

**Laboratory** Mahabal Enviro Engineers Pvt. Ltd., Plot Nos. 13,14,17,18,  
Grampanchayat Bokhara, Chhindawara Road, Koradi, Dist. Nagpur,  
Maharashtra

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

**Certificate Number** TC-7487

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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
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**BIOLOGICAL TESTING**

I.	POLLUTION & ENVIRONMENT			
1.	<b>Effluent &amp; Waste Water</b>	Total Bacterial Count/ Standard Plate Count/ Total Viable Count/ Total Plate Count	APHA 23 <sup>rd</sup> Ed. 2017, 9215 – B, 9 – 56.	≥1 CFU/ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005) Pour plate method.	≥1 CFU/ml
		Total coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 - B, 9 – 69.	1.8 to 1600 MPN index/ 100 ml
			IS 1622:1981, RA 2009, Ed.2.4, (2003-2005).	< 2 to 1600 MPN index/ 100 ml
		Faecal coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 - E, 9 – 77.	1.8 to 1600 MPN index/ 100ml
			IS 1622:1981, RA 2009, Ed.2.4, (2003-2005).	< 2 to 1600 MPN index/ 100ml
		Detection & Enumeration of E. coli	APHA 23 <sup>rd</sup> Ed.2017, 9221 - B&G, 9 - 69.	1.8 to 1600 MPN index/ 100ml Present or Absent/100 ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	< 2 to 1600 MPN index/ 100ml Present or Absent/100ml
		Detection of Salmonella spp.	APHA 23 <sup>rd</sup> Ed. 2017, 9260 - B, 9 – 152.	Present or Absent/100ml
			IS 15187:2016, RA 2009.	Present or Absent/100ml
		Detection of Staphylococcus aureus	APHA 23 <sup>rd</sup> Ed. 2017, 9213 – B, 9 – 46.	Present or Absent/100ml
		Enumeration of Staphylococcus aureus	IS 5887 (Part 2):1976, RA 2009.	≥1 CFU/ml

**Battal Singh**  
Convener

**N. Venkateswaran**  
Program Manager

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II	<b>AIR MONITORING</b>			
1.	<b>a) (Air/ Surface)</b>	Total Bacterial Count/ Standard Plate Count/ Total Viable Count/ Total Plate Count	USP 32, NF – 27, Chapter <1116> ISO 18593: 2004(E). IS 5402 : 2012.	≥1CFU/m <sup>3</sup>
		Detection of Staphylococcus aureus	USP 32, NF – 27, Chapter <1116> ISO 18593: 2004(E). IS 5887 (Part 2) : 1976, RA 2009.	≥1CFU/m <sup>3</sup>
		Detection of Yeast & Mould	USP 32, NF-27, Chapter <1116> ISO 18593: 2004(E). IS 5403: 1999, RA 2018.	≥1CFU/m <sup>3</sup>
	<b>b) Surface Swab</b>	Total Bacterial Count/ Standard Plate Count/ Total Viable Count/ Total Plate Count	USP 32, NF-27, Chapter <1116> ISO 18593: 2004(E). IS 5402: 2012, RA 2018.	≥1CFU/cm <sup>2</sup>
		Detection of Staphylococcus aureus	USP 32, NF-27, Chapter <1116> ISO 18593: 2004(E). IS 5887 (Part 2) : 1976, RA 2009.	≥1CFU/cm <sup>2</sup>
		Detection of Yeast & Mould	USP 32, NF-27, Chapter <1116> ISO 18593: 2004 (E). IS 5403: 1999, RA 2018.	≥1CFU/cm <sup>2</sup>

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III	<b>WATER</b>			
1.	<b>a) Drinking water Potable and Domestic water.</b>	Total Bacterial Count/ Standard Plate Count/ Total Viable Count/ Total Plate Count	APHA 23 <sup>rd</sup> Ed. 2017, 9215 – B, 9 – 56. IS 1622:1981, RA 2009, Ed.2.4 (2003-2005). Pour plate method	≥1 CFU/ml ≥1 CFU/ml
		Total coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 - B, 9 – 69. IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	≥1.1 to ≥23 MPN index/ 100 ml ≥2 to ≥1600 MPN index/ 100ml
			APHA 23 <sup>rd</sup> Ed. 2017, 9221 - D, 9 – 75. P-A Coliform test	Present or Absent/100ml
		Faecal coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 - E, 9 – 77. APHA 23 <sup>rd</sup> Ed. 2017, 9221 - D, 9 – 75. P-A Coliform test	≥1.1 to ≥23 MPN index/ 100 ml Present or Absent/100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	≥2 to ≥1600 MPN index/ 100 ml
		Detection & Enumeration of and E. coli	APHA, 23 <sup>rd</sup> Ed. 2017, 9221-B & G, 9-69-80	≥1.1 to ≥23 MPN index/ 100ml Present or Absent/100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005)	≥2 to ≥1600 MPN index/ 100ml Present or Absent/100ml
		Detection of Salmonella spp.	APHA 23 <sup>rd</sup> Ed. 2017, 9260 - B, 9 – 152.	Present or Absent/100ml
		Detection of Staphylococcus aureus	APHA 23 <sup>rd</sup> Ed. 2017, 9213 - B, 9 – 46.	Present or Absent/100ml
		Enumeration of Staphylococcus aureus	IS 5887 (Part 2): 1976, RA 2009.	≥1 CFU/ml

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	<b>b) Ground water</b>	Total Bacterial Count/ Standard Plate Count/	APHA 23 <sup>rd</sup> Ed. 2017, 9215 – B, 9 – 56.	≥1 CFU/ml
		Total Viable Count/ Total Plate Count	IS 1622:1981, RA 2009, Ed.2.4 (2003-2005). Pour plate method	≥1 CFU/ml
		Total coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 – B, 9 – 69.	≥1.1 to ≥1600 MPN index/ 100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	≥2 to ≥1600 MPN index/ 100ml
			APHA 23 <sup>rd</sup> Ed.2017, 9221 – D, 9 – 75. P-A Coliform test	Present or Absent/100ml
		Faecal coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 – E, 9 – 77.	≥1.1 to ≥1600 MPN index/ 100ml
			APHA 23 <sup>rd</sup> Ed.2017, 9221 – D, 9 – 75. P-A Coliform test	Present or Absent/100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	≥2 to ≥1600 MPN index/ 100ml
		Detection & Enumeration of and E. coli	APHA 23 <sup>rd</sup> Ed. 2017, 9221 – B & G, 9 – 69.	≥1.1 to ≥1600 MPN index/ 100ml Present or Absent/100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	≥2 to ≥1600 MPN index/ 100ml Present or Absent/100ml
		Detection of Salmonella spp.	APHA 23 <sup>rd</sup> Ed. 2017, 9260 - B, 9 – 152.	Present or Absent/100ml
		Detection of Staphylococcus aureus	APHA 23 <sup>rd</sup> Ed. 2017, 9213 - B, 9 – 46.	Present or Absent/100ml
		Enumeration of Staphylococcus aureus	IS 5887 (Part 2): 1976, RA 2009.	≥1 CFU/ml

