

Laboratory

**Stewart Surveyors & Assayers Pvt. Ltd., Kakani Towers, 4th Floor,
New No. 34 (Old No. 15), Khadher Nawaz Khan Road, Chennai,
Tamil Nadu**

Location 1: Kakani Towers, 4th Floor, New No. 34 (Old No. 15), Khadher Nawaz Khan
Road, Chennai, Tamil Nadu

Location 2: Western Side of IOC Foreshore Terminal, Aera-1, Chennai Pot Trust,
Royapuram, Chennai, Tamil Nadu

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

Discipline **Chemical Testing**

Issue Date **03.02.2014**

Certificate Number **T-2143**

Valid Until **02.02.2016**

Last Amended on **-**

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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
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Location 1**I. ORES & MINERALS**

1.	Iron Ore	Silica	IS 1493 (Part 1) 1981, RA 2006 ISO 2598 -1 : 1992	0.3% to 30%
		Total Iron	IS 1493 (Part 1) 1981, RA 2006 ISO 2597 -1 : 2006	25% to 70%
		Alumina	IS 1493 (Part 1) 1981, RA 2006 ISO 6830 : 1986	0.3% to 10%
		Phosphorus	IS 1493 : 1959, RA 2006 ISO 2599 : 2003	0.01% to 0.25%
		Sulphur	IS 1493 : 1959, RA 2006 ISO 4689 : 1986	0.004% to 0.3%
		Loss on Ignition	Chemical & Instrumental Analysis of Ores, Indian Bureau of Mines : 2012, Page - 292	0.5% to 10%
		Flow Moisture Point (FMP) & Transportable Moisture Limit (TML)	IMSBC Code – 2012, Appx. - 2 (By Flow Table Test method)	5% to 20%

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Location 1**II. COAL & COKE & OTHER SOLID FUELS**

1. Coal	Moisture in analysis sample (Inherent Moisture)	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3173-11	1.0% to 30%
	Volatile Matter	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3175-11/ ISO 562 : 2010	5.0% to 50%
	Ash	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3174-11/ ISO 1171 : 2010	1.0% to 60%
	Fixed Carbon	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3172-07a/ ISO 17246 : 2010	Calculated Value (By Difference)
	Gross Calorific Value	IS 1350 (Part 2) 1970, RA 2009/ ASTM D5865-11a/ ISO 1928 : 2009	1000 to 9000 kcal/kg
	Total Sulphur	IS 1350 (Part 3) 1969, RA 2010/ ISO 334 : 1992	0.01% to 5%
	Phosphorus	IS 1350 (Part 5) 1979, RA 2009	0.005% to 0.5%

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Location 1				
		Chlorine	IS 1350 (Part 5) 1979, RA 2009/ ISO 587 : 1997	0.005% to 0.5 %
2.	Coke	Moisture in analysis sample (Inherent Moisture)	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3173-11	0.1% to 10%
		Volatile Matter	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3175-11	0.1% to 10%
		Ash	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3174-11	0.1% to 50%
		Fixed Carbon	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3172-07a	Calculated Value (By Difference)
		Gross Calorific Value	IS 1350 (Part 2) 1970, RA 2009/ ASTM D5865-11a	1000 to 9000 kcal/kg
		Total Sulphur	IS 1350 (Part 3) 1969, RA 2010	0.05% to 5%
3.	Coal (Ultimate Analysis)	Carbon	ASTM D5373 – 08	10% to 90%
		Hydrogen	ASTM D5373 – 08	3% to 6%
		Nitrogen	ASTM D5373 – 08	0.5% to 2%

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Location 1				
4.	Coal & Coke (Ash Composition)	Silica	Chemical & Instrumental Analysis - Indian Bureau of Mines: 2012, Pg -79	15% to 70%
		Ferric Oxide	Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg -5	3% to 40%
	Coal & Coke (Ash Composition)	Alumina	Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg- 8 & 9	5% to 40%
		Calcium Oxide	Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg- 5 & 6	0.5% to 20%
		Magnesium Oxide	Chemical & Instrumental Analysis - Indian Bureau of Mines: 2012, Pg- 6&7	0.5% to 10%
		Sodium Oxide	Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg -203	0.1% to 10%
		Potassium Oxide	Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg -203	0.1% to 10%

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Location 1				
	Titania		Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg-12&13	0.1% to 10%
	Manganous Oxide		Chemical & Instrumental Analysis -Indian Bureau of Mines: 2012, Pg -13	0.02% to 3%
	Phosphorus Pentoxide		IS 1350 (Part 5) 1979, RA 2009	0.1% to 5%
	Sulphur Trioxide		IS 1355 : 1984, RA 2007	0.5% to 20%

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Location 2**I. ORES & MINERALS**

1. Iron Ore	Moisture	IS 1493 (Part 1) 1981, RA 2006 ISO 3087 : 2011 IMSBC Code – 2012, Appx.- 2	1% to 15%
	Angle of Repose	IMSBC Code – 2012, Appx. - 2 (By Tilting Box method)	30° to 45°

II. COAL & COKE & OTHER SOLID FUELS

1. Coal	Total Moisture	IS 1350 (Part 1) 1984, RA 2007/ ASTM D3302 / D3302M-12/ ISO 589 : 2008	1.0% to 55%
	Hardgrove Grindability Index	IS 4433 : 1979, RA 2005/ ASTM D 409 / D409M-11ae1	30 to 90
2. Coke	Total Moisture	IS 1350 (Part 1) 1984, RA 2007	0.5% to 25%

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