

Laboratory Earth & Environment Laboratory, Plot No.652, Ekamra Villa, IRC Village, Nayapalli, Bhubaneswar, Orissa

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5550

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Validity 05.08.2018 to 04.08.2020

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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
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CHEMICAL TESTING

I.	ORES & MINERALS			
1.	Lime Stone/ Dolomite	LOI	Gravimetric Method IS 1760(P1)-1991 (RA 2017)	5 % to 50 %
		Silica	Gravimetric Method IS 1760(P2)-1991 (RA 2017)	0.5 % to 20 %
		Alumina	Titrimetric Method IS 1760(P3)-1992 (RA 2017)	0.2 % to 5 %
		Iron oxide	Dichromate Method ASTM C-25-17	0.5 % to 5 %
		Calcium Oxide	Volumetric Method IS 1760(P3)-1992 (RA 2017)	10 % to 65 %
		Magnesium Oxide	Volumetric Method IS 1760(P3)-1992 (RA 2017)	0.2 % to 35 %
		Chlorides	Volumetric Method IS 1760(P5)-1991 (RA 2017)	0.01 % to 2 %
		Free silica	Gravimetric Method IS 1760(P6)-2001 (RA 2017)	1 % to 10 %
		Bulk Density	Weight Calculation Method EEL/SOP/Ry-01, Issue No 00, Dt.01.04.2015	1.8 tonne/m ³ to 3.5 tonne/m ³
		Sodium Oxide	Flame Photometric Method EEL/SOP/OM/L-01, Issue No 00, Dt. 01.04.2015	0.01 % to 2 %

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		Potassium Oxide	Flame Photometric Method EEL/SOP/OM/L-01, Issue No 00, Dt. 01.04.2015	0.01 % to 2 %
		Sulphur Trioxide	Gravimetric Method ASTM C-25-17	0.001 % to 2 %
		Manganese	Photometric Method ASTM C-25-17	0.1 % to 10 %
		Phosphorous	Photometric Method ASTM C-25-17	0.01 % to 1 %
		Strontium	Gravimetric Method ASTM C-25-17	0.005 % to 0.2 %
		Titania	Colorimetric Method EEL/SOP/OM/L-02, Issue No 00, Dt. 01.04.2015	0.01 % to 2 %
2.	Bauxite	LOI	Gravimetric Method IS 2000(P1)-1985 (RA 2006)	20 % to 35 %
		Silica	Gravimetric Method IS 2000(P2)-1985 (RA 2006)	0.5 % to 5 %
		Alumina	Titrimetric Method IS 2000(P3)-1985 (RA 2006)	40 % to 65 %
		Ferric Oxide	Dichromate Method IS 2000(P4)-1985 (RA 2006)	4 % to 25 %
		Calcium Oxide	Volumetric Method IBM, Feb 2012	0.01 % to 2 %
		Magnesium Oxide	Gravimetric Method IBM, Feb 2012	0.05 % to 5 %
		Bulk Density	Weight Calculation Method EEL/SOP/RY-01 Issue No 00, Dt.01.04.2015	2.17 tonne/m ³ to 3.2 tonne/m ³

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		Phosphorous Pentoxide	Spectrophotometric Method IS 2000(P7)-2001 (RA 2017)	0.1 % to 1 %
		Titania	Colorimetric Method IS 2000(P5)-1985 (RA 2017)	0.1 % to 10 %
		Total Available Alumina	Bomb Digestion Method EEL/SOP/OM/Bu-01 Issue No 00, Dt.01.04.2015	35 % to 60 %
		Reactive Silica	Gravimetric Method IBM, Feb 2012, Page No.24	0.5 % to 5 %
3.	Chromite	LOI	Gravimetric Method EEL/SOP/OM/C-1, Issue No. 00, Dtd.01.04.2015	0.1 % to 5 %
		Moisture	Gravimetric Method IS 4737-1982 (RA 2016)	0.1 % to 5 %
		Silica	Gravimetric Method IS 4737-1982 (RA 2016)	0.5 % to 20 %
		Total Iron	Volumetric Method IS 4737-1982 (RA 2016)	0.5 % to 50 %
		Alumina	Gravimetric Method IS 4737-1982 (RA 2016)	1 % to 30 %
		Chromium Oxide	Permanganate Method IS 4737-1982 (RA 2016)	10 % to 70 %
		Calcium Oxide	Volumetric Method IS 4737-1982 (RA 2016)	0.5 % to 2 %
		Magnesium Oxide	Volumetric Method IS 4737-1982 (RA 2016)	0.5 % to 2 %

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		Bulk Density	Weight Calculation Method EEL/SOP/Ry-01 Issue No 00, Dt. 01.04.15	1.6 tonne/m ³ to 5 tonne/m ³
4.	Iron Ore	LOI	Gravimetric Method IBM, Feb 2012	0.1 % to 30 %
		Moisture	Gravimetric Method IS 1493 (P-1)1981 (RA 2016)	2 % to 25 %
		Silica	Gravimetric Method IS 1493 (P-1)1981 (RA 2016)	0.5 % to 59 %
		Alumina	Complexometric Method IS 1493 (P-1)1981 (RA 2016)	0.2 % to 10 %
		Total Iron (as Fe)	Dichromate Method IS 1493 (P-1)1981 (RA 2016)	40 % to 70 %
		Calcium Oxide	AAS Method IS 1493 (P3) 1987 (RA 2016)	0.01 % to 1 %
		Magnesium Oxide	AAS Method IS 1493 (P3) 1987 (RA 2016)	0.01 % to 1 %
		Phosphorous	Alkalimetric Method IS 1493 (P-1)1981 (RA 2016)	0.001 % to 1 %
		Sulphur	Gravimetric Method IS 1493 (P-1)1981 (RA 2016)	0.01 % to 1 %
		Manganese	Colorimetric Method IS 1493-1959 (RA 2016)	0.01 % to 2 %
		Bulk Density	Weight Calculation Method EEL/SOP/Ry-01 Issue No 00, Dt.01.04.2015	2.0 tonne/m ³ to 3.8 tonne/m ³

