

<b>Laboratory</b>	<b>AE Chemlabs India Private Limited, No. 18/11, S.V.P. Nagar, 1st Floor, Arumbakkam, Chennai</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>19.08.2013</b>
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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I. AIR, GASES &amp; ATMOSPHERE</b>				
<b>1.</b>	<b>Ambient Air/In plant Air quality</b>	Temperature	IS 5182 Pt.23 : 2006	Ambient -60°C
		% Relative Humidity	IS 5182 Pt.23 : 2006	40 -100 %
		Respirable Suspended Particulate Matter (RSPM)	IS 5182 Pt.23 : 2006	1– 500 µg/m <sup>3</sup> 500 -5000µg/m <sup>3</sup>
		Particulate Matter less than 10µ (PM <sub>10</sub> ) µg/m <sup>3</sup>	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	
		Suspended Particulate matter (SPM)	IS 5182: Part 4 (Reaff. 2010)	1– 500 µg/m <sup>3</sup> 500 -5000µg/m <sup>3</sup>
		Particulate Matter less than 2.5µ (PM <sub>2.5</sub> ) µg/m <sup>3</sup>	USEPA Quality Assurance Hand Book, Vol .II, Part II, Quality Assurance Guidelines Document 2.12 CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	4-500µg/m <sup>3</sup>
		Carbon monoxide as CO	IS 5182: Part 10 (Reaff:2009)	1.15 – 100 mg/m <sup>3</sup>
Sulphur dioxide as SO <sub>2</sub>	IS 5182: Part 2: (Reaff. 2006) CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	5 – 10 µg/m <sup>3</sup> 10 – 1000 µg/m <sup>3</sup>		

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	<b>Ambient Air/In plant Air quality</b>	Nitrogen oxides as Nox	IS 5182: Part 6 -2006 CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	6 – 750 µg/m <sup>3</sup>
		Lead	IS 5182 Pt.22 (Reaff. 2009) CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	0.1µg/m <sup>3</sup> -50µg/m <sup>3</sup>
		Arsenic	APHA IIInd Edition Method of Air Sampling analysis – 302; CPCB Guidelines for the measurement of ambient Air Pollutant Volume 1 May 2011	5ng/m <sup>3</sup> -50ng/m <sup>3</sup>
		Nickel	APHA IIInd Edition Method of Air Sampling and analysis – 320 CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	5ng/m <sup>3</sup> -100ng/m <sup>3</sup>
		Ammonia	APHA IIInd Edition Method of Air Sampling analysis – 401 CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	20 - 700 µg/m <sup>3</sup>
		Ozone	IS 5182: Part 9 (1974) (Reaff. 2009) CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	20-19620 µg/m <sup>3</sup>

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<b>2.</b>	<b>Stack Emission</b>	Stack Temperature	IS 11255 Part 3 (Reaff.2008)	Ambient – 600 <sup>0</sup> C
		Area of Stack	IS 11255 Part 3 (Reaff.2008)	0.002 m <sup>2</sup> to 19.63 m <sup>2</sup>
		Stack Diameter	IS 11255 Part 3 (Reaff.2008)	0.05 m to 5 m
		Particulate matter	IS 11255 Part 1 (Reaff.2009)	1 – 10 mg/Nm <sup>3</sup> 10– 1000 mg/Nm <sup>3</sup>
		Sulphur dioxide as SO <sub>2</sub>	IS 11255 Part 2 (Reaff.2009); AECIPL/INS/SOP 017 (Using Flue Gas Analyzer)	3 – 1000 mg/Nm <sup>3</sup>
		Oxides of Nitrogen (as Nox)	IS 11255:Part 07:2005 / ; AECIPL/INS/SOP 017 (Using Flue Gas Analyzer)	2-400 mg/Nm <sup>3</sup>
		Velocity	IS 11255 Part 3(Reaff.2008)	≥ 1m/s
		Volume of Flue gas discharge	IS 11255 Part 3(Reaff.2008)	≥ 10 Nm <sup>3</sup> /hr
		Carbon Monoxide (CO)	IS 13270:1992 (Reaff: 2009); AECIPL/INS/SOP 017 (Using Flue Gas Analyzer)	0 – 5000mg/Nm <sup>3</sup>
		Oxygen (O <sub>2</sub> )	IS 13270:1992 (Reaff: 2009); AECIPL/INS/SOP 017 (Using Flue Gas Analyzer)	0.2 -25 %
		Carbon dioxide (CO <sub>2</sub> )	IS 13270:1992 (Reaff: 2009) ; AECIPL/INS/SOP 017 (Using Flue Gas Analyzer)	0.2 -25 %
Ammonia	IS:11255 part 6 (Reaff.2009)	5 – 100mg/Nm <sup>3</sup>		