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	c) Surface water (Rivers, lakes)	Total Bacterial Count/ Standard Plate Count/ Total Viable Count/ Total Plate Count	APHA 23 <sup>rd</sup> Ed. 2017, 9215 – B, 9 – 56.	≥1 CFU/ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005). Pour plate method	≥1 CFU/ml
		Total coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 – B, 9 – 69.	≥1.1 to ≥1600 MPN index/ 100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	≥2 to ≥1600 MPN index/ 100ml
			APHA 23 <sup>rd</sup> Ed. 2017, 9221 – D, 9 – 75. P-A Coliform test	Present or Absent/100ml
		Faecal coliforms	APHA 23 <sup>rd</sup> Ed. 2017, 9221 - E, 9 – 77.	≥1.1 to ≥1600 MPN index/ 100ml
			APHA 23 <sup>rd</sup> Ed.2017, 9221 – D, 9 – 75. P-A Coliform test	Present or Absent/100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	< 2 to 1600 MPN index/ 100ml
		Detection & Enumeration of and E. coli	APHA 23 <sup>rd</sup> Ed.2017, 9221 – B & G, 9 – 69.	≥1.1 to ≥1600 MPN index/ 100ml Present or Absent/100ml
			IS 1622:1981, RA 2009, Ed.2.4 (2003-2005).	< 2 to 1600 MPN index/ 100ml Present or Absent/100ml
		Detection of Salmonella spp.	APHA 23 <sup>rd</sup> Ed. 2017, 9260 – B, 9 – 152.	Present or Absent/100ml
		Detection of Staphylococcus aureus	APHA 23 <sup>rd</sup> Ed. 2017, 9213 - B, 9 – 46.	Present or Absent/100ml
		Enumeration of Staphylococcus aureus	IS 5887 (Part 2): 1976, RA 2009.	≥1 CFU/ml

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III.	Other specified food items cooked food Ready to eat variants	Total Bacterial Count/ Standard Plate Count/ Total Viable Count/ Total Plate Count	IS 5402: 2012	≥10 CFU/g or ≥1 CFU/ml
		Coliform Count	IS 5401 (Part 1): 2012 RA 2018. ISO 4832: 1991	≥10 CFU/g or ≥1 CFU/ml
			IS 5401(Part 1) :2012 ISO 4831:2006	<0.3 to >110 MPN index/g or ml
		Detection of E. coli (Thermotolerant bacteria)	IS 5887 (Part 1):1976, RA 2009.	Present or Absent /25 g or 25 ml\
		Enumeration of E. coli	IS 5887 (Part 1): 1976, RA 2009.	≥10 CFU/g or ≥1 CFU/ml <0.3 to >110 MPN index/g or ml
		Detection of Salmonella spp.	IS 5887 (Part 3): 1999, RA 2009.	Present or Absent /25 g or 25 ml
		Detection of Staphylococcus aureus (coagulase positive)	IS 5887 (Part 2): 1976, RA 2009.	Present or Absent /25g or 25ml
		Enumeration of Staphylococcus aureus (coagulase positive)	IS 5887 (Part 2): 1976, RA 2009.	≥10 CFU/g or
			IS 5887 (Part 8/ Sec.1): 2002.	≥1 CFU/ml

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<b><u>CHEMICAL TESTING</u></b>				
<b>I.</b>	<b>ATMOSPHERIC POLLUTION</b>			
1.	<b>a) Ambient Air; Fugitive Emission;</b>	Particulate Matter (Size less than 10 µm) or PM <sub>10</sub>	IS 5182 (Part 23):2006. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13, Page No. 11-14. WI/SAP/AA/07 Issue 03 Issue Date: 03/03/2018.	10 to 500 µg/m <sup>3</sup>
		Particulate Matter (Size less than 2.5 µm) or PM <sub>2.5</sub>	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13, Page No.15-30. WI/SAP/AA/20 Issue 03 Issue Date: 03/03/2018.	10 to 200 µg/m <sup>3</sup>
		Sulphur Dioxide	IS 5182 (Part 2):2001 RA 2006. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13, Page No1-6. WI/SAP/AA/02 Issue 03 Issue Date:03/03/2018.	4 to 200 µg/m <sup>3</sup>
		Nitrogen Dioxide	IS 5182 (Part 6): 2006. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I,	3 to 200 µg/m <sup>3</sup>

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			2012-13, Page No 7-10. WI/SAP/AA/01 Issue 03 Issue Date: 03/03/2018.	
		Ozone	Methods of Air Sampling and analysis 3 <sup>rd</sup> Edition 1988, Method No 819, Page No. 605 and Method 411 Page No. 403. "Determination of Ozone in Air". CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13, Page No 31 – 34. WI/SAP/AA/18 Issue 03 Issue Date: 03/03/2018.	19.6 to 400 µg/m <sup>3</sup>
		Ammonia	Methods of Air Sampling and analysis 3 <sup>rd</sup> Edition 1988, Method No 401, Page No. 379, "Indophenol Method" CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13 Page No. 35 – 39. WI/SAP/AA/03 Issue 03 Issue Date: 03/03/2018.	20 to 400 µg/m <sup>3</sup>
		Benzene	IS 5182 (Part 11):2006 RA 2009.	1 to 100 µg/m <sup>3</sup>

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		Benzo(a)Pyrene (BaP) Particulate Phase only	IS 5182 (Part 12): 2004, RA 2009. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13 Page No. 40-47. WI/SAP/AA/17 Issue 03 Issue Date: 03/03/2018.	0.5 to 20 ng/m <sup>3</sup>
		Chlorine	IS 5182 (Part XIX): 1982 RA 2006.	1 to 40 µg/m <sup>3</sup>
		Hydrogen Sulphide	IS 5182 (Part VII): 1973, RA 2009, Amds.1.	6 to 400 µg/m <sup>3</sup>
		Lead	IS 5182 (Part 22): 2004, RA 2009. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13 Page No 48-55. WI/SAP/AA/15 Issue 03 Issue Date: 03/03/2018.	0.02 to 50 µg/m <sup>3</sup>
		Nickel	USEPA/625/R-96/010a Compendium Method IO- 3.1 & 3.2 June 1999. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13 Page No 48-55. WI/SAP/AA/15 Issue 03 Issue Date: 03/03/2018.	3 to 50 ng/m <sup>3</sup>

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		Arsenic	USEPA/625/R-96/010a Compendium Method IO-3.1 & 3.2 June 1999. CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, 2012-13 Page No 48-55. WI/SAP/AA/15 Issue 03 Issue Date: 03/03/2018.	0.3 to 50 ng/m <sup>3</sup>
		Carbon Monoxide (CO)	CPCB guidelines for the measurement of Ambient Air Pollutants volume – II, 2012-2013, page no. 16-22. (NDIR method)	0.057 to 40 ppm 0.06 to 50 mg/m <sup>3</sup>
	<b>b. Ambient Noise and Source Noise (Excluding Vibrations)</b>	Noise Level Measurement	IS 9876:1981. WI/SAP/25 Issue 03 Issue Date: 03/03/2018.	30 to 130 dB(A)
	<b>c. Stack Emission</b>	Particulate Matter	IS 11255 (Part 1): 1985, RA 2003. CPCB (Air), Emission Regulations (Part 3), March 1995. WI/SAP/SA/09 Issue 03 Issue Date: 03/03/2018.	10 to 1000 mg/Nm <sup>3</sup>
		Sulphur Dioxide	IS 11255 (Part 2): 1985, RA 2003. CPCB (Air), Emission Regulations (Part 3), March 1995. WI/SAP/SA/09	10 to 5000 mg/Nm <sup>3</sup>