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		Titania	AAS Method IS 1493 (P3) 1987 (RA 2016)	0.02 % to 10 %
		Zinc	AAS Method IS 1493 (P7) 1993 (RA 2016)	0.01 % to 1 %
		Lead	AAS Method IS 1493 (P7) 1993 (RA 2016)	0.01 % to 1 %
		Copper Oxide	AAS Method IS 1493 (P5) 1990 (RA 2016)	0.01 % to 1 %
		Vanadium	AAS Method IS 1493 (P3) 1987 (RA 2016)	0.01 % to 1 %
		Arsenic	AAS Method IS 1493 (P8) 2014	0.001 % to 0.02 %
		Sodium Oxide	AAS Method IS 1493 (P6) 1990 (RA 2016)	0.01 % to 2 %
		Potassium Oxide	AAS Method IS 1493 (P6) 1990 (RA 2016)	0.01 % to 2 %
		Chromium	AAS Method IS 1493 (P3) 1987 (RA 2016)	0.01 % to 2 %
5.	Manganese Ore	LOI	Gravimetric Method IBM, Feb 2012	0.1 % to 5 %
		Silica	Gravimetric Method IS 1473-2004 (RA 2016)	5 % to 20 %
		Alumina	Oxine Method IS 1473-2004 (RA 2016)	5 % to 10 %

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		Iron	Dichromate Method IS 1473-2004 (RA 2016)	15 % to 40 %
		Calcium Oxide	Volumetric Method IBM, Feb 2012	0.05 % to 2 %
		Magnesium Oxide	Volumetric Method IBM, Feb 2012	0.02 % to 2 %
		Manganese	Volhard Method IS 1473-2004 (RA 2016)	20 % to 35 %
		Phosphorous	Alkalimetric Method IS 1473-2004 (RA 2016)	0.1 % to 2 %
		Bulk Density	Weight Calculation Method EEL/SOP/Ry-01 Issue No 00, Dt.01.04.2015	2.6 tonne/m ³ to 3.5 tonne/m ³
		Sulphur	Gravimetric Method IS 1473-2004 (RA 2016)	0.01 % to 1 %
		Titania	Colorimetric Method IS 1473-2004 (RA 2016)	0.01 % to 5 %
6.	Quartz	LOI	Gravimetric Method IS 1917 (P1)-1991 (RA 2017)	0.1 % to 5 %
		Silica	Gravimetric Method IS 1917 (P3)-1992 (RA 2017)	80 % to 99.9 %
		Alumina	AAS Method IS 1917 (P4)-1991 (RA 2017)	0.1 % to 1 %
		Iron	AAS Method IS 1917 (P5)-1992 (RA 2017)	0.02 % to 0.5 %

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		Calcium	AAS Method IS 1917 (P6)-1992 (RA 2017)	0.01 % to 0.5 %
		Magnesium	AAS Method IS 1917 (P6)-1992 (RA 2017)	0.01 % to 0.5 %
		Titania	Spectrophotometric Method IS 1917 (P7)-2001 (RA 2017)	0.01 % to 0.5 %
		Bulk Density	Weight Calculation Method EEL/SOP/Ry-01 Issue No 00, Dt.01.04.2015	1.5 tonne/m ³ to 3.0 tonne/m ³
		Sodium	Flame Photometric Method IS 1917 (P2)-1991 (RA 2017)	0.01 % to 0.5 %
		Potassium	Flame Photometric Method IS 1917 (P2)-1991 (RA 2017)	0.01 % to 0.5 %
7.	Graphite	Loss On Heating	Gravimetric Method IS 495-1967 (RA 2013)	1 % to 99 %
		Moisture	Gravimetric Method IS 11321-1985 (RA 2008)	0.05 % to 8 %
		Ash	Gravimetric Method IS 495-1967 (RA 2013) & IS 11321-1985 (RA 2008)	5 % to 70 %
		Volatile Matter	Gravimetric Method IS 11321-1985 (RA 2008)	0.1 % to 10 %

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		Fixed Carbon	Calculation Method IS 11321-1985 (RA 2008)	5 % to 99 %
		Bulk Density	Weight Calculation Method EEL/SOP/Ry-01 Issue No 00, Dt.01.04.2015	1.8 tonne/m ³ to 2.7 tonne/m ³
8.	Clays/China Clay (Kaolin)	LOI	Gravimetric Method IS 4589-2002 (RA 2018)	5 % to 20 %
		Silica	Gravimetric Method IBM-1970	2 % to 80 %
		Alumina	EDTA Method IS 4589-2002 (RA 2018)	2 % to 50 %
		Manganese Oxide	Spectrometric Method IBM-1970	0.01 % to 3 %
		Iron Oxide	Spectrometric Method IS 4589-2002 (RA 2018)	0.01 % to 5 %
		Calcium Oxide	Volumetric Method IBM-1970	0.01 % to 5 %
		Magnesium Oxide	Gravimetric Method IBM-1970	0.01 % to 30 %
		Sodium Oxide	Flame Photometric Method IS 11477-2011 (RA 2016) & IS 12107 (P9) 1987 (RA 2017)	0.01 % to 2 %
		Potassium Oxide	Flame Photometric Method IS 11477-2011 (RA 2016) & IS 12107 (P9) 1987 (RA 2017)	0.01 % to 2 %
		Bulk Density	Weight Calculation Method IS 1463-1983, (RA 2016)	0.5 g/cc to 2 g/cc

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		Titanium Oxide	Spectrometric Method IS 4589-2002 (RA 2018)	0.01 % to 10 %
9.	Alumino Silicates Minerals	LOI	Gravimetric Method IS 12107 (P1)1987 (RA 2017) & IS 1527-1972 (RA 2017)	0.1 % to 5 %
		Silica	Gravimetric Method IS 12107 (P2) 1987 (RA 2017) & IS 1527-1972 (RA 2017)	1 % to 40 %
		Alumina	EDTA Method IS 12107 (P3) 1987 (RA 2017) & IS 1527-1972 (RA 2017)	30 % to 75 %
		Iron Oxide	Spectrometric Method IS 12107 (P6) 1987 (RA 2017) & IS 1527-1972 (RA 2017)	0.5 % to 20 %
		Calcium Oxide	Volumetric Method IBM, Feb 2012	0.01 % to 10 %
		Magnesium Oxide	Gravimetric Method IBM, Feb 2012	0.01 % to 5 %
		Sodium Oxide	Flame Photometric Method IS 12107 (P9) 1987 (RA 2017) & IS 1527-1972 (RA 2017)	0.01 % to 2 %
		Potassium Oxide	Flame Photometric Method IS 12107 (P9) 1987 (RA 2017) & IS 1527-1972 (RA 2017)	0.01 % to 2 %
		Manganese Oxide	Spectrometric Method IS 12107 (P7) 1987 (RA 2017)	0.01 % to 2 %