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3.	<b>Noise Level Monitoring</b>	Lmin,Lmax,Leq (Equivalent Noise Level)	IS 9989 (Reaff. 2008)	30- 110 dB(A)
<b>II. WATER</b>				
1.	<b>Water/ Potable ground water/ Drinking water</b>	Colour	IS 3025 Part 4 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2120 B	2 – 10 Hazen 11 – 100 Hazen
		Odour	IS 3025 Part 5 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2150 B	Objectionable/ Un Objectionable
		Temperature °C	IS 3025 Part 9 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn 2550 B	10°C - 60 °C
		Turbidity as NTU	IS 3025 Part 10 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2130 B	0.5 -100 NTU 101-400 NTU
		pH Value @ 25 <sup>0</sup> C	IS 3025 Part 11 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 4500 H <sup>+</sup> B	1 – 10
		Conductivity @ 25 <sup>0</sup> C	IS 3025 Part 14 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2510 B	2 µmhos/cm – 20000 µmhos/cm
		Total Dissolved Solids	IS 3025 Part 16 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2540 C	2 – 100 mg/l 101 – 20000 mg/l
		Total Solids	IS 3025 Part 15 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 2540 B	2 – 100 mg/l 101 – 20000 mg/l
		Total Suspended Solids	IS 3025 Part 17 (Reaff.2006) APHA 22 <sup>nd</sup> Edn. 2540 D	2 – 100 mg/l 101 – 10000 mg/l

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	<b>Water/ Potable ground water/ Drinking water</b>	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21 2009 APHA 22 <sup>nd</sup> Edn. 2340 C	1 -500 mg/l 501 -10000 mg/l
		Calcium as Ca	IS 3025 Part 40 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 Ca B,	1 -500 mg/l 501-5000 mg/l
		Magnesium as Mg	IS 3025 Part 46 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 Mg B	1 -500 mg/l 501 -1000 mg/l
		Total Alkalinity or Methyl orange Alkalinity or Bicarbonate Alkalinity as CaCO <sub>3</sub> & HCO <sub>3</sub>	IS 3025 Part 23 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 2320 B	1 -500 mg/l 501-5000 mg/l
		Phenolphthalein Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 2320 B	1 -500 mg/l
		Chloride as Cl	IS 3025 Part 32 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 Cl <sup>-</sup> B	1 -500 mg/l 501-10000 mg/l
		Sulphate as SO <sub>4</sub>	IS 3025 Part 24 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 SO <sub>4</sub> E	1 – 100 mg/l 101 – 5000 mg/l
		Dissolved Oxygen	IS 3025 Part 38 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 O B,C	0.5 – 8.0 mg/l
		Iron as Fe	IS 3025 Part 53 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 B	0.05 – 5 mg/l 5 – 50 mg/l
		Nitrate as NO <sub>3</sub>	IS 3025 Part 34 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 NO <sub>3</sub> B	1 – 10 mg/l 10 –100 mg/l

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	<b>Water/ Potable ground water/ Drinking water</b>	Fluoride as F	IS 3025 Part 60- 2008 APHA 22 <sup>nd</sup> Edn. 4500 F B, D	0.1 – 20.0 mg/l
		Total Residual Chlorine	IS 3025 Part 26 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 Cl B	0.1 – 10 mg/l
		Total Silica as SiO <sub>2</sub>	IS 3025 Part 35 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 SiO <sub>2</sub> D	0.1 – 50 mg/l 50 - 200 mg/l
		Chromium as Cr <sup>6+</sup>	IS 3025 Part 52 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 Cr B	0.05 – 2 mg/l 2 – 100mg/l
		Copper	IS 3025 Part 42 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B/ AECIPL/TM/SOP/CH/066	0.02 - 100 mg/l
		Manganese	AECIPL/TM/SOP/CH/067 APHA 22 <sup>nd</sup> Edn. 3111 B	0.01 - 50mg/l
		Zinc	IS 3025 Part 49 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/068	0.01 - 100mg/l
		Cadmium	IS 3025 Part 41 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/069	0.003-100mg/l
		Aluminium	IS 3025 Part 55 (Reaff. 2009) APHA Edn. 3111 D IS:15302 (Reaff. 2009) AECIPL/TM/SOP/CH/070	0.03 - 100mg/l
		Mercury	IS 3025 Part 48 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3112B AECIPL/TM/SOP/CH/071	0.005 - 10mg/l