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			Issue 03 Issue Date: 03/03/2018.	
		Oxides of Nitrogen	IS 11255 (Part 7): 2005.	10 to 500 mg/Nm <sup>3</sup>
		Carbon Dioxide	IS 13270:1992, RA 2009.	0.2 to 15 %
		Carbon Monoxide	IS 13270:1992, RA 2009.	0.2 to 2 %
		Oxygen	IS 13270:1992, RA 2009.	1 to 21 %
		Mercury	CPCB Guidelines for the Measurement of Source Emission Monitoring LATS/80/2013-14, Chapter 5 and 6, page No. 54 -84. USEPA Method no 29, Feb 2017.	0.0006 to 0.5 mg/Nm <sup>3</sup>
<b>II.</b>	<b>POLLUTION &amp; ENVIRONMENT</b>			
<b>1.</b>	<b>a) Waste Water</b>	Acidity	APHA 23 <sup>rd</sup> Ed. 2017, 2310 - B, 2 – 34.	1 to 5000 mg/L
			IS 3025 (Part 22): 1986, \RA 2009.	1 to 5000 mg/L
		Alkalinity (Total, Phenolphthalein & Methyl orange)	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 36.	1 to 5000 mg/L
			IS 3025 (Part 23): 1986 RA 2009, Amds.1.	1 to 5000 mg/L
		Ammonical Nitrogen / Ammonia	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> - B & C, 4-114, & 4 -116.	5 to 100 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> – F, 4 -119.	0.1 to 5 mg/L
		Bicarbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2-37 & 4500 CO <sub>2</sub> - D, 4 – 38.	1 to 5000 mg/L

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			IS 3025 (Part 51): 2001, RA 2006, Ed.2.2 (2009).	1 to 5000 mg/L
		Biochemical Oxygen Demand (BOD) 3 days at 27°C	IS 3025 (Part 44): 1993 RA 2009.	1 to 50000 mg/L
		Boron	APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - B, 4 - 27.	0.1 to 1 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - C, 4 - 29.	1 to 10 mg/L
		Calcium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Ca - B, 3 - 69.	0.4 to 10000 mg/L
			IS 3025 (Part 40) 1991, RA 2009, Ed.1 (2004-02)	0.4 to 10000 mg/L
		Carbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 41 & 4500 CO <sub>2</sub> - D, 4 - 38.	0.48 to 3000 mg/L
			IS 3025 (Part 51): 2001 RA 2006.	0.48 to 3000 mg/L
		Chemical Oxygen Demand (COD)	APHA 23 <sup>rd</sup> Ed., 2017, 5220 - B, 5 - 18.	4 to 80000 mg/L
		Chloride	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl <sup>-</sup> - B, 4 - 75.	0.5 to 100000 mg/L
			IS 3025 (Part 32):1988, RA 2009.	0.5 to 100000 mg/L
		Chlorine (Residual)	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl - G, 4 - 72.	0.05 - 10 mg/L
			IS 3025 (Part 26): 1986, RA 2009. (Iodometric Method)	1 to 10 mg/L
		Colour	APHA 23 <sup>rd</sup> Ed. 2017, 2120 - B, 2 - 6.	1 to 500 Hazen units
			IS 3025 (Part 4):1983, RA 2006.	1 to 500 Hazen units

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		Dissolved Oxygen	APHA 23 <sup>rd</sup> Ed. 2017, 4500 O - B, 4-144 & C, 4 -146.	0.5 to 10 mg/L
			IS 3025 (Part 38): 1989, RA 2009.	0.5 to 10 mg/L
		Electrical Conductivity	APHA 23 <sup>rd</sup> Ed. 2017, 2510 - B, 2 - 58.	5 µS/cm to 2000 mS/cm
			IS 3025 (Part 14): 1984, RA 2006.	5 µS/cm to 2000 mS/cm
		Fluoride	APHA 23 <sup>rd</sup> Ed., 2017, 4500 F- D, 4 – 90.	0.05 to 20 mg/L
		Hardness (Total )	APHA 23 <sup>rd</sup> Ed. 2017, 2340 - C, 2 – 48.	1 to 5000 mg /L
			IS 3025 (Part 21): 2009.	1 to 5000 mg/L
		Inorganic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L
		Magnesium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Mg - B, 3 – 86.	1 to 1000 mg/L
		Nitrate as (NO <sub>3</sub> )	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> - E, 4 – 131.	0.5 to 50 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> – B, 4-127.	1 to 1000 mg/L
		Nitrite	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>2</sub> - B, 4 – 124.	0.05 - 10 mg /L
			IS 3025 (Part 34): 1988, RA 2009.	0.05 to 10 mg/L
		Odour	IS 3025 (Part 05): 1983, RA 2006.	Agreeable/Disagreeable
		Organic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L
		Oil & Grease	APHA 23 <sup>rd</sup> Ed. 2017, 5520 - B, 5 – 42.	1 to 500 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
			IS 3025 (Part 39): 1991, RA 2009.	1 to 500 mg/L
		pH	APHA 23 <sup>rd</sup> Ed. 2017, 4500 H <sup>+</sup> - B, 4 - 95.	2 - 12
			IS 3025 (Part 11): 1983, RA 2006.	2 - 12
		Potassium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 K - B, 3-89.	0.1 to 10000 mg/L
			IS 3025 (Part 45): 1993, RA 2009, Amds.1	0.1 to 10000 mg/L
		Phosphate (Total Phosphate Ortho Phosphate Dissolved Phosphate)	APHA 23 <sup>rd</sup> Ed. 2017 4500 P - E, 4 - 164. (Ascorbic acid Method)	0.05 - 500 mg/L
			IS: 3025 (PART-31) 1988, RA 1999.	0.05 to 500 mg/L
		Silica	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SiO <sub>2</sub> - D, 4 - 177.	0.04 to 200 mg/L
			IS 3025 (Part 35) 1988 RA 2009. (Heteropoly blue method)	0.04 to 200 mg/L
		Sulphide	APHA 23 <sup>rd</sup> Ed. 2017 4500 S <sup>2-</sup> - C, 4 - 183, and F, 4 - 187, D, 4-184.	0.08 to 5 mg/L
			IS: 3025 (Part 29): 1986, RA 2009. (Iodometric method)	0.5 to 50 mg/L
		Sulphate	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SO <sub>4</sub> - E, 4 - 199.	1 to 5000 mg/L
			IS 3025(Part 24): 1986, RA 2009.	1 to 5000 mg/L
		Sodium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Na - B, 3 - 99.	0.1 to 10000 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
			IS 3025 (Part 45): 1993, RA 2009.	0.1 to 10000 mg/L
		Sodium Absorption Ratio (SAR)	IS 11624:1986 By Calculation	0.2 to 30
		Temperature	APHA 23 <sup>rd</sup> Ed. 2017, 2550 – B, 2 – 74.	5 to 100°C
			IS 3025 (Part 9): 1984, RA 2006.	5 to 100°C
		Total Dissolved Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – C, 2 – 69.	5 to 50000 mg/L
			IS 3025 (Part 16): 1984, RA 2006, Ed.2.1 (1999-12)	5 to 50000 mg/L
		Total Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – B, 2 – 68.	5 to 100000 mg/L
			IS 3025 (Part 15): 1984, RA 2009.	5 to 100000 mg/L
		Total Suspended Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – D, 2 – 70.	5 to 10000 mg/L
			IS 3025 (Part 17): 1984, RA 2006.	5 to 10000 mg/L
		Turbidity	APHA 23 <sup>rd</sup> Ed. 2017, 2130 – B, 2 – 13.	0.1 to 1000 NTU
			IS 3025 (Part 10): 1984, RA 2006.	0.1 to 1000 NTU
	<b>b. Soil / sediment</b>	Available/ Exchangeable Potassium	FAO 1976, Sec. III, 8 – 1, Page No. 115 WI/SAP/SE/07 Issue No.03 Issue Date:02/01/2018. (By Flame Photometer).	35 to 5000 mg/kg
		Available Nitrogen	FAO 1976, Sec. III, 11, Page No. 145.	20 to 10000 mg/kg 50 to 25000 kg/ha