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		Chromium Trioxide	Spectrometric Method IBM, Feb 2012	0.01 % to 5 %
		Phosphorous Pentoxide	Spectrometric Method IBM, Feb 2012	0.01 % to 1 %
		Bulk Density	Weight Calculation Method EEL/SOP/Ry/-01, Issue No 00, Dt. 01.04.2015	1.8 tonne/m ³ to 2.2 tonne/m ³
		Titanium Oxide	Spectrometric Method IS 12107 (Pt.5) 1987 (RA 2017) & IS 1527-1972 (RA 2017)	0.01 % to 10 %
10.	Feldspar	LOI	Gravimetric Method IS 9749-2007 (RA 2017)	0.1 % to 2 %
		Silica	Gravimetric Method IS 9749-2007 (RA 2017)	30 % to 75 %
		Alumina	EDTA Method IS 9749-2007 (RA 2017)	10 % to 30 %
		Iron Oxide	Spectrometric Method IS 9749-2007 (RA 2017)	0.001 % to 2 %
		Calcium Oxide	EDTA Method IS 9749-2007 (RA 2017)	0.01 % to 5 %
		Magnesium Oxide	EDTA Method IS 9749-2007 (RA 2017)	0.01 % to 5 %
		Sodium Oxide	Flame Photometric Method IS 9749-2007 (RA 2017)	0.01 % to 10 %
		Potassium Oxide	Flame Photometric Method IS 9749-2007 (RA 2017)	0.01 % to 10 %

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11.	Gems & Semi-Precious Stones (Iolite, Garnet, Peridot, Spinel, Tourmaline & Indicolite)	Colour	EEL/SOP/OM-AS-01, Issue No 00, Dt.15.01.2016	Qualitative
		Transparency	EEL/SOP/OM-AS-01, Issue No 00, Dt.15.01.2016	Qualitative
		Hardness	EEL/SOP/OM-AS-01, Issue No 00, Dt.15.01.2016	1 to 10 (Qualitative)
		Lustre	EEL/SOP/OM-AS-01, Issue No 00, Dt.15.01.2016	Qualitative
12.	Ore & Minerals (Limestone/ Dolomite, Bauxite, Chromite, Iron Ore, Manganese Ore, Quartz, Graphite, Clays/China Clay (Kaolin), Alumino Silicates Minerals)	Recovery Percentage	EEL/SOP/RV-01, Section No. 03, Issue No. 00, Dtd. 01.04.2015	2.5 % to 99.99 %

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CHEMICAL TESTING

<u>AT LAB</u>				
I.	ORES & MINERALS			
1.	Ore & Minerals (Limestone/Dolomite, Bauxite, Chromite, Iron Ore, Manganese Ore, Quartz, Graphite, Clays/China Clay (Kaolin), Alumino Silicates Minerals)	Recovery Percentage	EEL/SOP/Ry-01, Section No. 04, Issue No. 00, Dtd. 01.04.2015	2.5 % to 99.99 %
II.	SOLID FUELS			
1.	Coal	Proximate Analysis		
		Total Moisture	Gravimetric Method, IS 1350 (P1)1984 (RA 2013)	0.3 % to 25 %
		Ash Content	Gravimetric Method IS 1350 (P1)1984 (RA 2013)	0.5 % to 50 %
		Volatile Matter	Gravimetric Method IS 1350 (P1)1984, (RA 2013)	0.5 % to 50 %
		Fixed Carbon	Calculation Method IS 1350 (P1)1984, (RA 2013) (By calculations)	15 % to 98.5 %

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		Gross Calorific Value	Bomb Calorimeter Method IS 1350(Pt.2) 2017	2000 kcals/kg to 8000 kcals/kg
		Hard Groove Grindability Index	Gravimetric Method IS 4433-1979, (RA 2015)	15 to 180
		Chloride	Volhard Method IS 1350 (Pt.5) 2017	0.01 % to 1 %
		Sulphur	Eschka Method IS 1350(P3) 1969 (RA 2015)	0.005 % to 5 %
		Phosphorus	Gravimetric Method IS 1350 (Pt.5) 2017	0.01 % to 5 %
2.	Coke	Proximate Analysis		
		Total Moisture	Gravimetric Method, IS 1350 (P1)1984 (RA 2013)	0.3 % to 25 %
		Ash Content	Gravimetric Method IS 1350 (P1)1984 (RA 2013)	0.5 % to 50 %
		Volatile Matter	Gravimetric Method IS 1350 (P1)1984, (RA 2013)	0.5 % to 50 %
		Fixed Carbon	Calculation Method IS 1350 (P1)1984, (RA 2013) (By calculations)	15 % to 98.5 %
		Gross Calorific Value	Bomb Calorimeter Method IS 1350(Pt.2)1975 (RA 2017)	2000 kcals/kg to 8000 kcals/kg
		Hard Groove Grindability Index	Gravimetric Method IS 4433-1979, (RA 2015)	15 to 180
		Chloride	Volhard Method IS 1350 (Pt.5) 2017	0.01 % to 1 %
		Sulphur	Eschka Method IS 1350(P3) 1969 (RA 2015)	0.005 % to 5 %

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		Phosphorus	Gravimetric Method IS 1350 (Pt.5) 2017	0.01 % to 5 %
III.	WATER			
1.	Water (Potable & Domestic, Drinking Purpose, Packaged Drinking Water)	pH	Electrometric Method IS 3025 (Pt-11)1983 (RA 2017)	2 to 12
		Total Alkalinity as CaCO ₃	Titration Method IS 3025 (Pt 23) 1986 (RA 2014)	1 mg/l to 1000 mg/l
		Turbidity	Turbidometric Method IS 3025 (P10) 1984 (RA 2017)	0.5 NTU to 100 NTU
		Electrical Conductivity	Electrode Method APHA, 23 rd Ed 2017 2510-B	0.1 µmhos/cm to 5000 µmhos/cm
		Total Dissolved Solids	Gravimetric Method IS 3025 (Pt-16)1984, (RA 2017)	5 mg/l to 10000 mg/l
		Total Suspended Solids	Gravimetric Method APHA, 23 rd Ed 2017, 2540-D	5 mg/l to 200 mg/l
		Total Hardness as CaCO ₃	Titration Method IS 3025 (P 21) 2009 (RA 2014)	5 mg/l to 5000 mg/l
		Calcium as Ca	Titration Method IS 3025 (Part 40) 1991, (RA 2014), APHA 23 rd Ed 2017, 3500-B	5 mg/l to 2000 mg/l
		Total Residual Chlorine	Iodometric Method IS 3025 (P 26) 1986 (RA 2014), APHA, 23 rd Ed 2017,4500-B	0.2 mg/l to 50 mg/l