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	<b>Water/ Potable ground water/ Drinking water</b>	Lead	IS 3025 Part 47 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/072	0.01 - 50mg/l
		Nickel	IS 3025 Part 54(Reaff. 2009)APHA 22 <sup>nd</sup> Edn. 3111B AECIPL/TM/SOP/CH/073	0.01 - 50mg/l
		Selenium	IS 3025 Part 56 (Reaff. 2009)APHA 22 <sup>nd</sup> Edn.3114 C IS:15303 : 2003 AECIPL/TM/SOP/CH/074	0.5 - 10mg/l
		Boron	IS 3025 Part 57 (Reaff. 2010) APHA 22 <sup>nd</sup> Edn.4500 B	0.05 - 50mg/l
		Sulphide	IS 3025 Part 29 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.4500 S <sup>2-</sup> F	1 - 50mg/l
		Cyanide	IS 3025 Part 27 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.4500-CN <sup>-</sup> E	0.01 - 10mg/l
		Total chromium	IS 3025 Part 52 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3111B AECIPL/TM/SOP/CH/075	0.02 - 100mg/l
		Sodium	IS 3025 Part 45 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3500 – Na B	1 - 400mg/l/ 401 - 2000mg/l
		Potassium	IS 3025 Part 45 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 – K B	1 - 400mg/l 401 - 2000mg/l

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<b>2.</b>	<b>Industrial water / Raw &amp; Treated Liquid effluents/ Waste Water/ Sewage water</b>	Colour	IS 3025 Part 4 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2120 B	2 – 10 Hazen 11 – 100 Hazen
		Temperature °C	IS 3025 Part 9 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn 2550 B	10°C - 60 °C
		Turbidity as NTU	IS 3025 Part 10 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2130 B	0.5 -100 NTU 101-400 NTU
		pH Value @ 25 <sup>0</sup> C	IS 3025 Part 11 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 4500 H <sup>+</sup> B	1 – 10
		Conductivity @ 25 <sup>0</sup> C	IS 3025 Part 14 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2510 B	2 µmhos/cm – 20000 µmhos/cm
		Total Dissolved Solids	IS 3025 Part 16 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 2540 C	2 – 100 mg/l 101 – 20000 mg/l
		Total Solids	IS 3025 Part 15 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 2540 B	2 – 100 mg/l 101 – 20000 mg/l
		Total Suspended Solids	IS 3025 Part 17 (Reaff.2006) APHA 22 <sup>nd</sup> Edn. 2540 D	2 – 100 mg/l 101 – 10000 mg/l
		Chloride as Cl	IS 3025 Part 32 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 Cl <sup>-</sup> B	1 -500 mg/l 501--10000 mg/l
Sulphate as SO <sub>4</sub>	IS 3025 Part 24 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 SO <sub>4</sub> E	1 – 100 mg/l 101 – 5000 mg/l		



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	<b>Industrial water / Raw &amp; Treated Liquid effluents/ Waste Water/ Sewage water</b>	COD (Open reflux method)	IS 3025 Part 58-2006 APHA 22 <sup>nd</sup> Edn. 5220 B	4 – 500 mg/l 501– 10000 mg/l
		BOD @ 20°C for 5 days BOD @ 27°C for 3 days	IS 3025 Part 44 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 5210 B	2 – 100 mg/l 101 –5000 mg/l
		Dissolved Oxygen	IS 3025 Part 38 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 O B,C	0.5 – 8.0 mg/l
		Iron as Fe	IS 3025 Part 53(Reaff.2009) APHA 22 <sup>nd</sup> Edn. 3500 B	0.05 – 5 mg/l 5 – 50 mg/l
		Total Kjeldahl Nitrogen as N	IS 3025 Part 34 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 N– B, C	1 – 500 mg/l
		Nitrate as NO <sub>3</sub>	IS 3025 Part 34 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 NO <sub>3</sub> B	1 – 10 mg/l 10 –100 mg/l
		Nitrite as NO <sub>2</sub>	IS 3025 Part 34 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 NO <sub>2</sub> B	0.01 – 10 mg/l
		Free Ammonia as NH <sub>3</sub>	IS 3025 Part 34 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn NH <sub>3</sub> B,C	0.1 – 20 mg/l
		Ammonical Nitrogen as N	IS 3025 Part 34 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 NH <sub>3</sub> B,C	1 – 500 mg/l
		Oil & Grease	IS 3025 Part 39 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 5520 O&G – B	1 – 1000 mg/l
	Fluoride as F	IS 3025 Part 60- 2008 APHA 22 <sup>nd</sup> Edn. 4500 F B, D	0.1 – 20.0 mg/l	

