

Laboratory **Inspectorate Griffith India Pvt. Ltd., Bhubaneswar Laboratory,
Plot # 211, Ground Floor, Sector-A, Zone-B, Mancheswar Industrial
Estate, Bhubaneswar, Odisha**

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

Certificate Number **TC-6766** *(in lieu of T-1064)*

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Validity **02.01.2018 to 01.01.2020**

Last Amended on 12.01.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
CHEMICAL TESTING				
I.	SOLID FUELS			
1.	Coal & Coke	Total Moisture	IS 1350 (Part 1) ISO 579, ISO 589 ASTM D2961, ASTM D3302/D3302M	0.1% to 50%
		Equilibrated Moisture	IS 1350 (Part 1)	0.1% to 10.0%
		Moisture in analysis sample (IM) / Air-dried Moisture / Dry Basis Moisture	IS 1350 (Part 1) ASTM D3173, ASTM D7582 ISO 687, ISO 11722	0.1% to 30%
		Volatile Matter on Air Dried Basis / Volatile Matter on Dry Basis/ Volatile Matter on Equilibrated Basis	IS 1350 (Part 1) ISO 562 ASTM D3175, ASTM D7582	0.30% to 50%
		Ash on Air Dried Basis / Ash on Dry Basis/ Ash on Equilibrated Basis	IS 1350 (Part 1) ISO 1171 ASTM D3174, ASTM D7582	0.20% to 95%
		Gross Calorific Value (GCV) / E GCV	IS 1350 (Part 2) ISO 1928 ASTM D5865	100 kcal/kg to 9000 kcal/kg
		Net Calorific Value (NCV)	ISO 1928 ASTM D5865	100 kcal/kg to 9000 kcal/kg
		Fixed Carbon on Air Dried Basis / Fixed Carbon on Dry Basis/ Fixed Carbon on Equilibrated Basis	IS 1350 (Part 1) ISO 17246 ASTM D3172	By Calculation
		Phosphorous	IS 1350 (Part 5)	0.01% to 0.5%

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			ASTM D6349 IGI/TPM/L/BSR / 15.1 Issue # 04, Rev # 00, Date: 01.03.2013	0.004% to 0.5%
		Total Sulphur	IS 1350 (Part 3) ISO 334, ISO 19579 ASTM D4239	0.1% to 5%
		Chlorine	IS 1350 (Part 5) (Mohr's Method) ISO 587 (Mohr's Method)	0.012% to 1.00%
		Ultimate analysis		
		Carbon	ISO 29541 ASTM D5373	10% to 100.0%
		Hydrogen	ISO 29541 ASTM D5373	0.2% to 15.0%
		Nitrogen	ISO 29541 ASTM D5373	0.2% to 5.0%
		Sulphur	ISO 334, ISO 19579 ASTM D4239	0.05% to 10.0%
		Oxygen	ASTM D3176	0.04% to 90.0%
		Forms of Sulphur		
		Pyritic Sulphur	IS 1350 (Part 3)	0.01% to 1.00%
		Organic Sulphur	IS 1350 (Part 3)	0.01% to 1.00%
		Sulphate Sulphur	IS 1350 (Part 3)	0.005% to 0.50%
		Ash Fusion Temperature		
		Initial Deformation Temperature	IS 12891 ISO 540 ASTM D1857/D1857M	900°C to 1500°C
		Spherical Temperature	IS 12891 ISO 540 ASTM D1857/D1857M	900°C to 1500°C

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		Hemispherical Temperature	IS 12891 ISO 540 ASTM D1857/D1857M	900°C to 1500°C
		Flow Temperature	IS 12891 ISO 540 ASTM D1857/D1857M	900°C to 1500°C
		Hardgrove Grindability Index	IS 4433 ISO 5074 ASTM D409/D409M	30 to 110
		Crucible Swelling Number/Free Swelling Index	IS 1353 ISO 501 ASTM D720M	1 to 9
		Low Temperature (LT) Gray-king Assay	IS 1353	A to G9
		Reactivity Of Coke Coke Reactivity Index (CRI) Coke Strength After Reaction (CSR)	IS 4023:1991 ISO 18894 ASTM D5341/D5341M	CRI to 18% to 39% CSR to 40% to 80%
		Chemical Composition of Ash of Coal & Coke		
		SiO ₂	IS 1355 ASTM D6349	15% to 70%
		Fe ₂ O ₃	IS 1355 ASTM D6349	1% to 40%
		Al ₂ O ₃	IS 1355 ASTM D6349	5% to 40%
		CaO	IS 1355 ASTM D3682, ASTM D6349	0.05% to 25%
		MgO	IS 1355 ASTM D3682, ASTM D6349	0.05% to 20%

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		Na ₂ O	IS 1355 ASTM D6349	0.005% to 5%
		K ₂ O	IS 1355 ASTM D6349	0.005% to 5%
		TiO ₂	ASTM D3682, ASTM D 6349 (ICP-OES) IGI/TPM/L/BSR /15.4 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 20%
		MnO /Mn ₃ O ₄	IS 1355 ASTM D6349 (ICP-OES) IGI/TPM/L/BSR /16.2 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 2.5%
		P ₂ O ₅	IS 1355 ASTM D6349	0.01% to 3.5%
		SO ₃	IS 1355 ASTM D5016, ASTM D63493	0.05% to 20%
2.	Graphite	Moisture	IS 11321	0.05% to 20%
		Volatile Matter	IS 11321	0.10% to 10%
		Ash	IS 11321	0.10% to 95%
		Fixed Carbon	IS 11321	1% to 95%
		Total Sulphur	IS 11321	0.01% to 5%
II.	ORES & MINERALS			
1.	Iron Ore	Silica	IS 1493 (Part 1) ISO 2598 –1 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.50% to 70%