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			WLII, SEC. B8b, Page No. 13. WI/SAP/SE/05, Issue No. 03 Issue date:02/01/2018. (Titrimetric method)	
		Available Phosphorus	FAO 1976, Sec. III, 12 – 1, Page No.157. WI/SAP/SE/06, Issue No.03 Issue date: 02/01/2018. (Spectrophotometric Method)	1 to 100 mg/kg
		EC	FAO 1976, Sec. III, 5, Page No 85. WI/SAP/SE/02 Issue No.03 Issue date: 02/01/2018.	5 µS/cm to 200 mS/cm
		Moisture content	IS 2720 (Part – II) 1973, RA 2002, Ed.3.1. WI/SAP/SE/03 Issue No.03 Issue date: 02/01/2018.	0.5 to 50 %
		Organic Carbon	WLII, SEC. B - 7, Page No. 10, WI/SAP/SE/04 Issue No.03 Issue date: 02/01/2018.	0.2 to 5 %
		pH	FAO 1976, Sec. III, 1, Page No 65. WI/SAP/SE/01 Issue No.03 Issue Date:02/01/2018. (by pH meter)	1 to 14

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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
		Available/ Exchangeable Calcium	FAO 1976, Sec. III, 8 - 1, Page No. 115, WI/SAP/SE/09 Issue No. 03 Issue date: 02/01/2018.	250 to 50000 mg/kg 1.25 to 250 meq/100 g.
		Available/ Exchangeable Magnesium	FAO 1976, Sec. III, 8 – 1, Page No. 115, WI/SAP/SE/13 Issue No.03 Issue date: 02/01/2018.	250 to 5000 mg/kg 2.08 to 41 meq/100 g.
		Available/ Exchangeable Sodium	FAO 1976, Sec. III, 8 – 1, Page No. 115. WI/SAP/SE/11 Issue No.03 Issue date:02/01/2018 (By Flame Photometer)	20 to 1000 mg/kg
		Cation Exchange capacity	FAO 1976, Sec. III, 7 – 2, Page No 104. WI/SAP/SE/10 Issue No.03 Issue date: 02/01/2018.	5 to 250 meq/100 g
		Available Copper	Manual of Soil Testing, Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. India Jan 2011, Sec.4 -17, Page No 105. WI/SAP/SE/16 Issue No.03 Issue date:02/01/2018.	0.4 to 100 mg/kg
		Available zinc	Manual of Soil Testing, Department of Agriculture & Cooperation, Ministry of	0.4 to 100 mg/kg

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			Agriculture, Govt. India Jan 2011, Sec.4 -17, Page No 105. WI/SAP/SE/16 Issue No.03 Issue date: 02/01/2018.	
		Available Iron	Manual of Soil Testing, Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. India Jan 2011, Sec.4 -17, Page No 105. WI/SAP/SE/16 Issue No.03 Issue date: 02/01/2018.	0.4 to 100 mg/kg
		Available Manganese	Manual of Soil Testing, Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. India Jan 2011, Sec.4 -17, Page No 105. WI/SAP/SE/16 Issue No.03 Issue date:02/01/2018	0.4 to 100 mg/kg
<b>III.</b>	<b>WATER</b>			
<b>1.</b>	<b>a) Surface water</b>	Acidity	APHA 23 <sup>rd</sup> Ed. 2017, 2310 - B, 2 – 34.	1 to 1000 mg/L
			IS 3025 (Part 22): 1986, RA 2009.	1 to 1000 mg/L
		Alkalinity (Total, Phenolphthalein & Methyl orange)	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 36.	1 to 1000 mg/L

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			IS 3025 (Part 23): 1986 RA 2009, Amds.1.	1 to 1000 mg/L
		Ammonical Nitrogen/ Ammonia	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> - B & C, 4 -114, & 4 – 116.	5 to 50 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> – F, 4 - 119.	0.1 to 5 mg/L
		Bicarbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2-37 & 4500 CO <sub>2</sub> - D, 4 – 38.	1 to 1000 mg/L
			IS 3025 (Part 51): 2001, RA 2006, Ed.2.2 (2009).	1 to 1000 mg/L
		Biochemical Oxygen Demand 3 days at 27°C (BOD)	IS 3025 (Part 44): 1993 RA 2009.	1 to 1000 mg/L
		Boron	APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - B, 4 - 27.	0.1 to 1 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - C, 4 - 29.	1 to 10 mg/L
		Calcium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Ca - B, 3 - 69.	0.4 to 1000 mg/L
			IS 3025 (Part 40) 1991, RA 2009, Ed.1 (2004-02)	0.4 to 1000 mg/L
		Carbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 41 & 4500 CO <sub>2</sub> - D, 4 - 38.	0.48 to 300 mg/L
			IS 3025 (Part 51): 2001 RA 2006.	0.48 - 300 mg/L
		Colour	APHA 23 <sup>rd</sup> Ed. 2017, 2120 - B, 2 – 6.	1 to 50 Hazen units
			IS 3025 (Part 4): 1983, RA 2006	1 to 100 Hazen units

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		Chloride	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl <sup>-</sup> - B, 4 - 75.	1 to 5000 mg/L
			IS 3025 (Part 32):1988, RA 2009.	1 to 5000 mg/L
		Chemical Oxygen Demand (COD)	APHA 23 <sup>rd</sup> Ed., 2017, 5220 - B, 5 -18.	4 to 5000 mg/L
		Chlorine (Residual)	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl – G, 4 – 72.	0.05 to 2 mg/L
			IS 3025 (Part 26): 1986, RA 2009.	1 to 10 mg/L
		Dissolved Oxygen	APHA 23 <sup>rd</sup> Ed. 2017, 4500 O - B, 4-144 & C, 4 -146.	0.5 to 10 mg/L
			IS 3025 (Part 38): 1989, RA 2009.	0.5 to 10 mg/L
		Electrical Conductivity	APHA 23 <sup>rd</sup> Ed. 2017, 2510 - B, 2 - 58.	0.1 µS/cm to 2000 mS/cm
			IS 3025 (Part 14): 1984, RA 2006.	0.1 µS/cm to 2000 mS/cm
		Fluoride	APHA 23 <sup>rd</sup> Ed., 2017, 4500 F- D, 4 – 90.	0.05 to 10 mg/L
		Hardness (Total )	APHA 23 <sup>rd</sup> Ed. 2017, 2340 - C, 2 – 48.	1 to 5000 mg/L
			IS 3025 (Part 21): 2009.	1 to 5000 mg/L
		Inorganic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L
		Magnesium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Mg - B, 3 – 86.	1 to 1000 mg/L
			IS 3025 (Part 46): 1994, RA 2009.	1 to 1000 mg/L
		Nitrate (NO <sub>3</sub> )	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> – B, 4-127.	1 to 200 mg/L

