

Laboratory Sai Universal Mining Services, Plot No.-15-DP2, KIADB, Sankalapura Industrial Area, Bellary Road, Hospet, Bellary(D), Karnataka

Accreditation Standard ISO/IEC 17025: 2005

Discipline Chemical Testing **Issue Date** 05.02.2016

Certificate Number T-2736 **Valid Until** 04.02.2018

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S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. ORES & MINERALS				
1.	Iron Ore	Total Fe	IS 1493: 1981 (RA 2001)	10 % to 69.9 %
		Silica		0.5 % to 25 %
		Alumina		0.5 % to 20 %
		Phosphorus		0.02 % to 0.1 %
		Sulphur		0.01 % to 0.02 %
		Loss of Ignition	SUMS/SOP-01, 13.05.2015	0.1 % to 20 %
		Manganese	IS 1493: 1959 (RA 2006)	0.05 % to 15 %
2.	Manganese Ore	Manganese	IS 1473: 2004 (RA 2008)	5 % to 50 %
		Silica		0.5 % to 15 %
		Ferric Oxide		0.5 % to 15 %
		Alumina		1 % to 40 %
		Phosphorus		0.01 % to 0.1 %
		Sulphur		0.01 % to 0.2 %
3.	Bauxite ore	Alumina	IS 2000 (Part 3): 1985 (RA 2006)	1 % to 45 %
		Silica	IS 2000 (Part 2): 1985 (RA 2006)	0.5 % to 20 %
		Loss Of Ignition	IS 2000 (Part 1): 1985 (RA 2006)	0.5 % to 10.0 %

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	Bauxite ore	Titanium Oxide	IS 2000 (Part 5): 1985 (RA 2006)	0.5 % to 12.0 %
		Ferric Oxide	IS 2000 (Part 4): 1985 (RA 2006)	1 % to 35.0 %
4.	Limestone & Dolomite	Loss Of Ignition	IS 1760 (Part 1): 1991 (RA 2006)	1 % to 50 %
		Silica	IS 1760 (Part 2): 1991 (RA 2006)	0.1 % to 15 %
		Ferric Oxide	IS 1760 (Part 3): 1991 (RA 2006)	0.05 % to 2.0 %
		Calcium oxide	IS 1760 (Part 3): 1991 (RA 2006)	0.5 % to 56 %
		Magnesium oxide	IS 1760 (Part 3): 1991 (RA 2006)	0.10 % to 40 %
		Alumina	IS 1760 (Part 3): 1991 (RA 2006)	0.05 % to 5.0 %
5.	Quartzite and high silica Sand	Silica	IS 1917 (Part 3): 1991 (RA 2001)	80 % to 99.5 %
		Loss Of Ignition	IS 1917 (Part 1): 1992 (RA 2005)	0.1 % to 2 %
II. AIR, GASES & ATMOSPHERE				
1.	Stack Monitoring	Velocity	IS 11255 (Part 3): 2008	3 m/s to 45 m/s
		Volume of Gas Discharged	IS 11255 (Part 3): 2008	5 Nm ³ /h to 74000 Nm ³ /h

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	Stack Monitoring	Particulate matter	IS 11255 (Part 1): 1985 (RA 2009)	1 mg/Nm ³ to 500 mg/Nm ³
		Sulphur dioxide as SO ₂	IS 11255 (Part 2): 1985 (RA 2009)	5 mg/Nm ³ to 500 mg/Nm ³
		Oxides of Nitrogen as NO _x	IS 11255 (Part 7): 2005	3 mg/Nm ³ to 400 mg/Nm ³
2.	Ambient air Quality monitoring	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): (RA 2006)	5 µg/m ³ to 1000 µg/m ³
		Nitrogen Dioxide (NO ₂)	IS 5182 (Part 6): 2006 (RA 2012)	6 µg/m ³ to 750 µg/m ³
		PM ₁₀	IS 5182 (Part 23): 2004 (RA 2006)	5 µg/m ³ to 1000 µg/m ³
		PM _{2.5}	SUMS/SOP/038 Issued. 01/ Dated. 03.05.2012 (Based on CPCB Guidelines for the Measurement of Ambient Air Pollutants Vol. 1: May 2011)	5 µg/m ³ to 1000 µg/m ³
		Ozone	IS 5182 (Part 9): 1974 (RA 2009)	20 µg/m ³ to 1000 µg/m ³
		Lead	IS 5182 (Part 22): 2004 (RA 2009)	1 µg/m ³ to 1000 µg/m ³
		Ammonia	SUMS/SOP/046 Issued. 01 Dated. 10.06.2015 (Based on CPCB Guidelines for the Measurement of Ambient Air Pollutants Vol. 1: May 2011)	5 µg/m ³ to 1000 µg/m ³