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		Total Iron	IS 1493 (Part 1) ASTM E246 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	2% to 70%
		Ferrous Iron	IS 1493	0.1% to 35%
		Al as Alumina	IS 1493 (Part 1), IS 1493 (Part 4) ISO/TR 4688-1, ISO 6830 ASTM E507 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.40% to 30%
		Titanium as TiO ₂	IS 1493 (Part 3) ISO 4691 ASTM E878 IGI/TPM/L/BSR 15.6 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.05% to 20.0%
		Mn as Manganese Oxide	IS 1493 ISO 9682 –1 IGI/TPM/L/BSR/16.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 10%
		Ca as Calcium Oxide	IS 1493 (Part 3)	0.01% to 20%

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Convenor

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Program Director

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			ISO 10203 IGI/TPM/L/BSR/16.3 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	
		Mg as Magnesium Oxide	IS 1493 (Part 3) ISO 10204 IGI/TPM/L/BSR/16.3 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 20%
		Na as Sodium Oxide	IS 9497 ISO 13313:2017 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 1.0%
		K as Potassium Oxide	IS 9497 ISO 13312 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 1.0%
		Phosphorous	IGI/TPM/L/BSR/23.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 1%
		Sulphur	IS 1493 ISO 4689-3, ISO 15350	0.002% to 0.5%

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			ASTM E1915 IGI/TPM/L/BSR/14.4 Issue # 04, Rev # 00, Date: 01.03.2013	
		Copper as CuO	IS 1493 (Part 5) ISO 5418-2 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.001% to 1%
		Lead as PbO	IS 1493 (Part 7) ISO 13311 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 0.5%
		Zinc as ZnO	IS 1493 (Part 7) ISO 13311 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 0.5%
		Chromium	IS 1493 (Part 3) ISO 13311 IGI/TPM/L/BSR/16.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 2%
		Vanadium as V ₂ O ₅	IS 1493 (Part 3) IGI/TPM/L/BSR/16.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 2%

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		Nickel as NiO	IGI/TPM/L/BSR/16.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 2%
		Cobalt	IGI/TPM/L/BSR/16.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.1 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 2%
		Total Moisture	IS 11690	2% to 20%
		Transportable Moisture Limit	IMSBC Code MSC 85/26/Add. 2	1% to 20%
2.	Manganese Ore	Silica	IS 1473 ISO 5890 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.3% to 50%
		Manganese	IS 1473 ISO 4298 ASTM E248 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	2% to 65%
		Manganese Dioxide	IS 1473	15% to 95%
			ISO 312 ASTM E465	2% to 65%
		Iron	IS 1473 ISO 9681 ASTM E316 IGI/TPM/L/BSR/24.2	0.5% to 40%

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			Issue # 04, Rev # 01, Date: 01.06.2013	
		Al as Alumina	IS 1473 ISO 5889 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.3% to 25%
		Ca as Calcium Oxide	IS 1473 ISO 6233, ISO 7953 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 15%
		Mg as Magnesium Oxide	IS 1473 ISO 6233, ISO 7953 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 15%
		Sulphur	IS 1473 ISO 320 IGI/TPM/L/BSR/14.7 Issue # 04, Rev # 00, Date: 01.03.2013	0.002% to 0.15%
		Phosphorous	IGI/TPM/L/BSR/23.1 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.005% to 1.0%
		Ba as Barium Oxide	IS 1473 ISO 548 IGI/TPM/L/BSR/24.2	0.1% to 5.0%

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			Issue # 04, Rev # 01, Date: 01.06.2013	
		Nickel	IS 1473: ISO 315 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 0.2%
		Lead	IS 1473 ISO 5889 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.003% to 0.5%
		Copper	IS 1473 ISO 5889 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.002% to 0.5%
		Zinc	IS 1473 ISO 5889 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.001% to 0.5%
		Combined Water	IS 1473 ISO 549:1981	0.5% to 8.0%
		Na as Sodium Oxide	IS 9497 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 1%
		K as Potassium Oxide	IS 9497 IGI/TPM/L/BSR/24.2 Issue # 04, Rev # 01, Date: 01.06.2013	0.01% to 2.5%