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			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> - E, 4 – 131.	0.5 to 50 mg/L
		Nitrite	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>2</sub> - B, 4 – 124.	0.05 to 10 mg/L
			IS 3025 (Part 34): 1988, RA 2009.	0.05 to 10 mg/L
		Odour	IS 3025 (Part 05): 1984, RA 2006	Agreeable/ Disagreeable
		Organic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L
		pH	APHA 23 <sup>rd</sup> Ed. 2017, 4500 H <sup>+</sup> - B, 4 – 95.	2 to 12
			IS 3025 (Part 11): 1983, RA 2006.	2 to 12
		Potassium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 K – B, 3-89.	0.1 to 500 mg/L
			IS 3025 (Part 45): 1993, RA 2009, Amds.1 (By flame Photometer)	0.1 to 500 mg/L
		Phosphate (Total Phosphate, Ortho Phosphate, Dissolved Phosphate)	APHA 23 <sup>rd</sup> Ed. 2017 4500 P – E, 4 – 164. (Ascorbic acid Method)	0.03 to 20 mg/L
			IS 3025 (PART-31) 1988, RA 1999.	0.03 to 20 mg/L
		Silica	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SiO <sub>2</sub> – E, 4 – 177.	0.1 to 100 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 SiO <sub>2</sub> – D, 4 – 175.	1 to 200 mg/L
			IS 3025 (Part 35): 1988 RA 2009. (Hetero-poly blue method)	0.1 to 100 mg/L
		Sodium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Na – B, 3 – 99.	0.1 to 1000 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
			IS 3025 (Part 45): 1993, RA 2009.	0.1 to 1000 mg/L
		Sodium absorption ratio	IS 11624:1986 By calculation	0.2 to 30
		Sulphate	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SO <sub>4</sub> ,- E, 4 – 199.	1 to 2000 mg/L
			IS 3025(Part 24): 1986, RA 2009.	1 to 2000 mg/L
		Temperature	APHA 23 <sup>rd</sup> Ed. 2017, 2550 – B, 2 – 74.	5 to 50°C
			IS 3025 (Part 9): 1984, RA 2006.	5 to 50°C
		Total Dissolved Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – C, 2 – 69.	5 to 5000 mg/L
			IS 3025 (Part 16): 1984, RA 2006, Ed.2.1(1999-12)	5 to 5000 mg/L
		Total Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – B, 2 – 68.	5 to 10000 mg/L
			IS 3025 (Part 15): 1984 , RA 2009.	5 to 10000 mg/L
		Total Suspended Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – D, 2 – 69.	5 to 5000 mg/L
			IS 3025 (Part 17): 1984, RA 2009.	5 to 5000 mg/L
		Turbidity	APHA 23 <sup>rd</sup> Ed. 2017, 2130 – B, 2 – 13.	0.1 to 1000 NTU
			IS 3025 (Part 10): 1984, RA 2006	0.1 to 1000 NTU
		Sulphide	APHA 23 <sup>rd</sup> Ed. 2017 4500 S <sup>2</sup> – C, 4 - 183, and F, 4 – 187, D, 4-184.	0.08 to 50 mg/L
			IS: 3025 (Part 29): 1986, RA 2009 (Iodometric method)	0.08 to 50 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
	<b>b) Ground Water</b>	Acidity	APHA 23 <sup>rd</sup> Ed. 2017, 2310 - B, 2 – 34.	1 to 1000 mg/L
			IS 3025 (Part 22): 1986, RA 2009	1 to 1000 mg/L
		Alkalinity (Total, Phenolphthalein & Methyl orange)	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 36.	1 to 1000 mg/L
			IS 3025 (Part 23): 1986 RA 2009 Amds.1.	1 to 1000 mg/L
		Ammonical Nitrogen/ Ammonia	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> - B & C, 4 -114, & 4 – 116.	5 to 20 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> – F, 4 - 119.	0.1 to 5 mg/L
		Bicarbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2-37 & 4500 CO <sub>2</sub> - D, 4 – 38.	1 to 1000 mg /L
			IS 3025 (Part 51): 2001, RA 2006, Ed.2.2 (2009).	1 to 1000 mg /L
		Biochemical Oxygen Demand 3 days at 27°C (BOD)	IS 3025 (Part 44): 1993 RA 2009.	1 to 100 mg/L
		Boron	APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - B, 4 - 27.	0.1 to 1 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - C, 4 - 29.	1 to 10 mg/L
		Calcium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Ca - B, 3 - 69.	0.4 - 1000 mg/L
			IS 3025 (Part 40) 1991, RA 2009, Ed.1 (2004-02)	0.4 to 1000 mg/L
		Carbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 41 & 4500 CO <sub>2</sub> - D, 4 - 38.	0.48 to 300 mg/L

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			IS 3025 (Part 51): 2001 RA 2006.	0.48 to 300 mg/L
		Colour	APHA 23 <sup>rd</sup> Ed. 2017, 2120 - B, 2 – 6.	1 to 50 Hazen units
			IS 3025 (Part 4): 1983, RA 2006	1 to 50 Hazen units
		Chloride	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl <sup>-</sup> - B, 4 - 75.	1 to 5000 mg/L
			IS 3025 (Part 32):1988, RA 2009.	1 to 5000 mg/L
		Chemical Oxygen Demand (COD)	APHA 23 <sup>rd</sup> Ed., 2017, 5220 - B, 5 -18.	4 - 500 mg/L
		Chlorine (Residual)	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl – G, 4 – 72.	0.05 to 5 mg/L
			IS 3025 (Part 26): 1986, RA 2009. (Iodometric Method)	1 to 10 mg/L
		Dissolved Oxygen	APHA 23 <sup>rd</sup> Ed. 2017, 4500 O - B, 4-144 & C, 4 -146.	0.5 to 10 mg/L
			IS 3025 (Part 38): 1989, RA 2009.	0.5 to 10 mg/L
		Electrical Conductivity	APHA 23 <sup>rd</sup> Ed. 2017, 2510 - B, 2 - 58.	5 µS/cm to 50 mS/cm
			IS 3025 (Part 14): 1984, RA 2006.	5 µS/cm to 50 mS/cm
		Fluoride	APHA 23 <sup>rd</sup> Ed., 2017, 4500 F- D, 4 – 90.	0.05 to 20 mg/L
		Hardness (Total )	APHA 23 <sup>rd</sup> Ed. 2017, 2340 - C, 2 – 48.	1 to 5000 mg /L
			IS 3025 (Part 21): 2009.	1 to 5000 mg /L
		Inorganic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L