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	Ambient air Quality monitoring	Nickel	SUMS/SOP/048 Issued. 01/ Dated. 10.06.2015 (Based on CPCB Guidelines for the Measurement of Ambient Air Pollutants Vol. 1: 2011	15 ng/m ³ to 1000 ng/m ³
		Arsenic	SUMS/SOP/049 Issued. 01/ Dated. 10.06.2015 (Based on CPCB Guidelines for the Measurement of Ambient Air Pollutants Vol. 1: 2011	3 ng/m ³ to 1000 ng/m ³
3.	Noise Level Monitoring	Noise Level	IS 9989: 1981 (RA 2008)	35 dB to 130 dB (A)
III. WATER				
1.	Ground Water/ Surface Water	pH @25°C	APHA (22 nd Edition) 4500 B: 2012	1 to 14
		Total Hardness as CaCO ₃	APHA (22 nd Edition) 2340 C: 2012	1 mg/l to 5000 mg/l
		Calcium	APHA (22 nd Edition) 3500Ca B: 2012	1 mg/l to 3000 mg/l
		Magnesium	APHA (22 nd Edition) 3500Mg B: 2012	1 mg/l to 3000 mg/l
		Chloride	APHA (22 nd Edition) 4500Cl B: 2012	1 mg/l to 10000 mg/l
		Total Alkalinity as CaCO ₃	APHA (22 nd Edition) 2320 B: 2012	1 mg/l to 5000 mg/l

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	Ground Water/ Surface Water	Conductivity @25 ⁰ C	APHA (22 nd Edition) 2510 B: 2012	1 µs/cm to 100000 µs/cm
		Total Dissolved Solids	APHA (22 nd Edition) 2540 C: 2012	1 mg/l to 10000 mg/l
		Sulphate as SO ₄	APHA (22 nd Edition) 4500 SO ₄ B: 2012	1 mg/l to 1000 mg/l
		Fluoride as F	APHA (22 nd Edition) 4500 F D: 2012	0.1 mg/l to 5 mg/l
		Nitrate as NO ₃	APHA (22 nd Edition) 4500 NO ₃ E: 2012	1 mg/l to 50 mg/l
		Nitrite as NO ₂	APHA (22 nd Edition) 4500 NO ₂ B: 2012	0.1 mg/l to 10 mg/l
		Iron as Fe	APHA (22 nd Edition) 4500 Fe B: 2012	0.02 mg/l to 10 mg/l
		Turbidity	APHA (22 nd Edition) 2530 B: 2012	0.5 NTU to 100 NTU
		Colour	APHA (22 nd Edition) 2120 B	5 Hazen Units to 500 Hazen Units
		Sodium as Na	APHA (22 nd Edition) 3500 Na B: 2012	1 mg/l to 500 mg/l
		Potassium as K	APHA (22 nd Edition) 3500 K B: 2012	1 mg/l to 500 mg/l
		Boron as B	APHA (22 nd Edition) 4500 B: 2012	0.1 mg/l to 10 mg/l