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		Total Moisture	IS 1449 IS 1473	2% to 20%
		Transportable Moisture Limit	IMSBC Code MSC 85/26/Add. 2	5% to 20%
3.	Chromite Ore	Silica	IS 4737 ISO 5997	0.3% to 35%
		Chromium Oxide	IS 4737 ISO 6331 ASTM E342	2.0% to 68.0%
		Total Iron	IS 4737 ISO 6130	2.0% to 45.0%
		Al as Al ₂ O ₃	IS 4737 ISO 8889	1.0% to 30%
		Ca as Calcium Oxide	IS 4737 ISO 5975	0.2% to 5.0%
		Sulphur	IGI/TPM/L/BSR/14.8 Issue # 04, Rev # 00, Date: 01.03.2013	0.004% to 0.15%
		Mg as Magnesium Oxide	IS 4737 ISO 5975	1.0% to 30%
		Ti as Titanium Dioxide	IGI/TPM/L/BSR/15.9 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 1.5%
		Phosphorous	IGI/TPM/L/BSR/19.1 Issue # 04, Rev # 00, Date: 01.03.2013	0.001% to 0.1%
		Manganese as MnO	IGI/TPM/L/BSR/16.14 Issue # 01, Rev # 00, Date: 01.04.2015	0.05% to 1.5%
		Vanadium as V ₂ O ₅	IGI/TPM/L/BSR/16.14 Issue # 01, Rev # 00, Date: 01.04.2015	0.02% to 1.5%
		Nickel as NiO	IGI/TPM/L/BSR/16.14	0.01% to 1.5%

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			Issue # 01, Rev # 00, Date: 01.04.2015	
		Total Moisture	IS 8562 IS 4737	2% to 20%
		Transportable Moisture Limit	IMSBC Code MSC 85/26/Add. 2	5% to 20%
4.	Bauxite	Loss On Ignition	IS 2000 (Part 1) ISO 806	2.0% to 40%
		Silica	IS 2000 (Part 2)	0.5% to 50.0%
		Al as Al_2O_3	IS 2000 (Part 3)	0.50% to 75.0%
		Fe as Fe_2O_3	IS 2000 (Part 4)	0.5% to 40.0%
		Ti as TiO_2	IS 2000 (Part 5)	0.50% to 20.0%
		Ca as Calcium Oxide	IS 2000 (Part 9)	0.03% to 5.0%
		Mg as Magnesium Oxide	IS 2000 (Part 9) ISO 2297, ISO 3256	0.03% to 5.0%
		Trihydrate Alumina (THA)	IGI/TPM/L/BSR/25.2 Issue # 01, Rev # 00, Date: 07.12.2014	0.1% to 60%
		Monohydrate Alumina (MHA)	IGI/TPM/L/BSR/25.2 Issue # 01, Rev # 00, Date: 07.12.2014	0.1% to 30%
		Reactive Silica	IGI/TPM/L/BSR/18.1 Issue # 01, Rev # 00, Date: 07.12.2014	0.1% to 10%
		V_2O_5	IGI/TPM/L/BSR/16.15 Issue # 01, Rev # 00, Date: 01.07.2017	0.01% to 2.00%
		Ga	IGI/TPM/L/BSR/16.15 Issue # 01, Rev # 00, Date: 01.11.2017	0.002% to 0.025%
5.	Limestone & Dolomite	Loss on Ignition	IS 1760 (Part 1)	1.0% to 50%
		Silica	IS 1760 (Part 2)	0.05% to 45.0 %

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		Fe as Fe ₂ O ₃	IS 1760 (Part 3) ASTM C25	0.05% to 30.0%
		Ti as TiO ₂	IGI/TPM/L/BSR/15.7 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 2.50%
		Al as Alumina	IS 1760 (Part 3)	0.05% to 30.0%
		Ca as Calcium Oxide	IS 1760 (Part 3)	1.0% to 56%
		Mg as Magnesium Oxide	IS 1760 (Part 3)	0.2% to 35%
		Sulphur	ASTM C25	0.002% to 0.1%
		Phosphorous	ASTM C25	0.002% to 0.1%
		Acid Insoluble with SiO ₂ & without SiO ₂	ASTM C25	0.10% to 10.0%
		Na as Na ₂ O	IS 9497	0.006% to 2.00%
		K as K ₂ O	IS 9497	0.006% to 2.00%
6.	Hydrated Lime	Calcium Hydroxide	IS 1514	50.0% to 95.0%
7.	Quartz	Loss On Ignition	IS 1917 (Part 1)	0.1% to 15.0%
		Silica	IS1917 (Part 3)	65.0% to 99.9%
		Alumina	IS 1917 (Part 4) IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00, Date: 01.06.2013	0.01% to 10.0%
		Fe as Fe ₂ O ₃	IS 1917 (Part 5) IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00, Date: 01.06.2013	0.01% to 5.0%
		Titanium as TiO ₂	IS 1917 (Part 7) IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00, Date: 01.06.2013	0.01% to 2.50%
		Sodium as Sodium Oxide	IS 1917 (Part 2), IS 9497 IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00,	0.002% to 1.0%

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		Potassium as Potassium Oxide	IS 1917 (Part 2), IS 9497 IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00, Date: 01.06.2013	0.002% to 1.0%
		Ca as Calcium Oxide	IS 1917 (Part 6) IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00, Date: 01.06.2013	0.01% to 2.5%
		Mg as Magnesium Oxide	IS 1917 (Part 6) IGI/TPM/L/BSR/24.3 Issue # 01, Rev # 00, Date: 01.06.2013	0.01% to 2.5%
		Thermal Stability	IS 13054	0 to 100% (+19mm) 0 to 100% (- 5 mm)
8.	Fluorspar	CaCO ₃	IS 2411 ASTM E815	0.1% to 5%
		CaF ₂	IS 2411, IS 8587 ASTM E815	60% to 99%
		SiO ₂	IS 2411, IS 8587 ASTM E815, ASTM E463	0.1% to 20%
		Fe ₂ O ₃	IS 2411	0.2% to 1.5%
		Al ₂ O ₃	IS 2411	0.2% to 15%
9.	Rock Phosphate	Total P ₂ O ₅	IS 11224	28.0% to 38.0%
		SiO ₂	IS 11224	1.0% to 12.0%
		Moisture	IS 11224	0.2% to 10.0 %
		Organic Matter	IS 11224	0.2% to 5.0%
		Fe ₂ O ₃	IGI/TPM/L/BSR/16.11 Issue # 01, Rev # 00, Date: 01.04.2015	0.010% to 3.0%