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		Chloride as Cl	Argentometric Method IS 3025 (Pt-32) 1988 (RA 2014)	1 mg/l to 200 mg/l
		Sulphide as S	Iodometric Method IS 3025 (Pt-29) 1986 (RA 2014)	1 mg/l to 100 mg/l
		Sulphate as SO ₄	Spectrophotometric Method IS 3025, (Pt-24) 1986, (RA 2014)	1 mg/l to 1000 mg/l
		Ammonical Nitrogen As NH ₃ -N	Titration Method IS 3025 (Pt34) 1988, (RA 2014)	0.1 mg/l to 100 mg/l
		Phosphorus as P	Colorimetric Method APHA, 23 rd Ed 2017,4500-P	0.005 mg/l to 10 mg/l
		Magnesium as Mg	AAS Method IS 3025 (Pt 46) 1994 (RA 2014)	1 mg/l to 1000 mg/l
		Aluminum as Al	AAS Method APHA 23 rd Ed, 2017, 3111 D	0.02 mg/l to 50 mg/l
		Copper as Cu	AAS Method APHA 23 rd 2017-3111B	0.2 mg/l to 10 mg/l
		Iron as Fe	AAS Method APHA 23 rd Ed 2017, 3111C	0.0001 mg/l to 100 mg/l
		Mercury as Hg	AAS Method IS 3025 (Part 48):1994, (RA 2014)	0.0001 mg/l to 10 mg/l
		Arsenic as As	AAS Method IS 3025 (Part 37)-1988, (RA 2014)	0.005 mg/l to 20 mg/l
		Lead as Pb	AAS Method APHA 23 rd Ed 2017, 3111B	0.01 mg/l to 20 mg/l

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		Colour	Visual Comparison Method IS 3025 (Pt-4) 1983 (RA 2017)	2 Hazen to 100 Hazen
		Odour	Observation Method IS 3025 (Pt-5) 1983 (RA 2017)	Agreeable/Disagreeable (Qualitative)
		Hexavalent Chromium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-70, 3-75	0.01 mg/l to 1000 mg/l
		Ammonia	Titration Method APHA 23 rd Ed. 2017 4500, 4-115, 4-116	0.05 mg/l to 100 mg/l
		Total Chromium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-70, 3-75	1 mg/l to 5000 mg/l
		Nitrate	Spectrophotometric Method APHA 23 rd Ed. 2017 4500, 4-122-123	5 mg/l to 100 mg/l
		Nitrite	Spectrophotometric Method APHA 23 rd Ed. 2017 4500, 4, 120-121	0.01 mg/l to 100 mg/l
		Fluoride	Distillation Method IS 3025 (Pt. 60):2013	0.1 mg/l to 50 mg/l
		Zinc	AAS Method IS 3025 (P 49) 1994, (RA 2014)	0.01 mg/l to 100 mg/l
		Selenium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-95-96, & IS 3025 (P 56) 2003 (RA 2014)	0.005 mg/l to 10 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
		Vanadium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-103-104	0.001 mg/l to 10 mg/l
		Nickel	AAS Method APHA 23 rd Ed.2017 3500,3-110	0.01 mg/l to 10 mg/l
		Manganese	Colorimetric Method APHA 23 rd Ed. 2017 3500, 3-87, & IS 3025 (Pt. 59) 2009 (RA 2017)	0.01 mg/l to 10 mg/l
		Cyanide	Electrode Method APHA 23 rd Ed. 2017 4500, 4-48 & IS 3025 (Pt. 27) 1986 (RA 2014)	0.001 mg/l to 100 mg/l
		Phenol	Spectrophotometric Method IS 3025(Pt.43):1992, (RA 2014)	0.001 mg/l to 100 mg/l
		Bio-assay	Observation Method IS 6582-1971 (RA 2014)	Qualitative
		Cadmium	AAS Method APHA 23 rd Ed. 2017 3500, 3-107, & IS 3025 (Pt. 41) 1992 (RA 2014)	0.01 mg/l to 10 mg/l
		Boron	Titration Method IS 3025(Pt-57):2005, (RA 2010)	0.1 mg/l to 50 mg/l
		Surfactants	Sublation Method APHA 23 rd Ed. 2017 5540, 5-53	0.001 mg/l to 10 mg/l
		Potassium	Flame photometric Method IS 3025(Pt 45):1993 (RA 2014)	1 mg/l to 1000 mg/l

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		Sodium	Flame photometric Method IS 3025(Pt 45):1993 (RA 2014)	1 mg/l to 1000 mg/l
		Taste	Threshold Method APHA 23 rd Ed. 2017, 2160, 2-22, 2-23	Qualitative
2.	Water for Construction Purpose	pH value	Electrometric Method IS 3025 (Pt.11)-1983, (RA 2017)	2 to 12
		Chloride	Argentometric Method IS 3025 (Pt.32)-1988, (RA 2014)	10 mg/l to 1000 mg/l
		Sulphate	Spectrophotometric Method IS 3025 (Pt.24)-1986, (RA 2014)	10 mg/l to 1000 mg/l
		Total Suspended Material	Gravimetric Method IS 3025 (Pt.17)-1984, (RA 2017)	5 mg/l to 1000 mg/l
		Acidity (ml of 02 'N' NaOH used to neutralize the 100 ml of the water)	Indicator Method IS 3025 (Pt.22)-1986, (RA 2014)	2 mg/l to 5 mg/l
		Alkalinity (ml of 02 'N' H2SO4 used to neutralize the 100 ml of the water)	Indicator Method IS 3025 (Pt.23)-1986, (RA 2014)	5 mg/l to 25 mg/l
		Organic Solids	Gravimetric Method IS 3025 (Pt.18)-1984, (RA 2017)	2 mg/l to 1000 mg/l
		Inorganic Solids	Gravimetric Method IS 3025 (Pt.16)-1984, (RA 2017)	10 mg/l to 3000 mg/l