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2.	Waste & Effluents Water	pH @25 ⁰ C	APHA (22 nd Edition) 4500 B: 2012	1 to 14
		Total Hardness as CaCO ₃	APHA (22 nd Edition) 2340 C: 2012	1 mg/l to 5000 mg/l
		Calcium as Ca	APHA (22 nd Edition) 3500Ca B: 2012	1 mg/l to 3000 mg/l
		Magnesium as Mg	APHA (22 nd Edition) 3500Mg B: 2012	1 mg/l to 3000 mg/l
		Chloride as Cl	APHA (22 nd Edition) 4500Cl B: 2012	1 mg/l to 10000 mg/l
		Total Alkalinity as CaCO ₃	APHA (22 nd Edition) 2320 B: 2012	1 mg/l to 5000 mg/l
		Conductivity @25 ⁰ C	APHA (22 nd Edition) 2510 B: 2012	1 μs/cm to 100000 μs/cm
		Total Dissolved Solids	APHA (22 nd Edition) 2540 C: 2012	1 mg/l to 10000 mg/l
		Sulphate as SO ₄	APHA (22 nd Edition) 4500 SO ₄ B: 2012	1 mg/l to 1000 mg/l
		Fluoride as F	APHA (22 nd Edition) 4500 F D: 2012	0.1 mg/l to 5 mg/l
		Nitrate as NO ₃	APHA (22 nd Edition) 4500 NO ₃ E: 2012	0.1 mg/l to 50 mg/l
		Nitrite as NO ₂	APHA (22 nd Edition) 4500 NO ₂ B: 2012	0.1 mg/l to 10 mg/l

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	Waste & Effluents Water	Iron as Fe	APHA (22 nd Edition) 4500 Fe B: 2012	0.02 mg/l to 10 mg/l
		Turbidity	APHA (22 nd Edition) 2530 B: 2012	0.5 mg/l to 100 NTU
		Colour	APHA (22 nd Edition) 2120 B	5 to 500 Hazen units
		Sodium as Na	APHA (22 nd Edition) 3500 Na B: 2012	1 mg/l to 500 mg/l
		Potassium as K	APHA (22 nd Edition) 3500 K B: 2012	1 mg/l to 500 mg/l
		Boron as B	APHA (22 nd Edition) 4500 B: 2012	0.1 mg/l to 10 mg/l
		Chemical Oxygen Demand (COD)	APHA (22 nd Edition) 5220 C: 2012	4 mg/l to 40000 mg/l
		Biological oxygen Demand (BOD) at 27 ^o C for 3 days	IS 3025 (Part 44): 1993 (RA 2009)	2 mg/l to 5000 mg/l
		Oil & Grease	APHA (22 nd Edition) 5520 B: 2012	5 mg/l to 1000 mg/l
		Acidity	APHA (22 nd Edition) 2310 B: 2012	1 mg/l to 5000 mg/l
		Total Solids	APHA (22 nd Edition) 2540 B: 2012	1 mg/l to 10000 mg/l
	Total Suspended Solids	APHA (22 nd Edition) 2540 D: 2012	1 mg/l to 100 mg/l	

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	Waste & Effluents water	Phenol	APHA (22 nd Edition) 5530 D: 2012	0.1 mg/l to 4 mg/l
		Lead	APHA (22 nd Edition) 3111 B: 2012	1 mg/l to 100 mg/l
		Aluminum	APHA (22 nd Edition) 3111 D: 2012	2 mg/l to 100 mg/l
		Chromium	APHA (22 nd Edition) 3111 B: 2012	1 mg/l to 100 mg/l
		Manganese	APHA (22 nd Edition) 3111 B: 2012	0.5 mg/l to 100 mg/l
		Cadmium	APHA (22 nd Edition) 3111 B: 2012	0.5 mg/l to 100 mg/l
		Mercury	APHA (22 nd Edition) 3112 B: 2012	0.01 mg/l to 100 mg/l
		Arsenic	APHA (22 nd Edition) 3114 B: 2012	0.01 mg/l to 100 mg/l

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