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		CaO	IS 9386	40.0% to 55.0%
		MgO	IGI/TPM/L/BSR/16.11 Issue # 01, Rev # 00, Date: 01.04.2015	0.010% to 1.0%
		Al ₂ O ₃	IGI/TPM/L/BSR/16.11 Issue # 01, Rev # 00, Date: 01.04.2015	0.010% to 3.0%
		Cl	IS 11224	0.010% to 0.10%
		Na ₂ O	IS 9497	0.10% to 1.0%
		K ₂ O	IS 9497	0.006% to 0.50%
		CO ₂	IS 11224	2.0% to 10.0%
		LOI	IS 11224	3.0% to 10.0 %
III.	METALS & ALLOYS			
1.	Ferro Manganese	Carbon	IGI/TPM/L/BSR/14.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 8.0%
		Silicon	IS 1559 ISO 4158	0.1% to 6.0%
		Sulphur	IGI/TPM/L/BSR/14.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.005% to 0.5%
		Phosphorous	IS 1559 IGI/TPM/L/BSR/23.2 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 1.0%
		Manganese	IS 1559 ISO 4159	25% to 90%
2.	Silico Manganese	Carbon	IGI/TPM/L/BSR/14.5 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 3.0%
		Silicon	IS 1559	5% to 35%

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		Sulphur	ISO 4158 IGI/TPM/L/BSR/14.5 Issue # 04, Rev # 00, Date: 01.03.2013	0.005% to 0.2%
		Phosphorous	IS 1559 IGI/TPM/L/BSR/23.2 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 1.0%
		Manganese	IS 1559 ISO 4159	25% to 85%
3.	Ferro Silicon	Silicon	IS 1559 (Part 1) ISO 4158	25% to 85%
		Aluminium	IS 1559 (Part 5) ISO 4139 IGI/TPM/L/BSR/16.4 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 6.0%
		Sulphur	IS 1559 (Part 3) IGI/TPM/L/BSR/14.9 Issue # 04, Rev # 00, Date: 01.03.2013	0.005% to 0.5%
		Phosphorous	IS 1559 (Part 4) IGI/TPM/L/BSR/23.3 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 0.3%
		Manganese	IGI/TPM/L/BSR/16.4 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 5%
		Calcium	IGI/TPM/L/BSR/16.4 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 2.5%
		Carbon	IGI/TPM/L/BSR/14.9	0.05% to 1.0%

Pooja Singh
Convenor

N. Venkateswaran
Program Director

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			Issue # 04, Rev # 00, Date: 01.03.2013	
4.	Ferro Molybdenum	Molybdenum	IS 12614 (Part 1)	52% to 65%
		Silicon	IS 1559	0.1% to 2.0%
		Carbon	IGI/TPM/L/BSR/14.10 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 1.0%
		Sulphur	IGI/TPM/L/BSR/14.10 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 2.0%
		Phosphorous	IGI/TPM/L/BSR/23.3 Issue # 04, Rev # 00, Date: 01.03.2013	0.025% to 0.25%
		Copper	IGI/TPM/L/BSR/16.8 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 2.0%
5.	Pig Iron /Cast Iron	Carbon	IGI/TPM/L/BSR/14.1 Issue # 04, Rev # 00, Date: 01.03.2013	1.5% to 6.0%
		Manganese	IS 12308 (Part 10) IGI/TPM/L/BSR/16.5 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 7.0%
		Silicon	IS 12308 (Part 6)	0.1% to 6.0%
		Sulphur	IGI/TPM/L/BSR/14.1 Issue # 04, Rev # 00, Date: 01.03.2013	0.005% to 0.25%
		Phosphorous	IS 12308 (Part 5) IGI/TPM/L/BSR/23.2 Issue # 04, Rev # 00, Date: 01.03.2013	0.01% to 0.5%
		Nickel	IS 12308 (Part 7) IGI/TPM/L/BSR/16.5	0.5% to 36%

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			Issue # 04, Rev # 00, Date: 01.03.2013	
		Chromium	IS 12308 (Part 8) IGI/TPM/L/BSR/16.5 Issue # 04, Rev # 00, Date: 01.03.2013	0.1% to 28.0%
6.	Carbon Steel (low carbon, medium carbon & high carbon steel; Alloy Steel; Stainless Steel)	Manganese	IS 228 (Part 2) IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.10% to 2.0%
		Silicon	IS 228 (Part 8)	0.05% to 5.00%
			IS 228 (Part 11)	0.01% to 0.05%
		Phosphorous	IS 228 (Part 3)	0.005% to 0.1%
		Carbon	IS 228 (Part 20) ISO 15350	0.05% to 2.00%
		Sulphur	IS 228 (Part 20) ISO 15350	0.05% to 2.00%
		Chromium	IS 228 (Part 6) IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.10% to 25.00%
		Nickel	IS 228 (Part 5) IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.10% to 30.00%
		Molybdenum	IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.002% to 2.00%
		Vanadium	IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.002% to 2.00%
		Titanium	IGI/TPM/L/BSR/15.10	0.002% to 2.00%