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		Magnesium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Mg - B, 3 – 86.	1 to 1000 mg/L
			IS 3025 (Part 46): 1994, RA 2009.	1 to 1000 mg/L
		Nitrate (NO <sub>3</sub> )	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> – B, 4-127.	1 to 500 mg /L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> - E, 4 – 131.	0.5 to 50 mg /L
		Nitrite	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>2</sub> - B, 4 – 124.	0.05 to 5 mg /L
			IS 3025 (Part 34): 1988, RA 2009.	0.05 to 5 mg /L
		Odour	IS 3025 (Part 05): 1984, RA 2006	Agreeable/ Disagreeable
		Organic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 100 mg/L
		pH	APHA 23 <sup>rd</sup> Ed. 2017, 4500 H <sup>+</sup> - B, 4 – 95.	2 to 12
			IS 3025 (Part 11): 1983, RA 2006.	2 to 12
		Potassium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 K – B, 3-89.	0.1 to 500 mg/L
			IS 3025 (Part 45): 1993, RA 2009, Amds.1	0.1 to 500 mg/L
		Phosphate (Total Phosphate, Ortho Phosphate, Dissolved Phosphate)	APHA 23 <sup>rd</sup> Ed. 2017 4500 P – E, 4 – 164. (Ascorbic acid Method)	0.03 to 10 mg/L
			IS: 3025 (PART-31) 1988, RA 1999.	0.03 to 10 mg/L
		Silica	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SiO <sub>2</sub> – E, 4 – 177.	0.1 to 50 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 SiO <sub>2</sub> – D, 4 – 175.	1 to 100 mg/L

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			IS 3025 (Part 35): 1988 RA 2009. (Hetero-poly blue method)	0.1 to 100 mg/L
		Sodium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Na – B, 3 – 99.	0.1 to 1000 mg/L
			IS 3025 (Part 45): 1993, RA 2009.	0.1 to 1000 mg/L
		Sodium absorption ratio	IS 11624:1986 By Calculation.	0.2 to 30
		Sulphate	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SO <sub>4</sub> ,- E, 4 – 199.	1 -2000 mg/L
			IS 3025(Part 24): 1986, RA 2009.	1 -2000 mg/L
		Temperature	APHA 23 <sup>rd</sup> Ed. 2017, 2550 – B, 2 – 74.	5 to 50°C
			IS 3025 (Part 9): 1984, RA 2006.	5 to 50°C
		Total Dissolved Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – C, 2 – 69.	5 to 5000 mg/L
			IS 3025 (Part 16): 1984, RA 2006, Ed.2.1(1999-12)	5 to 5000 mg/L
		Total Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – B, 2 – 68.	5 to 10000 mg/L
			IS 3025 (Part 15): 1984 , RA 2009.	5 to 10000 mg/L
		Total Suspended Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – D, 2 – 69.	5 to 500 mg/L
			IS 3025 (Part 17): 1984, RA 2009.	5 to 500 mg/L
		Turbidity	APHA 23 <sup>rd</sup> Ed. 2017, 2130 – B, 2 – 13.	0.1 to 100 NTU
			IS 3025 (Part 10): 1984, RA 2006	0.1 to 100 NTU

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		Sulphide	APHA 23 <sup>rd</sup> Ed. 2017 4500 S <sup>2</sup> – C, 4 - 183, and F, 4 – 187, D, 4 – 184.	0.08 to 5 mg/L
			IS: 3025 (Part 29): 1986, RA 2009. (Iodometric method)	0.08 to 5 mg/L
		Taste	IS 3025 (Part7& 8): 1984, RA 2006.	Agreeable/ Disagreeable
<b>c.</b>	<b>Drinking water, potable and domestic water</b>	Colour	APHA 23 <sup>rd</sup> Ed. 2017, 2120 - B, 2 – 6.	1 to 50 Hazen units
		Odour	IS 3025 (Part 05): 1984, RA 2006	Agreeable/ Disagreeable
		Taste	IS 3025 (Part7& 8): 1984, RA 2006.	Agreeable/ Disagreeable
		pH	APHA 23 <sup>rd</sup> Ed. 2017, 4500 H <sup>+</sup> - B, 4 – 95.	2 to 12
			IS 3025 (Part 11): 1983, RA 2006.	2 to 12
		Turbidity	APHA 23 <sup>rd</sup> Ed. 2017, 2130 – B, 2 – 13.	0.1 to 50 NTU
			IS 3025 (Part 10): 1984, RA 2006	0.1 to 50 NTU
		Total Dissolved Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – C, 2 – 69.	5 to 5000 mg/L
			IS 3025 (Part 16): 1984, RA 2006, Ed.2.1(1999-12)	5 to 5000 mg/L
		Ammonical Nitrogen/ Ammonia	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> - B & C, 4 -114, & 4 – 116.	5 to 10 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NH <sub>3</sub> – F, 4 - 119.	0.1 to 5 mg/L
		Boron	APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - B, 4 - 27.	0.1 to 1 mg/L

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			APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - C, 4 - 29.	1 to 5 mg/L
		Calcium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Ca - B, 3 - 69.	0.4 - 1000 mg/L
			IS 3025 (Part 40) 1991, RA 2009, Ed.1 (2004-02)	0.4 - 1000 mg/L
		Chloride	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl <sup>-</sup> - B, 4 - 75.	1 to 2000 mg/L
			IS 3025 (Part 32):1988, RA 2009.	1 to 2000 mg/L
		Fluoride	APHA 23 <sup>rd</sup> Ed., 2017, 4500 F- D, 4 - 90.	0.05 to 10 mg/L
		Chlorine (Residual)	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl - G, 4 - 72.	0.05 to 5 mg/L
			IS 3025 (Part 26): 1986, RA 2009.	1 to 10 mg/L
		Magnesium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Mg - B, 3 - 86.	1 to 1000 mg/L
			IS 3025 (Part 46): 1994, RA 2009.	1 to 1000 mg/L
		Nitrate (NO <sub>3</sub> )	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> - B, 4-127.	1 to 100 mg /L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> - E, 4 - 131.	0.5 to 50 mg /L
		Sulphate	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SO <sub>4</sub> - E, 4 - 199.	1 to 1000 mg/L
			IS 3025(Part 24): 1986, RA 2009.	1 to 1000 mg/L
		Sulphide	APHA 23 <sup>rd</sup> Ed. 2017 4500 S <sup>2-</sup> - C, 4 - 183, and F, 4 - 187, D, 4 - 184	0.08 to 2 mg/L

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			IS: 3025 (Part 29): 1986, RA 2009. (Iodometric method)	0.08 to 2 mg/L
		Alkalinity (Total, Phenolphthalein & Methyl orange)	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 36.	1 to 1000 mg/L
			IS 3025 (Part 23): 1986 RA 2009 Amds.1.	1 to 1000 mg/L
		Hardness (Total )	APHA 23 <sup>rd</sup> Ed. 2017, 2340 - C, 2 - 48.	1 to 2000 mg /L
			IS 3025 (Part 21): 2009.	1 to 2000 mg/L
		Acidity	APHA 23 <sup>rd</sup> Ed. 2017, 2310 - B, 2 - 34.	1 to 500 mg/L
			IS 3025 (Part 22): 1986, RA 2009	1 to 500 mg/L
		Bicarbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2-37 & 4500 CO <sub>2</sub> - D, 4 - 38.	1 to 1000 mg /L
			IS 3025 (Part 51): 2001, RA 2006, Ed.2.2 (2009).	1 to 1000 mg /L
		Biochemical Oxygen Demand 3 days at 27°C (BOD)	IS 3025 (Part 44): 1993 RA 2009.	1 to 50 mg/L
		Carbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 41 & 4500 CO <sub>2</sub> - D, 4 - 38.	0.48 to 100 mg/L
			IS 3025 (Part 51): 2001 RA 2006.	0.48 to 100 mg/L
		Chemical Oxygen Demand (COD)	APHA 23 <sup>rd</sup> Ed., 2017, 5220 - B, 5 -18.	4 to 100 mg/L
		Dissolved Oxygen	APHA 23 <sup>rd</sup> Ed. 2017, 4500 O - B, 4-144 & C, 4 -146.	0.5 to 10 mg/L