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3.	Raw Water, (Ground Water & Surface Water, Irrigation Water)	pH	Electrometric Method IS 3025 (P-11)1983 (RA 2017)	2 to 12
		Total Alkalinity as CaCO ₃	Indicator Method IS 3025 (Part 23) 1986 (RA 2014)	1 mg/l to 5000 mg/l
		Temperature	Thermometric Method APHA, 23 rd Ed 2017, 2550	5 °C to 50 °C
		Turbidity	Turbidometric Method IS 3025 (Part 10)-1984 (RA 2017)	1 NTU to 1000 NTU
		Electrical Conductivity	Electrode Method APHA, 23 rd Ed 2017 2510 B	5 µmhos/cm to 100000 µmhos/cm
		Total Dissolved Solids	Gravimetric Method IS 3025(Pt-16)1984, (RA 2017)	10 mg/l to 10000 mg/l
		Total Suspended Solids	Gravimetric Method APHA, 23 rd 2017, 2540 D	5 mg/l to 1000 mg/l
		Total Hardness as CaCO ₃	Titration Method IS 3025 (Part 21):2009 (RA 2014)	5 mg/l to 5000 mg/l
		Calcium Hardness as CaCO ₃	Titration Method APHA 23 rd Ed. 2017	5 mg/l to 2000 mg/l
		Magnesium Hardness as CaCO ₃	Calculation Method APHA 23 rd Ed-2017 Part 3500 A,3-86	5 mg/l to 5000 mg/l
	Total Residual Chlorine	Iodometric Method IS 3025,Part-26-1986, (RA 2014), APHA, 23 rd Ed 2017, 4500 B	1 mg/l to 100 mg/l	
	Dissolved Oxygen	Titrimetric Method IS 3025(Part 38)-1989, (RA 2014)	1 mg/l to 8 mg/l	

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		Biological Oxygen Demand @ 27 ^o C for 3 days	Incubation Method IS 3025(Pt-44)1993 (RA 2014), APHA 23 rd Ed 2017, Part-5210B	4 mg/l to 5000 mg/l
		Chemical Oxygen Demand	Open Reflux Method APHA, 23 rd Ed 2017 5220 B,5-18, 5-19	4 mg/l to 10000 mg/l
		Mercury as Hg	AAS Method IS 3025 (Part 48):1994, (RA 2014)	0.0001 mg/l to 20 mg/l
		Iron as Fe	AAS Method APHA 23 rd Ed. 2017 3111C	0.0001 mg/l to 500 mg/l
		Chloride as Cl	Argentometric Method IS 3025(Pt-32)1988, (RA 2014)	1 mg/l to 10000 mg/l
		Sulphide as S	Iodometric Method IS 3025(Pt-29)1986, (RA 2014)	1 mg/l to 100 mg/l
		Sulphate as SO ₄	Spectrophotometric Method IS 3025(Pt-24)1986, (RA 2014)	1 mg/l to 5000 mg/l
		Ammonical Nitrogen as NH ₃ -N	Titrimetric Method IS 3025 (Part 34)-1988, (RA 2014)	0.1 mg/l to 100 mg/l
		Phosphorous as P	Colorimetric Method APHA, 23 rd Ed.2017, 4500-P	0.01 mg/l to 200 mg/l
		Copper as Cu	AAS Method APHA 23 rd 2017-3111B	0. 2 mg/l to 50 mg/l
		Arsenic as As	AAS Method IS 3025 (Part 37)-1988, (RA 2014)	0.005 mg/l to 50 mg/l

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		Lead as Pb	AAS Method APHA 23 rd Ed 2017, 3111B	1 mg/l to 25 mg/l
		Aluminum as Al	AAS Method APHA 23 rd Ed 2017, 3111 D	0.1 mg/l to 100 mg/l
		Magnesium as Mg	AAS Method IS 3025(Pt 46), 1994, (RA 2014)	1 mg/l to 2000 mg/l
		Total Kjeldahl Nitrogen as N	Distillation Method APHA 23 rd Ed, 4500N _{Org} , - A, 4-138	1 mg/l to 1000 mg/l
		Oil and Grease	Gravimetric Method IS 3025 (Part 39):1991, (RA 2014)	1 mg/l to 1000 mg/l
		Nitrate	Spectrophotometric Method APHA 23 rd Ed. 2017 4500, 4-126-127	5 mg/l to 100 mg/l
		Nitrite	Spectrophotometric Method APHA 23 rd Ed. 2017 4500, 4-124-125	0.01 mg/l to 100 mg/l
		Bio-assay	Observation Method IS 6582-1971, (RA 2014)	Qualitative
		Cyanide	Electrode Method APHA 23 rd Ed. 2017 4500, 4-48 & IS 3025 (Pt. 27)1986 (RA 2014)	0.001 mg/l to 100 mg/l
		Phenol	Spectrophotometric Method IS 3025(Pt.43):1992, (RA 2014)	0.001 mg/l to 100 mg/l
		Odour	Observation Method IS 3025 (Pt-5)1983 (RA 2017)	Agreeable/ Disagreeable (Qualitative)

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		Hexavalent Chromium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-70, 3-75	0.01 mg/l to 1000 mg/l
		Total Chromium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-70, 3-75	1 mg/l to 5000 mg/l
		Total Solid	Calculation Method IS 3025(P-15) 1984, (RA 2014)	10 mg/l to 10000 mg/l
		Total Volatile Solid	Gravimetric Method IS 3025(P-18) 1984 (RA 2017)	10 mg/l to 10000 mg/l
		Carbonate Hardness	Calculation Method IS 3025 (Part-21):2009 (RA 2014)	5 mg/l to 5000 mg/l
		Non-carbonate Hardness	Calculation Method IS 3025 (Part-21):2009 (RA 2014)	5 mg/l to 5000 mg/l
		Oxygen Absorbed in 4 hr	Incubation Method IS 3025(P 63):2007 (RA 2013)	0.01 mg/l to 8 mg/l
IV.	ATMOSPHERIC POLLUTION			
1.	Ambient Air	Suspended Particulate Matter	Gravimetric Method EEL/SOP/AAQ/SPM-01, Issue No.00, Dt.01.04.15	10 µg/m ³ to 1000 µg/m ³
		PM _{2.5} -Particulate Matter(<2.5µm)	Gravimetric Method SOP No.-R-5.4 30/STP (A), Sec-03/00/20/12/2013/CPCB Guidelines	5 µg/m ³ to 1000 µg/m ³

