg/Nm <sup>3</sup>
		CO <sub>2</sub>	LAB-SOP-093 Issue No:-01 Issue Date:-01.01.2015	0.1 % to 16 %
		O <sub>2</sub>	LAB-SOP-093 Issue No:-01 Issue Date:-01.01.2015	0.1 % to 25 %
		CO	LAB-SOP-093 Issue No:-01 Issue Date:-01.01.2015	1.145 mg/Nm <sup>3</sup> to 2290 mg/Nm <sup>3</sup>
		Ammonia	IS 11255 (Part 6): 1999 (RA 2014)	5 mg/Nm <sup>3</sup> to 100 mg/ Nm <sup>3</sup>

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		H <sub>2</sub> S	IS 11255 (Part 4): 2006 (RA 2017)	5 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		NO <sub>x</sub>	IS 11255 (Part 7): 2005	4 mg/ Nm <sup>3</sup> to 500 mg/Nm <sup>3</sup>
		Cadmium	USEPA(2000) Method-29	0.1 mg/ Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Copper	USEPA(2000) Method-29	0.15 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Lead	USEPA(2000) Method-29	0.1 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Manganese	USEPA(2000) Method-29	0.2 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Nickel	USEPA(2000) Method-29	0.1 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Zinc	USEPA(2000) Method-29	0.15 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Chromium	USEPA(2000) Method-29	0.2 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
		Chlorine	LAB-SOP-104 Issue No:-01 Issue Date:-01.01.2015	5 mg/Nm <sup>3</sup> to 100 mg/Nm <sup>3</sup>
3.	Noise	Noise	IS 9989: 1981 & LAB-SOP-044 Issue No:-01 Issue Date:-01.01.2015	34 dB(A) to 134 dB(A)
4.	Meteorological Parameters	Temperature	LAB-SOP-142 Issue No:-01	-40 °C to 60 °C
		Relative Humidity	Issue Date:-05.07.2017	5 % to 100 %
		Wind Direction		0 to 359 degree
		Wind Speed		0.01 m/s to 55 m/s
III.	<b>POLLUTION &amp; ENVIRONMENT</b>			
1.	Soil Testing	Dry Density	IS 2720 (Part 29): 1975 (RA 2015) LAB-SOP-079	1 g/cc to 2 g/cc

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		Moisture Content	IS 2720 (Part 2): 1973 (RA 2015)	0.1 % to 100 %
		Porosity	IS 2720 (Part 7): 1980 (RA 2011)	30 % to 70 %
		Water Holding Capacity	LAB-SOP-083, Issue No-01 Issue Date:-01-01-2015	25 % to 75 %
		Cation Exchange Capacity	LAB-SOP-085 Issue No:-01 Issue Date:-01-01-2015	(5 to 100 meq)/100g
		pH	IS 2720 (Part 26): 1987 (RA 2011)	2.00 to 12.00
		Conductivity	IS 14767:2000 (RA 2016)	1 µmhos/cm to 200 mmhos/cm
		Aluminum	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Cadmium	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Chromium	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Copper	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Iron	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Lead	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Manganese	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Nickel	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Zinc	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Sodium	LAB-SOP-117 Issue No:-01 Issue Date:-01-01-2015	1 g/kg to 100 g/kg

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		Potassium	LAB-SOP-128, Issue No:-01 Issue Date:-01-01-2015	1 g/kg to 100 g/kg
		Calcium	LAB-SOP-129 Issue No:-01 Issue Date:-01-01-2015	5 mg/kg to 100 mg/kg
		Magnesium	LAB-SOP-130 Issue No:-01 Issue Date:-01-01-2015	5 mg/kg to 100 mg/kg
		Total Sulphate	IS 2720 (Part 27): 1977 (RA 2015)	10 mg/kg to 1000 mg/kg
		Total Kjeldahl Nitrogen	IS 14684:1999 (RA 2014)	0.5 % to 100 %
		Nitrate Nitrogen NO <sub>3</sub> -N	IS 14684:1999 (RA 2014)	0.5 % to 100 %
		Total Phosphate	IS 10158 (Part 2): 1973 (RA 2010)	1 mg/kg to 1000 mg/kg
		Organic Matter	IS 2720 (Part 22): 1972 (RA 2015)	1 mg/kg to 1000 mg/kg
		Cobalt	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Molybdenum	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg
		Barium	EPA-3050B/EPA 7000B/ EPA 3051a	1 mg/kg to 100 mg/kg