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			IS 3025 (Part 38): 1989, RA 2009.	0.5 to 10 mg/L
		Electrical Conductivity	APHA 23 <sup>rd</sup> Ed. 2017, 2510 - B, 2 - 58.	5 µS/cm to 50 mS/cm
			IS 3025 (Part 14): 1984, RA 2006.	5 µS/cm to 50 mS/cm
		Potassium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 K – B, 3-89.	0.1 to 100 mg/L
			IS 3025 (Part 45): 1993, RA 2009, Amds.1	0.1 to 100 mg/L
		Sodium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Na – B, 3 – 99.	0.1 to 1000 mg/L
			IS 3025 (Part 45): 1993, RA 2009.	0.1 to 1000 mg/L
		Total Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – B, 2 – 68.	5 to 5000 mg/L
			IS 3025 (Part 15): 1984, RA 2009.	5 to 5000 mg/L
		Total Suspended Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – D, 2 – 69.	5 to 100 mg/L
			IS 3025 (Part 17): 1984, RA 2009.	5 to 100 mg/L
	<b>d) Water for Construction Purpose Specification</b>	Inorganic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L
		Organic solids	IS 3025 (Part 18): 1984, RA 2006.	5 to 1000 mg/L
		Sulphate	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SO <sub>4</sub> - E, 4 – 199.	1 to 2000 mg/L
			IS 3025(Part 24): 1986, RA 2009.	1 to 2000 mg/L
		Chloride	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl <sup>-</sup> - B, 4 - 75.	1 to 5000 mg/L

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			IS 3025 (Part 32):1988, RA 2009.	1 to 5000 mg/L
		Total Suspended Solids	APHA 23 <sup>rd</sup> Ed. 2017, 2540 – D, 2 – 69.	5 to 5000 mg/L
			IS 3025 (Part 17): 1984, RA 2009.	5 to 5000 mg/L
		pH	APHA 23 <sup>rd</sup> Ed. 2017, 4500 H <sup>+</sup> - B, 4 – 95.	2 to 12
			IS 3025 (Part 11): 1983, RA 2006.	2 to 12
	<b>e) Irrigation water</b>	pH	APHA 23 <sup>rd</sup> Ed. 2017, 4500 H <sup>+</sup> - B, 4 – 95.	2 to 12
			IS 3025 (Part 11): 1983, RA 2006.	2 to 12
		Electrical Conductivity	APHA 23 <sup>rd</sup> Ed. 2017, 2510 - B, 2 - 58.	10 µS/cm to 200 mS/cm
			IS 3025 (Part 14): 1984, RA 2006.	10 µS/cm to 200 mS/cm
		Boron	APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - B, 4 - 27.	0.1 to 1 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 B - C, 4 - 29.	1 to 10 mg/L
		Calcium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Ca - B, 3 - 69.	0.4 to 1000 mg/L
			IS 3025 (Part 40) 1991, RA 2009, Ed.1. (2004-02)	0.4 to 1000 mg/L
		Magnesium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Mg - B, 3 – 86.	1 to 1000 mg/L
			IS 3025 (Part 46): 1994, RA 2009.	1 to 1000 mg/L
		Alkalinity (Total, Phenolphthalein & Methyl orange)	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 36.	1 to 1000 mg/L

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			IS 3025 (Part 23): 1986 RA 2009 Amds.1.	1 to 1000 mg/L
		Hardness (Total )	APHA 23 <sup>rd</sup> Ed. 2017, 2340 - C, 2 – 48.	1 to 5000 mg /L
			IS 3025 (Part 21): 2009.	1 to 5000 mg /L
		Bicarbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2-37 & 4500 CO <sub>2</sub> - D, 4 – 38.	1 to 1000 mg /L
			IS 3025 (Part 51): 2001, RA 2006, Ed.2.2 (2009).	1 to 1000 mg /L
		Carbonate	APHA 23 <sup>rd</sup> Ed. 2017, 2320 - B, 2 - 41 & 4500 CO <sub>2</sub> - D, 4 - 38.	0.48 to 300 mg/L
			IS 3025 (Part 51): 2001 RA 2006.	0.48 to 300 mg/L
		Potassium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 K – B, 3-89.	0.1 to 500 mg/L
			IS 3025 (Part 45): 1993, RA 2009, Amds.1	0.1 to 500 mg/L
		Sodium	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Na – B, 3 – 99.	0.1 to 1000 mg/L
			IS 3025 (Part 45): 1993, RA 2009.	0.1 to 1000 mg/L
		Chloride	APHA 23 <sup>rd</sup> Ed. 2017, 4500 Cl <sup>-</sup> - B, 4 - 75.	1 to 5000 mg/L
			IS 3025 (Part 32):1988, RA 2009.	1 to 5000 mg/L
		Sulphate	APHA 23 <sup>rd</sup> Ed. 2017, 4500 SO <sub>4</sub> - E, 4 – 199.	1 to 2000 mg/L
			IS 3025(Part 24): 1986, RA 2009.	1 to 2000 mg/L
		Sodium absorption ratio	IS 11624:1986 By Calculation	0.2 to 30

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		Nitrate (NO <sub>3</sub> )	APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> – B, 4-127.	1 to 500 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 4500 NO <sub>3</sub> - E, 4 – 131.	0.5 to 50 mg/L
<b>IV.</b>	<b>RESIDUES IN WATER</b>			
<b>1.</b>	<b>a) Trace Metal elements (water)</b>	Copper	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.04 to 10 mg/L
		Manganese	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.04 to 10 mg/L
		Cadmium	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.05 to 10 mg/L
		Iron	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.08 to 10 mg/L
			APHA 23 <sup>rd</sup> Ed. 2017, 3500 Fe – B, 3 – 77.	0.1 to 10 mg/L
		Chromium Hexavalent	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Cr – B, 3 – 71.	0.02 to 10 mg/L
		Total Chromium	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.1 to 10 mg/L
			IS: 3025 (PART-52): 2003, RA 2009.	0.1 to 10 mg/L
		Lead	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.1 to 10 mg/L
		Arsenic	APHA 23 <sup>rd</sup> Ed. 2017, 3114 – C, 3 – 40.	0.01 to 10 mg/L
			IS:3025 (Part 37): 1988, RA 2009.	0.01 to 10 mg/L
		Zinc	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.01 to 10 mg/L
		Aluminum	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Al – B, 3 – 63.	0.025 to 10 mg/L