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		PM ₁₀ -Particulate Matter (<10)	Gravimetric Method IS 5182 (P 23) 2006, (RA 2017)	10 µg/m ³ to 1000 µg/m ³
		Sulphur Dioxide	West & Gaeke Method, IS 5182(P 2) 2001, (RA 2017)	4 µg/m ³ to 200 µg/m ³
		Nitrogen Dioxide	Jacob & Hochheiser Method IS 5182 (P 6) 2005 (RA 2017)	4 µg/m ³ to 200 µg/m ³
		Lead	ASS Method EEL/SOP/AAQ/Pb-01, Issue No.00, Dtd. 01.04.15	0.01 µg/m ³ to 10 µg/m ³
		Arsenic	ASS Method, EEL/SOP/AAQ/AS-01, Issue No.00, Dtd. 01.04.15	0.01 µg/m ³ to 10 µg/m ³
		Ammonia	Indophenols Method, EEL/SOP/AAQ/NH ₃ -01, Issue No.00, Dt.01.04.15	0.1 µg/m ³ to 1000 µg/m ³
		Ozone	Colorimetric Method EEL/SOP/AAQ/Oz-01, Issue No.00, Dt.01.04.15	1 µg/m ³ to 1000 µg/m ³
		Dust fall	Gravimetric Method IS 5182 (Pt-1) 2012 RA 2012	1 gm/m ² mo to 500 gm/m ² mo
		Carbon Monoxide	Instrument Method EEL/SOP/AAQ/CO-01, Issue No.00, Dtd. 01.04.15	0.1 mg/l to 25 mg/l
		Benzene	Gas Chromatography Method IS 5182 (P 11) 2006, (RA 2017)	0.01 µg/m ³ to 10 µg/m ³
		Benzo (a) Pyrene (BaP)	Gas Chromatography Method IS 5182 (P12) 2004, (RA 2014)	0.01 µg/m ³ to 5 µg/m ³

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		Nickel	ASS Method EEL/SOP/AAQ/Ni-01, Issue No.00, Dtd. 01.04.15	0.2 µg/m ³ to 2000 µg/m ³
		Fluoride	Electrode Method , IS 5182 (P-13) 1991 (RA 2014)	0.005 mg/m ³ to 5 mg/m ³
		Cyanide	Electrode Method, EEL/SOP/AAQ/CN-01, Issue No.00, Dtd. 01.04.15	0.013 mg/m ³ to 13 mg/m ³
		Hydrogen Sulphide	Colorimetric Method, IS 5182 (Pt-7) 1973, (RA 2014)	5 µg/m ³ to 1000 µg/m ³
		Carbon Disulphide	Spectrophotometric Method IS 5182 (P-20) 1982 (RA 2014)	5.0 µg/m ³ to 2500 µg/m ³
2.	Stack Emission Monitoring	Suspended Particulate matter	Gravimetric Method IS 11255 (P 1) 1985 (RA 2014)	5 mg/Nm ³ to 1000 mg/Nm ³
		Sulphur Dioxide (as SO ₂)	Titration Method IS 11255 (P2) 1985 (RA 2014)	1 mg/Nm ³ to 1000mg/Nm ³
		Oxides of Nitrogen (as NO _x)	Colorimetric Method USEPA, Method-7	1 mg/Nm ³ to 2000 mg/Nm ³
		Oxygen	ORSAT Method IS 13270:1992 (RA 2014)	0.2% to 22%
		Carbon Dioxide	ORSAT Method IS 13270:1992 (RA 2014)	0.2% to 16%
		Carbon Monoxide	ORSAT Method IS 13270-2007 (RA 2014) EEL/SOP/SM/CO-01, Issue No.00, Dtd. 01.04.15	0.1% to 2%
		Ammonia	Spectrophotometric Method IS 11255 (P 6) 1999 (RA 2014)	5 mg/Nm ³ to 1000 mg/Nm ³

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		Fluoride	Electrode Method EEL/SOP/SM/F-01, Issue No.00, Dtd. 01.04.15	0.020 mg/m ³ to 2.000 mg/m ³
		Cyanide	Colorimetric Method EEL/SOP/SM/CN-01, Issue No.00, Dtd. 01.04.15	0.01 mg/Nm ³ to 1 mg/Nm ³
		Hydrogen Sulphide	Titration Method IS 11255 (Part-4) 2006 (RA 2017)	0.5 mg/Nm ³ to 100 mg/Nm ³
		Carbon Disulphide	Titration Method IS 11255 (Part-4) 2006, (RA 2017)	0.5 mg/Nm ³ to 100 mg/Nm ³
3.	Noise	Sound Pressure Level	Leq Calculation Method IS 9989-1981 (RA 2014)	30 dB to 130 dB
V.	POLLUTION & ENVIRONMENT			
1.	Hazardous/Solid Waste/MSW	pH	Electrode Method IS 10158-1982 (RA 2014)	2 to 12
		Moisture	Gravimetric Method IS 9235-1979 (RA 2014)	0.1 % to 90 %
		Kjeldahl Nitrogen	Method 4.0 IS 10158-1982 (RA 2014)	10 mg/kg to 10000 mg/kg
		Phosphorus	Quinoline Phosphomolybdate Method IS 10158-1982 (RA 2014)	1 mg/kg to 500 mg/kg
		Potassium	Flame Photometric Method IS 10158-1982 (RA 2014) EPA 3050B (Rev.2, Dec-1996)	1 mg/kg to 5000 mg/kg
		Volatile Substances	Gravimetric Method IS 10158-1982 (RA 2014)	0.5 % to 50 %
		Non-Volatile Substances	Gravimetric Method IS 10158-1982 (RA 2014)	0.1 % to 100 %

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		Calcium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Magnesium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Total Nitrogen	Method 5.00 IS 10158-1982 (RA 2014)	5 mg/kg to 10000 mg/kg
		Sodium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 5000 mg/kg
		Aluminium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Barium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Silver	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 50 mg/kg
		Copper	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 50 mg/kg
		Iron	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Manganese	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 50 mg/kg
		Zinc	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Lead	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg

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		Cadmium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 50 mg/kg
		Chromium	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Nickel	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 500 mg/kg
		Arsenic	AAS Method EPA 7062 (Rev.0, Sep-1994)	0.1 mg/kg to 50 mg/kg
		Mercury	AAS Method EPA 7471B (Rev.2, Feb-2007)	0.1 mg/kg to 50 mg/kg
		Hexavalent Chromium	Colorimetric Method EPA 7196A (Rev.1, July-1992)	0.1 mg/kg to 100 mg/kg
		Electrical Conductivity	Electrode Method IS 14767-2000 (RA 2016)	1 μ s/cm to 10000 μ s/cm
		Total Sulphur	Eschka Method ASTM E-775-15	25 mg/kg to 1000 mg/kg
		Chloride	Potentiometric Method ASTM E-776-16	5 ppm to 1000 ppm
		Cation Exchange Capacity	Ammonium Acetate Technique USEPA Method 9080 (Sep.1986)	1 meq/100 g to 100 meq/100 g
		Vanadium	AAS Method EPA 7000B (Rev.2, Feb-2007)	1 mg/kg to 50 mg/kg each
		Selenium	AAS Method EPA 7742 (Rev.0, Sep-1994)	0.1 mg/kg to 50 mg/kg