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			Issue # 04, Rev # 00, Date: 01.03.2013	
		Copper	IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.002% to 2.00%
		Aluminum	IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.002% to 2.00%
		Cobalt	IGI/TPM/L/BSR/16.6 Issue # 04, Rev # 00, Date: 01.03.2013	0.002% to 2.00%
7.	Ferro Chrome	Carbon (LCFC)	ASTM E1915 IGI/TPM/L/BSR/14.3 Issue # 04, Rev # 00, Date: 01.03.2013	0.05% to 2.0%
		Carbon(HCFC)	ASTM E1915 IGI/TPM/L/BSR/14.2 Issue # 04, Rev # 00, Date: 01.03.2013	5% to 10.0%
		Silicon	IS 1559 IS 13452 (Part 1)	0.2% to 10.0%
		Chromium (LCFC)	IS 13452 (Part 6)	45% to 80%
		Chromium (HCFC)	IS 13452 (Part 5)	40% to 66%
		Sulphur	IS 1559 IGI/TPM/L/BSR/14.2 Issue # 04, Rev # 00, Date: 01.03.2013 IGI/TPM/L/BSR/14.3 Issue # 04, Rev # 00, Date: 01.03.2013	0.005% to 0.75%
		Phosphorous	IS 1559	0.005% to 0.1%

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			IGI/TPM/L/BSR/19.1 Issue # 04, Rev # 00, Date: 01.03.2013	
		Manganese	IGI/TPM/L/BSR/16.7 Issue # 04, Rev # 00, Date: 01.03.2013	0.02% to 1.5%
		Titanium	IGI/TPM/L/BSR/15.3 Issue # 04, Rev # 00, Date: 01.03.2013	0.02% to 1.5%
		Aluminium	IGI/TPM/L/BSR/16.7 Issue # 04, Rev # 00, Date: 01.03.2013	0.02% to 10.0%
		Nickel	IGI/TPM/L/BSR/16.7 Issue # 04, Rev # 00, Date: 01.03.2013	0.02% to 1.0%
		Vanadium	IGI/TPM/L/BSR/16.7 Issue # 04, Rev # 00, Date: 01.03.2013	0.02% to 1.0%
IV.	FERTILIZERS			
1.	Potassic Fertilizers (Muriate of Potash)	Moisture	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 2(i) Page- 64	0.1% to 3%
		K ₂ O	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 5(ii) Page-96	1% to 61.5%
		NaCl	IS 6092 (Part 6), Clause No. 5.8	0.1% to 5%
		KCl	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II,	50% to 99.5%

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		MgCl ₂	Part – B , 5(ii) Page-96 Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 8(iii) Page-117	0.1% to 2%
2.	Nitrogenous Fertilizers (Urea)	Moisture	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 2(i) c Page-64	0.1% to 5%
		Total Nitrogen	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 3(ii). Page-66	1% to 46.5%
		Biuret	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 2(xii). Page-75	0.01% to 2.0%
3.	Nitrogenous Fertilizers (Diammonium Phosphate)	Moisture	The Fertiliser (Control) Order, Schedule – II, Part – B , 2(ii) a Page-64	0.01% to 1.5%
		Water Soluble P ₂ O ₅	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 4 (iii) Page-87	1% to 46%
		Total P ₂ O ₅	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 4 (ii) , Page-86	1% to 50%
		Neutral Ammonia-citrate soluble P ₂ O ₅	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B , 4(ii), (iv) & (v) Page-86	1% to 48%

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		Total Nitrogen	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B, 3(iv) Page-66	1% to 20%
		Ammoniacal Nitrogen	Method of Analysis as per the Fertiliser (Control) Order, Schedule – II, Part – B, 3(vii) Page-71	1% to 20%
V.	WATER			
1.	Drinking Water / Ground Water / Surface Water	Colour	IS 3025 (Part 4), Clause No. 3 APHA 2120B	(1to 100) Hazen
		Odour	IS 3025 (Part 5) APHA 2150B	Qualitative Disagreeable/ Agreeable
		Turbidity	IS 3025 (Part 10) APHA 2130B	0.02 NTU to 800 NTU
		Total Dissolved Solids	IS 3025 (Part 16), (Gravimetric Method) APHA 2540C	5 mg/l to 2000 mg/l
		pH Value	IS 3025 (Part 11), (Electrometric Method) APHA 4500H+B	1 to 13
		Total Hardness (as CaCO ₃)	IS 3025 (Part 21) APHA 2340C	2.0 mg/l to 600 mg/l
		Chlorides	IS 3025 (Part 32), (Argentometric Method) APHA 4500CI-B	1 mg/l to 1000 mg / l
		Residual Free Chlorine	IS 3025 (Part 26), (Iodometric Method) APHA 4500CI-B	0.1 mg/l to 10 mg/l
		Sulphate as SO ₄	IS 3025 (Part 24)	2 mg/l to 400 mg/l