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	<b>Industrial water / Raw &amp; Treated Liquid effluents/ Waste Water/ Sewage water</b>	Total Residual Chlorine	IS 3025 Part 26 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 Cl B	0.1 – 10 mg/l
		Phenolic compound as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 5530 B,C,D	0.001–1.0 mg/l
		Total phosphate as P	IS 3025 Part 31 (Reaff :2009) APHA 22 <sup>nd</sup> Edn. 4500 P B,D	0.1 – 50 mg/l 51 - 100 mg/l
		Chromium as Cr <sup>6+</sup>	IS 3025 Part 52 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 Cr B	0.05 – 2 mg/l 2 – 100mg/l
		Particle size 850micron	IS:6339 (Reaff. 2011)	0.1 -75%
		Total chromium	IS 3025 Part 52 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3111B	0.05 - 100mg/l
		Arsenic	IS 3025 Part 37 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3114B	0.01 - 50mg/l
		Mercury	IS 3025 Part 48 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3112B AECIPL/TM/SOP/CH/071	0.005 - 50mg/l
		Lead	IS 3025 Part 47 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/072	0.03 - 50mg/l
		Nickel	IS 3025 Part 54 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/073	0.03 - 50mg/l

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Industrial water / Raw &amp; Treated Liquid effluents/ Waste Water/ Sewage water</b>	Cadmium	IS 3025 Part 41 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/069	0.02 - 50mg/l
		Copper	IS 3025 Part 42 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3111B AECIPL/TM/SOP/CH/066	0.04 - 100 mg/l
		Zinc	IS 3025 Part 49 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3111B AECIPL/TM/SOP/CH/068	0.02 - 100mg/l
		Selenium	IS 3025 Part 56 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3114C IS:15303 (Reaff. 2009) AECIPL/TM/SOP/CH/074	0.5 - 50mg/l
		Boron	IS 3025 Part 57 (Reaff. 2010) APHA 22 <sup>nd</sup> Edn.4500 B B	0.05 - 50mg/l
		Percent Sodium	AECIPL/TM/SOP/063	1-80%
		Residual Sodium Carbonate	IS:11624 (Reaff. 2009)	0.1meq/l -50meq/l
		Cyanide	IS 3025 Part 27 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.4500 CN E	0.02 - 50mg/l
		Sulphide	IS 3025 Part 29 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.4500 S <sup>2-</sup> F	1 - 50mg/l
		Sodium	IS 3025 Part 45 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3500 Na B	1 - 400mg/l 401 - 8000mg/l
		Potassium	IS 3025 Part 45 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn.3500 K B	1 - 400mg/l 401 - 8000mg/l

<b>Laboratory</b>	<b>AE Chemlabs India Private Limited, No. 18/11, S.V.P. Nagar, 1st Floor, Arumbakkam, Chennai</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>19.08.2013</b>
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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Industrial water / Raw &amp; Treated Liquid effluents/ Waste Water/ Sewage water</b>	Calcium	IS 3025 Part 40 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 Ca B	1 –500 mg/l 501–5000 mg/l
		Magnesium	IS 3025 Part 46 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 3500 Mg B	1 –500 mg/l 501–1000 mg/l
		Dissolved Phosphate	IS 3025 Part 31 (Reaff. :2009) APHA 22 <sup>nd</sup> Edn. 4500 P B,D	0.1 – 50 mg/l 51 - 100 mg/l
<b>3.</b>	<b>Construction Water</b>	pH Value @ 25 <sup>0</sup> C	IS 3025 Part 11 (Reaff. 2006) APHA 22 <sup>nd</sup> Edn. 4500 H <sup>+</sup> B	1 – 10
		Chloride as Cl	IS 3025 Part 32 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 Cl <sup>-</sup> B	1 -500 mg/l 501-10000 mg/l
		Sulphate as SO <sub>4</sub>	IS 3025 Part 24 (Reaff. 2009) APHA 22 <sup>nd</sup> Edn. 4500 SO <sub>4</sub> E	1 – 100 mg/l 101 – 5000 mg/l
		Total Suspended Solids	IS 3025 Part 17 (Reaff.2006) APHA 22 <sup>nd</sup> Edn. 2540 D	10 – 100 mg/l 101 – 10000 mg/l
		a) To neutralize 100ml of sample water using phenolphthalein as an indicator using 0.02N NaOH	IS 3025 Part 22 (Reaff.2009)	0-50ml
		To neutralize 100ml of sample water using Mixed indicator using 0.02 N H <sub>2</sub> SO <sub>4</sub>	IS 3025 part 23 (Reaff. 2009)	0-100ml

-X-X-X-X-X-X-X-X-X-X-X-X-