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		Antimony	AAS Method EPA 7000B (Rev.2, Feb-2007)	0.1 mg/kg to 100 mg/kg
2.	Waste Water	pH	Electrometric Method IS 3025 (P-11)1983 (RA 2017)	2 to 12
		Total Alkalinity as CaCO ₃	Indicator Method IS 3025 (P 23) 1986 (RA 2014)	1 mg/l to 5000 mg/l
		Temperature	Thermometric Method APHA, 23 rd Ed 2017, 2550	5°C to 50°C
		Turbidity	Turbidometric Method IS 3025 (Part 10)-1984 (RA 2017)	1 NTU to 1000 NTU
		Electrical Conductivity	Electrode Method APHA, 23 rd Ed 2017-2510 B	5 µmhos/cm to 100000 µmhos/cm
		Total Dissolved Solids	Gravimetric Method IS 3025, (Pt-16)1984, (RA 2017)	10 mg/l to 10000 mg/l
		Total Suspended Solids	Gravimetric Method APHA, 23 rd Ed 2017, 2540 D	5 mg/l to 1000 mg/l
		Total Hardness as CaCO ₃	Titration Method IS 3025 (P 21) 2009 (RA 2014)	5 mg/l to 5000 mg/l
		Calcium Hardness as CaCO ₃	Titration Method APHA 23 rd Ed 2017	5 mg/l to 2000 mg/l
		Magnesium Hardness as CaCO ₃	Calculation Method APHA 23 rd Ed-2017 Part 3500 A,3-86	5 mg/l to 5000 mg/l
		Total Residual Chlorine	Iodometric Method IS 3025(Part-26)1986, (RA 2014), APHA, 23 rd Ed 2017, 4500 B	1 mg/l to 100 mg/l

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		Dissolved Oxygen	Titrimetric Method IS 3025(Part 38)-1989, (RA 2014)	1 mg/l to 8 mg/l
		Biological Oxygen Demand @ 27 ^o C for 3 days	Incubation Method IS 3025(Pt-44)1993 (RA 2014)	4 mg/l to 5000 mg/l
		Chemical Oxygen Demand	Open Reflux Method APHA, 23 rd Ed 2017,5220 B, 5-18, 5-19	4 mg/l to 10000 mg/l
		Mercury as Hg	AAS Method IS 3025 (Part 48):1994, (RA 2014)	0.0001 mg/l to 20 mg/l
		Iron as Fe	AAS Method APHA 23 rd Ed.2017, 3111C	0.0001 mg/l to 500 mg/l
		Chloride as Cl	Argentometric Method IS 3025(Pt-32)1988, (RA 2014)	1 mg/l to 10000 mg/l
		Sulphide as S	Iodometric Method IS 3025(Pt-29)1986, (RA 2014)	1 mg/l to 100 mg/l
		Sulphate as SO ₄	Spectrophotometric Method IS 3025(Pt-24)1986, (RA 2014)	1 mg/l to 5000 mg/l
		Ammonical Nitrogen as NH ₃ -N	Titrimetric Method IS 3025 (Part 34)-1988, (RA 2014)	0.1 mg/l to 100 mg/l
		Phosphorous as P	Colorimetric Method APHA, 23 rd Ed 2017, 4500 P	0.01 mg/l to 200 mg/l
		Copper as Cu	AAS Method APHA 23 rd 2017-3111B	0. 2 mg/l to 50 mg/l
		Arsenic as As	AAS Method IS 3025 (Part 37)-1988,	0.005 mg/l to 50 mg/l

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			(RA 2014)	
		Lead as Pb	AAS Method APHA 23 rd Ed 2017, 3111B	1 mg/l to 25 mg/l
		Aluminum as Al	AAS Method APHA 23 rd Ed 2017, 3111 D	0.1 mg/l to 100 mg/l
		Magnesium as Mg	AAS Method IS 3025(Pt 46), 1994, (RA 2014)	1 mg/l to 2000 mg/l
		Total Kjeldahl Nitrogen as N	Distillation Method APHA 23 rd Ed 2017, 4500N _{org} -A, 4-138	1 mg/l to 1000 mg/l
		Oil and Grease	Gravimetric Method IS 3025 (Part 39):1991, (RA 2014)	1 mg/l to 1000 mg/l
		Nitrate	Spectrophotometric Method APHA 23 rd Ed. 2017, 4500, 4-126-127	5 mg/l to 100 mg/l
		Nitrite	Spectrophotometric Method APHA 23 rd Ed. 2017, 4500, 4-124-125	0.01 mg/l to 100 mg/l
		Bio-assay	Observation Method IS 6582-1971, (RA 2014)	Qualitative
		Cyanide	Electrode Method APHA 23 rd Ed. 2017 4500, 4-48 & IS 3025 (Pt. 27) 1986 (RA 2014)	0.001 mg/l to 100 mg/l
		Phenol	Spectrophotometric Method IS 3025(Pt.43):1992, (RA 2014)	0.001 mg/l to 100 mg/l

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		Odour	Observation Method IS 3025 (Pt-5):1983 (RA 2017)	Agreeable/Disagreeable (Qualitative)
		Hexavalent Chromium	Spectrophotometric Method APHA 23 rd Ed. 2017, 3500, 3-70, 3-75	0.01 mg/l to 1000 mg/l
		Total Chromium	Spectrophotometric Method APHA 23 rd Ed. 2017 3500, 3-70, 3-75	1 mg/l to 5000 mg/l
		Total Solid	Calculation Method IS 3025(Pt-15):1984, (RA 2014)	10 mg/l to 10000 mg/l
		Total Volatile Solid	Gravimetric Method IS 3025(Pt-18):1984 (RA 2017)	10 mg/l to 10000 mg/l
		Carbonate Hardness	Calculation Method IS 3025 (Part-21):2009 (RA 2014)	5 mg/l to 5000 mg/l
		Non-carbonate Hardness	Calculation Method IS 3025 (Part-21):2009 (RA 2014)	5 mg/l to 5000 mg/l
		Oxygen absorbed in 4 hr	Incubation Method IS 3025(P 63):2007 (RA 2013)	0.01 mg/l to 8 mg/l
VI.	SOIL & ROCK			
1.	Soil	pH	Electrometric Method IS 2720 (P 26) 1987, (RA 2016)	2.0 to 12
		Conductivity	Electrometric Method IS 14767-2000 (RA 2016)	10 µmhos/cm to 10000 µmhos/cm