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		Fluoride as F	APHA 4500SO4-E IS 3025 (Part 60), (Zirconium Alizarin Method) APHA 4500F-D	0.01 mg/l to 2 mg/l
		Calcium as Ca	IS 3025 (Part 2), (ICP) APHA 3120B	0.1 mg/l to 300 mg/l
		Iron	IS 3025 (Part 40) APHA 3500Ca-B	5 mg/l to 300 mg/l
		Lead as Pb	IS 3025 (Part 53), (AAS) Clause No. 7 APHA 3111B-B, APHA 3120B	0.01 mg/l to 50 mg/l
		Zinc as Zn	IS 3025 (Part 2), (ICP) APHA 3120B, APHA 3113B	0.01 mg/l to 5 mg/l
		Chromium as Cr ⁺⁶	IS 3025 (Part 49), (AAS) Clause No. 6 APHA 3113B, APHA 3120B	0.01 mg/l to 5 mg/l
		Total Alkanity	IS 3025 (Part 52), (Spectrophotometric Method) APHA 3500B Cr	0.01 mg/l to 20 mg/l
		Aluminum as Al	IS 3025 (Part 23) APHA 2320B	0.5 mg/l to 500 mg/l
		Boron	IS 3025 (Part 2), (ICP) APHA 3120B	0.01 mg/l to 5 mg/l
		Barium	IS 3025 (Part 2) APHA 3120B	0.01 mg/l to 10.0 mg/l
		Cadmium	IS 3025 (Part 2), (ICP) APHA 3120B	0.005 mg/l to 10.0 mg/l
			IS 3025 (Part 41), (AAS) Clause No. 6 APHA 3120B, APHA 3111B	0.01 mg/l to 5.0 mg/l

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		Copper as Cu	IS 3025 (Part 2), (ICP) APHA 3120B, APHA 3111B	0.01 mg/l to 50 mg/l
		Magnesium	IS 3025 (Part 2), (ICP) APHA 3500 Mg, 3120B	0.5 mg/l to 200 mg/l
		Manganese	IS 3025 (Part 59), Clause No. 6 APHA 3111B, APHA 3120B	0.01 mg/l to 5.0 mg/l
		Molybdenum	IS 3025 (Part 2), (ICP) APHA 3120B, APHA 3111D	0.01 mg/l to 0.5 mg/l
		Nickel	IS 3025 (Part 54), (AAS) Clause No. 7 APHA 3120B	0.01 mg/l to 10.0 mg/l
		Mercury as Hg	IS 3025 (Part 48), (AAS) Clause No. 5 APHA 3112B	0.001 mg/l to 2 mg/l
		Selenium	IS 3025 (Part 56), (AAS) Clause No. 6 APHA 3114B, APHA 3120B	0.01 mg/l to 1 mg/l
		Arsenic	IS 3025 (Part 37), (AAS) Clause No. 2 APHA 3114B, APHA 3120B	0.001 mg/l to 2.0 mg/l
		Nitrate (NO ₃)	IS 3025 (Part 34), Clause No. 3.1(a) APHA 4500 NO ₃ E	0.02 mg/l to 50.0 mg/l
		Acidity	IS 3025 (Part 22) APHA 2310B	0.5 mg/l to 500 mg/l
2.	Packaged Drinking Water	Colour	IS 3025 (Part 4)	(1to 100) Hazen
		Odour	IS 3025 (Part 5)	Qualitative Disagreeable/Agreeable
		Turbidity	IS 3025 (Part 10)	0.02 NTU to 800 NTU
		Total Dissolved Solids	IS 3025 (Part 16), (Gravimetric Method)	5 mg/l to 2000 mg/l

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		pH Value	IS 3025 (Part 11), (Electrometric Method)	1 to 13
		Chlorides	IS 3025 (Part 32), (Argentometric Method)	1 mg/l to 500 mg / l
		Residual Free Chlorine	IS 3025 (Part 26), (Iodometric Method)	1 mg/l to 50 mg/l
		Sulphate as SO ₄	IS 3025 (Part 24)	1 mg/l to 400 mg/l
		Fluoride as F	IS 3025 (Part 60), (Zirconium Alizarin Method)	0.2 mg/l to 2 mg/l
		Calcium as Ca	IS 3025 (Part 2), (ICP)	0.1 mg/l to 300 mg/l
		Zinc as Zn	IS 3025 (Part 49), (ICP)	0.02 mg/l to 5 mg/l
		Aluminum as Al	IS 3025 (Part 2), (ICP)	0.04 mg/l to 5 mg/l
		Total Alkalinity	IS 3025 (Part 23)	2.0 mg/l to 500 mg/l
		Barium	IS 3025 (Part 2), (ICP)	0.01 mg/l to 10.0 mg/l
		Copper as Cu	IS 3025 (Part 2), (ICP)	0.01 mg/l to 50 mg/l
		Iron	IS 3025 (Part 53), (AAS) Clause No. 7	0.01 mg/l to 50 mg/l
		Magnesium	IS 3025 (Part 2), (ICP)	0.5 mg/l to 200 mg/l
		Manganese	IS 3025 (Part 59), Clause No. 5	0.01 to 5.0 mg/l
		Sodium	IS 3025 (Part 45)	0.5 to 200.0 mg/l
		Selenium	IS 3025 (Part 56), Clause No. 7	0.01 mg/l to 1 mg/l
		Antimony	IS 3025 (Part 2), (ICP)	0.01 mg/l to 1.0 mg/l
		Nitrate (NO ₃)	IS 3025 (Part 34), Clause No. 3.1(a)	0.02 mg/l to 50.0 mg/l
		Nitrite (NO ₂)	IS 3025 (Part 34), Clause No. 4	0.02 mg/l to 50 mg/l
		Arsenic	IS 3025 (Part 37), (AAS) Clause No. 2	0.01 mg/l to 2.0 mg/l
		Cadmium	IS 3025 (Part 41), (AAS)	0.01 mg/l to 5.0 mg/l