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			IS 3025 (Part 55): 2003; RA 2009. (Eriochrome Cynine R Method)	0.025 to 10 mg/L
		Selenium	APHA 23 <sup>rd</sup> Ed. 2017, 3114 – C, 3 – 40.	0.01 to 10 mg/L
		Mercury	APHA 23 <sup>rd</sup> Ed. 2017, 3112 – B, 3 – 25.	0.0005 to 1 mg/L
			IS:3025 (Part 48) 1994, RA 2009.	0.0005 to 1 mg/L
	<b>b) Trace Metal elements (Waste Water)</b>	Copper	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.04 to 10 mg/L
		Manganese	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.04 to 10 mg/L
		Cadmium	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.05 to 10 mg/L
		Chromium Hexavalent	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Cr – B, 3 – 71.	0.03 to 10 mg/L
		Total Chromium	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.1 to 10 mg/L
			IS: 3025 (PART-52): 2003, RA 2009.	0.1 -100 mg/L
		Iron	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.08 to 10 mg/L
			APHA, 23 <sup>rd</sup> Ed., 2017, 3500 Fe-B,	0.1 to 10 mg/L
		Lead	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.1 to 10 mg/L
		Arsenic	APHA 23 <sup>rd</sup> Ed. 2017, 3114 – C, 3 – 40.	0.01 to 10 mg/L
			IS:3025 (Part 37): 1988, RA 2009.	0.01 to 10 mg/L

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		Zinc	APHA 23 <sup>rd</sup> Ed. 2017, 3111 – B, 3 – 20.	0.01 to 10 mg/L
		Aluminum	APHA 23 <sup>rd</sup> Ed. 2017, 3500 Al – B, 3 – 63.	0.025 to 10 mg/L
			IS: 3025 (Part 55): 2003; RA 2009. (Eriochrome Cynine R Method)	0.025 to 10 mg/L
		Selenium	APHA 23 <sup>rd</sup> Ed. 2017, 3114 – C, 3 – 40.	0.01 to 10 mg/L
		Mercury	APHA 23 <sup>rd</sup> Ed. 2017, 3112 – B, 3 – 25.	0.0005 to 1 mg/L
			IS:3025 (Part 48) 1994, RA 2009.	0.0005 to 1 mg/L
<b>V.</b>	<b>SOLID FUEL</b>			
<b>1.</b>	<b>COAL &amp; COKE</b>	Total Moisture	IS 1350 (Part 1): 1984, RA 2013.	1 to 40 %
			ASTM D3302/D3302M –15	1 to 40 %
		Moisture Equilibrated at 40°C and 60% RH	IS 1350 (Part 1): 1984, RA 2013.	0.2 to 40 %
		Inherent/ Residual Moisture	IS 1350 (Part I) :1984, RA 2013.	1 to 25 %
			ASTM D3173 -11.	1 to 25 %
		Ash	IS 1350 (Part I) :1984, RA 2013.	1 to 80 %
			ASTM D3174 – 12.	1 to 80 %
		Volatile Matter	IS 1350 (Part I): 1984, RA 2013.	1 to 50 %
			ASTM D3175 – 11.	1 to 50 %
		Fixed Carbon	IS 1350 (Part I) :1984, RA 2013. (By Calculation)	1 to 80 %

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			ASTM D5142 – 09. (By Calculation)	1 to 80 %
		Proximate Analysis by Thermo-gravimetric analyzer (TGA) 1) Moisture 2) Ash 3) Volatile Matter	ASTM D 5142 – 09.	0.1 to 25 % 1 to 60 % 1 to 50 %
		Gross Calorific Value	IS 1350 (Part II): 2017	1500 to 9000 kcal/kg
			ASTM D 5865 – 04.	1500 to 9000 kcal/kg
		Total Sulphur	IS 1350 (Part III): 1969, RA 2015.	0.05 to 5 %
			ASTM D 5373 – 08. By CHNS Analyzer	0.05 to 5 %
		Carbon	ASTM D 5373 – 08. By CHNS Analyzer	15 to 99 %
		Hydrogen	ASTM D 5373 – 08. By CHNS Analyzer	0.1 to 8 %
		Nitrogen	IS 1350 (Part IV) :Sec.2, 1975, RA 2010.	0.1 to 5 %
			ASTM D 5373 – 08. By CHNS Analyzer	0.1 to 5 %
		Oxygen	ASTM D 3176 – 09. (by Difference)	0.5 to 30 %
		Mineral Matter	IS 1350 (Part I) :1984, RA 2013.	1.11 to 88 %
		Ash Fusibility (DT, ST, HT, FT)	ASTM D1857 – 04.	900 to 1500°C
		Fineness (by 2.36 mm, 1.18 mm, 600 micron, 75 micron sieve)	ASTM D197 – 87.	0.1 to 100 %

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		Hardgrove Grindability Index (HGI)	ASTM D409/D409M – 12.	20 to 100
		Mercury	ASTM D3684 – 01. Reapproved – 2006.	0.1 to 6 mg/kg
<b>VI.</b>	<b>BUILDING MATERIAL</b>			
<b>1.</b>	<b>a. Cement (OPC, PPC)</b>	Al <sub>2</sub> O <sub>3</sub>	IS 4032:1985	1 to 10 %
		Calcium Oxide	IS 4032:1985, Sec.4.7.2	20 to 70 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 4032:1985, Sec 4.5.1	0.1 to 10 %
		Magnesium Oxide	IS 4032:1985, Sec 4.8.1	1 to 20 %
		Loss on Ignition	IS 4032:1985, Sec 4.2	0.1 to 10 %
		SiO <sub>2</sub>	IS: 4032:1985 Sec 4.3	12 to 40 %
	<b>b. Admixture</b>	Ash contents	IS 9103:1999, RA 2008.	1 to 20 %
		Dry material content of admixture	IS 9103:1999, RA 2008.	1 to 50 %
		pH	IS 9103:1999, RA 2008.	2 to 12
		Relative Density	IS 9103:1999, RA 2008.	0.8 - 2 g/cc
		Soluble chlorides	IS 6925:1973, RA 2004.	0.002 to 5 %
<b>VII.</b>	<b>FOOD AND AGRICULTURAL PRODUCTS</b>			
<b>1.</b>	<b>a) Nutritional Analysis of Food, Dried milk Powder</b>	Moisture	FSSAI Lab Manual 2016. method No. 10.2	1 to 80 %
		Total Ash	FSSAI Lab Manual 2016. method No. 10.7	0.5 to 10 %
		Fat	FSSAI Lab Manual 2016. method No. 10.3	0.5 to 50 g/100 g or 100 ml
		Protein	FSSAI Lab Manual 2016. method No. 19.1	1 to 50 g/100 g or 100 ml
		Carbohydrate	USFDA Title 21, Food and Drugs, Apr 2012.	10 to 80 g/100 g or 100 ml
		Sugar	FSSAI lab Manual 2016. IS 6287:1985 RA 2010,	1 to 80 g/100 g or 100 ml

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**Validity** 29.06.2018 to 28.06.2020

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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
			Ed 2.1 Amds.1 IS 4079:1967 RA 2000.	
		Energy Value (Calories)	Codex Alimentarius, 3.31:1985	50 to 1000 Cal/100 g or 100ml
	<b>b) Cereal based foods</b>	Moisture	IS 15271:2003, RA 2009. Method Annex B.	1 to 80 %
		Total Ash	IS 15271:2003, RA 2009 Method Annex C.	0.5 to 10 %
		Fat	IS 15271:2003, RA 2009 Method Annex D.	0.5 to 50 g/100g