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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
		Soluble Sulphates	Precipitation Method IS 2720 (P 27)-1977, (RA 2015)	0.01 % to 0.5 %
		Moisture	Gravimetric Method IS 2720 (P-18)-1992, (RA 2016)	0.1 % to 50 %
		Organic Matter	Walkley-Black Method IS 2720 (Pt. 22) 1972, (RA 2015)	0.5 % to 80 %
		Chloride	Titration Method ASTM D1411-2009	0.001 % to 2 %
		Available Sodium	Flamephotometric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Available Calcium	AAS Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Available Magnesium	AAS Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Sodium Absorption Ratio (SAR)	Calculation Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	2 to 50
		Available Nitrogen	Digestion Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Available Phosphorous	Spectrophotometric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Available Potash	Flamephotometric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %

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		Permeability	Gravimetric Method IS 2720 (P 17) 1986 (RA 2016)	10 ⁻² cm/sec to 10 ⁻¹⁰ cm/sec
		Texture (Silt, Sand, Clay & Color)	Bouyoucos Hydrometer Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	Qualitative
		Bulk Density	Wet-volume Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	1 kg/l to 3 kg/l
		Cation Exchange Capacity	Titration Method IS 2720 (P 24) 1976, (RA 2015)	0.1 meq/100g to 300 meq/100g
		Water Content	Oven-Drying Method IS 2720 (P 2) 1973, (RA 2015)	0.5 % to 85 %
		Porosity	Gravimetric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	25 % to 70 %
		Density	ASTM D7263-2009	1 g/cc to 5 g/cc
		LOI	Gravimetric Method IS 6186-1986 (RA 2015)	0.1 % to 5 %
		Alkalinity	Volumetric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	50 mg/kg to 250 mg/kg
		Salinity	Electrometric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	1000 ppm to 10000 ppm
		Water holding Capacity	Gravimetric Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	5 % to 65 %
		Iron	AAS Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %

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		Aluminium	AAS Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Manganese	AAS Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.01 % to 2 %
		Mercury	AAS Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	0.0001 µg/g to 2 µg/g
		Acidity	Titration Method EEL/SOP/BM-S-02 Issue No-00, Issue dt-1.04.2015	50 cmol _c /kg to 250 cmol _c /kg
VII.	BUILDING MATERIALS			
1.	Cement (OPC & PPC)	Insoluble Residue	Gravimetric Method IS 4032-1985 (RA 2014), Clause No.4.10	0.5 % to 35 %
		LOI	Gravimetric Method IS 4032-1985 (RA 2014), Clause No.4.2	0.5 % to 6 %
		Silica	Gravimetric Method IS 4032-1985 (RA 2014), Clause No.4.3	18 % to 35 %
		Alumina	EDTA Method IS 4032-1985 (RA 2014), Clause No.4.6.2	2 % to 15 %
		Ferric Oxide	EDTA Method IS 4032-1985 (RA 2014), Clause No.4.5.2	2 % to 7 %
		Calcium Oxide	EDTA Method IS 4032-1985 (RA 2014), Clause No.4.7.2	40 % to 70 %

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		Magnesia	EDTA Method IS 4032-1985 (RA 2014), Clause No.4.8.2	0.5 % to 10 %
		Total Chloride	Titration Method IS 4032-1985 (RA 2014), Amendment 2	0.01 % to 0.5 %
		Sulphuric Anhydride	Gravimetric Method IS 4032-1985 (RA 2014), Clause No.4.9	1 % to 4 %
		Sodium Oxide	Flame Photometric Method IS 4032-1985 (RA 2014), Clause No.4.11	0.01 % to 1.0 %
		Potassium Oxide	Flame Photometric Method IS 4032-1985 (RA 2014), Clause No.4.11	0.01 % to 2.0 %
2.	Admixture	pH Value	Electrometric Method IS 9103-1999 (RA 2013)	2 to 12
		Chloride	Volumetric Method IS 6925-1973 (RA 2013)	0.01 % to 1.0 %
3.	Concrete	Chlorides	Titration Method IS 14959 (P 1) 2001 (RA 2016)	0.01 % to 2.0 %
		Sulphur	Titration Method BS:1881 (Pt.124)-1988	0.01 % to 5 %
4.	Aggregate	Chlorides	Titration Method IS 14959(P1)2001 (RA 2016)	0.01 % to 2 %
		Sulphates	Gravimetric Method IS 4032-1985 (RA 2014), Clause No.4.9	0.01 % to 5 %
5.	Fly Ash	LOI	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.3	0.01 % to 20 %

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		Moisture	Gravimetric Method IS 3812 (Pt-1):2013	0.1 % to 10 %
		Silica	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.4	20 % to 65 %
		Alumina	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.7	10 % to 40 %
		Ferric Oxide	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.6	0.01 % to 5 %
		Calcium Oxide	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.8	0.01 % to 10 %
		Magnesia	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.9	0.01 % to 10%
		Sulphate Anhydride	Gravimetric Method IS 1727-1967 (RA 2013) Clause No. 5.10	0.01 % to 10 %
		Chlorides	Titration Method IS 4032-1985 (RA 2014) Amendment 2	0.01 % to 2.0%
		Available Alkalies as Na ₂ O	Flame Photometric Method IS 3812(Pt-1):2013 Annexure C	0.01 % to 2.0%
VIII.	METAL & ALLOYS			
1.	Metals & Alloys (Plain Steel, Alloy Steels & Structural Steel)	Sulphur	Evolution Method IS 228 (Pt. 9)-1989, (RA 2014)	0.01 % to 0.25 %
		Phosphorous	Alkali Metric Method IS 228 (Pt. 3)-1987, RA-2012	0.001 % to 0.50 %

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		Silicon	Gravimetric Method IS 228 (Pt. 8)-1989 (RA 2014)	0.05 % to 5.0 %
		Manganese	Titration Method IS 228 (Pt-2) 1987, RA-2012	0.01 % to 2.0 %