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			Clause No. 6	
		Chromium	IS 3025 (Part 52), (AAS)	0.03 mg/l to 20.0 mg/l
			Clause No. 7	
		Mercury as Hg	IS 3025 (Part 48)	0.001 mg/l to 2 mg/l
		Lead as Pb	IS 3025 (Part -2), (ICP)	0.01 mg/l to 5 mg/l
		Nickel	IS 3025 (Part 54), (AAS)	0.01 mg/l to 10.0 mg/l
			Clause No. 7	
3.	Irrigation Water	Colour	IS 3025 (Part 4)	(1to 100) Hazen
		Odour	IS 3025 (Part 5)	Qualitative Disagreeable / Agreeable
		pH Value	IS 3025 (Part 11), (Electrometric Method)	3 to 11
		Oil & Grease	IS 3025 (Part 39)	5 mg/l to 500 mg / l
		Total Suspended Solids	IS 3025 (Part 17)	5 mg/l to 2000 mg/l
		Arsenic	IS 3025 (Part 37)	0.01 mg/l to 2.0 mg/l
		BOD (3 days)	IS 3025 (Part 44)	1 mg/l to 1000 mg/l
4.	Packaged Natural Mineral Water	Colour	IS 3025 (Part 4)	(1to 100) Hazen
		Odour	IS 3025 (Part 5)	Qualitative Disagreeable /Agreeable
		Turbidity	IS 3025 (Part 10)	0.02 NTU to 800 NTU
		Total Dissolved Solids	IS 3025 (Part 16), (Gravimetric Method)	5 mg/l to 2000 mg/l
		pH Value	IS 3025 (Part 11), (Electrometric Method)	1 to 13
		Chlorides	IS 3025 (Part 32), (Argentometric Method)	1 mg/l to 500 mg / l
		Sulphate as SO ₄	IS 3025 (Part 24)	1 mg/l to 400 mg/l
		Fluoride as F	IS 3025 (Part 60), (Zirconium Alizarin Method)	0.1 mg/l to 2 mg/l
		Calcium as Ca	IS 3025 (Part 2), (ICP)	0.1 mg/l to 300 mg/l
		Zinc as Zn	IS 3025 (Part 49), (ICP)	0.02 mg/l to 5 mg/l

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Validity 02.01.2018 to 01.01.2020 **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Total Alkalinity	IS 3025 (Part 23)	2.0 mg/l to 500 mg/l
		Barium	IS 3025 (Part 2), (ICP)	0.01 to 10.0 mg/l
		Copper as Cu	IS 3025 (Part 2), (ICP)	0.01 mg/l to 50 mg/l
		Magnesium	IS 3025 (Part 2), (ICP)	0.5 mg/l to 200 mg/l
		Manganese	IS 3025 (Part 59), Clause No. 5	0.01 mg/l to 5.0 mg/l
		Sodium	IS 3025 (Part 45)	0.5 mg/l to 200.0 mg/l
		Selenium	IS 3025 (Part 56), Clause No. 7	0.01 mg/l to 1 mg/l
		Antimony	IS 3025 (Part 2), (ICP)	0.01 mg/l to 1.0 mg/l
		Nitrate (NO ₃)	IS 3025 (Part 34) Clause No. 3.1(a)	0.02 mg/l to 50.0 mg/l
		Nitrite (NO ₂)	IS 3025 (Part 34) Clause No. 4	0.01 mg/l to 50 mg/l
		Arsenic	IS 3025 (Part 37), (AAS) Clause No. 2	0.001 mg/l to 2.0 mg/l
		Cadmium	IS 3025 (Part 41)	0.003 mg/l to 5.0 mg/l
		Chromium	IS 3025 (Part 52)	0.03 mg/l to 20.0 mg/l
		Mercury as Hg	IS 3025 (Part 48)	0.0002 mg/l to 2 mg/l
		Lead as Pb	IS 3025 (Part 2), (ICP)	0.005 mg/l to 5 mg/l
		Nickel	IS 3025 (Part 54)	0.02 mg/l to 10.0 mg/l
5.	Others (Reagent Grade Water)	pH Value	IS 3025 (Part 11), (Electrometric Method)	3 to 11
		Total Dissolved Solids	IS 3025 (Part 16), (Gravimetric Method)	0.1 mg/l to 10 mg/l
		Total Suspended Solids	IS 3025 (Part 17)	0.1 mg/l to 10 mg/l
		Silica (SiO ₂)	IS 3025 (Part 35)	0.01 mg/l to 2.5 mg/l
		Conductivity	IS 3025 (Part 14)	0.1 µS/cm to 10 µS/cm
VI.	POLLUTION & ENVIRONMENT			
1.	Waste Water (Effluents/	Colour	IS 3025 (Part 4) APHA 2120B	(1to 100) Hazen

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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
	Sewage)	Odour	IS 3025 (Part 5) APHA 2150B	Qualitative Disagreeable/ Agreeable
		pH Value	IS 3025 (Part 11), (Electrometric Method) APHA 4500 H+B	1 to 13
		Oil & Grease	IS 3025 (Part 39) APHA 5520B	5 mg/l to 500 mg /l
		Residual Free Chlorine	IS 3025 (Part 26), (Iodometric Method) APHA 4500Cl-B	0.1 mg/l to 50 mg/l
		Suspended Solids	IS 3025 (Part 17) APHA 2540E	5 mg/l to 2000 mg/l
		Phosphate	IS 3025 (Part 31), (Vanadomolybdo Method) APHA 4500P -C	0.1 mg/l to 10 mg/l
		Fluoride as F	IS 3025 (Part 60), (Zirconium Alizarin Method) APHA 4500 F-D	0.2 mg/l to 20 mg/l
		Iron	IS 3025 (Part 53), (AAS) APHA 3111B & 3550,3120B	0.01 mg/l to 50 mg/l
		Lead as Pb	IS 3025 (Part 2), (ICP) APHA 3111B, 3120B	0.01 mg/l to 50 mg/l
		Zinc as Zn	IS 3025 (Part 49), (ICP) APHA 3111, 3120B	0.02 mg/l to 50 mg/l
		Chromium as Cr ⁺⁶	IS 3025 (Part 52), (Spectrophotometric Method) APHA 3500 Cr-B	0.01 mg/l to 20 mg/l
		Aluminum as Al	IS 3025 (Part 2), (ICP) APHA 3111 & 3500 Al, 3120B	0.01 mg/l to 50 mg/l
		Cadmium	IS 3025 (Part 41) APHA 3111B, 3120B	0.01 mg/l to 50.0 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
		Copper as Cu	IS 3025 (Part 2), (ICP) APHA 3111B, 3120B	0.01 mg/l to 50 mg/l
		Chromium	IS 3025 (Part 52) APHA 3111D, 3120B	0.03 mg/l to 20.0 mg/l
		Silica (SiO ₂)	IS 3025 (Part 35) APHA 4500 SiO ₂ C, 3120B	0.4 mg/l to 10 mg/l
		Reactive Silica	IS 3025 (Part 35) APHA 4500 SiO ₂ -C	0.5 mg/l to 10 mg/l
		Colloidal Silica	IS 3025 (Part 35) APHA 4500 SiO ₂ -C	0.5 mg/l to 10 mg/l
		Titanium	IS 3025 (Part 2), (ICP) APHA 3111D, 3120B	0.01 mg/l to 2.0 mg/l
		Manganese	IS 3025 (Part 59) APHA 3111, 3120B	0.01 mg/l to 5.0 mg/l
		Sodium	IS 3025 (Part 45) APHA 3500Na-B, 3120B	0.5 mg/l to 200.0 mg/l
		Potassium	IS 3025 (Part 45) APHA 3500K-B, 3120B	0.1 mg/l to 10.0 mg/l
		Nickel	IS 3025 (Part 54) APHA 3111, 3120B	0.3 mg/l to 10.0 mg/l
		Mercury as Hg	IS 3025 (Part 48) APHA 3112	0.002 mg/l to 5 mg/l
		Selenium	IS 3025 (Part 56), IS 15303	0.1 mg/l to 1 mg/l
		Vanadium	IS 3025 (Part 2), (ICP) APHA 3111B, 3120B	0.01 mg/l to 5.0 mg/l
		Arsenic	IS 3025 (Part 37) APHA 3114C, 3120B	0.01 mg/l to 5.0 mg/l
		Ammonical Nitrogen	IS 3025 (Part 34) APHA 4500NH ₃ -C	1.0 mg/l to 50.0 mg/l
		Dissolved Oxygen	IS 3025 (Part 38) APHA 4500 O-C	0.5 mg/l to 12 mg/l

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		Electrical Conductivity	IS 3025 (Part 14) APHA 2510 B	1.0 µS/cm to 10000 µS/cm
		COD	IS 3025 (Part 58) APHA 5220B	5 mg/l to 50000 mg/l
		BOD (3 days)	IS 3025 (Part 44) APHA 5210B	1 mg/l to 25000 mg/l
		Temperature	IS 3025 (Part 9) APHA 2550B	1 °C to 90 °C
		Nitrate (NO ₃)	IS 3025 (Part 34) APHA 4500 NO3 E	0.02 mg/l to 100 mg/l
		Nitrite (NO ₂)	IS 3025 (Part 34) APHA 4500 NO2 B	0.02 mg/l to 50 mg/l
		T. Kjeldal Nitrogen	IS 3025 (Part 34) APHA 4500 N org B	5 mg/l to 200 mg/l
		Fixed Solids	IS 3025 (Part 18) APHA 2540E	5 mg/l to 2000 mg/l
		Volatile Solids	IS 3025 (Part 18) APHA 2540E	5 mg/l to 1000 mg/l

***NOTE:** The Laboratory has demonstrated competence for the stated scope for **WATER**. This however **does not fully cover** the specification requirements of **BIS** for the **Packaged Drinking Water** as per **IS:14543** and the **Packaged Natural Mineral Water IS:13428**.