

**Laboratory**

**Mitra S.K. Private Limited, Holding No. E-5-138/157, Ward no.23,  
Gangarampur Road, Phase-2 R.H.S. to Behala, Banerjee para,  
P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas, West Bengal**

**Location 1:** Holding No. E-5-138/157, Ward No.23, Gangarampur Road, Phase-2  
R.H.S. to Behala, Banerjee para, P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas,  
West Bengal

**Location 2:** Holding No. 22/107, Plot No.: 784, Ward No.:8, Khanjan chak, 1<sup>st</sup> Floor,  
Haldia, Dist Purba Medinipur, West Bengal

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

**Certificate Number TC-7642 (in lieu of T-0148)**

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**Validity 11.08.2018 to 10.08.2020**

**Last Amended on**

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**

<b>LOCATION -1:</b>				
I.	<b>ORES &amp; MINERALS</b>			
<b>1.</b>	<b>IRON ORE</b>	Silica (SiO <sub>2</sub> )	IS 1493(Part 1)-1981, RA 2016	0.5 % to 10.0%
			ISO 2598-1:1992, RC 2014	2.0 % to 32.0 %
		Total Iron (Fe)	IS 1493(Part 1)-1981, RA 2016	30.0 % to 72.0 %
			ISO 2597-1:2006 , RC 2015	
			ISO 2597-2:2015	
			SOP:TPM/MSK/1/B1 (Issue No. 02 dated 01.04.2011)	
		Ferrous Iron (FeO)	ISO 9035:1989 , RC 2017	1.0 % to 25.0%
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 1493(Part 1)-1981, RA 2016	0.5 % to 7.0 %
			ISO 11535:2006, RC 2014	0.5 % to 6.6 %
			ISO 6830:1986 , RC 2015	0.5 % to 5.0 %
		Titanium Dioxide(TiO <sub>2</sub> )	IS 1493-1959, RA 2016	2.0 % to 20.0 %
ISO 11535:2006 , RC 2014	0.10% to 2.0%			
Manganese (Mn)	IS 1493-1959, RA 2016	0.1 % to 2.0 %		
	ISO 11535:2006 ,RC 2014			
Calcium Oxide(CaO)	ISO 11535:2006, RC 2014	0.05 % to 9.0 %		

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		Magnesium Oxide (MgO)	ISO 11535:2006, RC 2014	0.1% to 3.0 %
		Sodium Oxide (Na <sub>2</sub> O)	SOP:TPM/MSK/1/J1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.05% to 3.0 %
		Potassium Oxide (K <sub>2</sub> O)	SOP:TPM/MSK/1/K1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.05% to 3.0 %
		Phosphorus (P)	IS 1493:1959, RA 2016	0.01 % to 0.5 %
			ISO 11535:2006, RC 2014	0.01% to 1.5%
		Sulphur (S)	ISO 4689-3:2017	0.002 % to 0.25 %
		Arsenic (As)	SOP:TPM/MSK/1/N1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.0001% to 0.01%
		Nickel (Ni)	SOP:TPM/MSK/1/O1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001% to 0.1 %
		Copper (Cu)	SOP:TPM/MSK/1/P1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001% to 0.02%
		Lead (Pb)	SOP:TPM/MSK/1/Q1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001% to 0.01%

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		Zinc (Zn)	SOP:TPM/MSK/1/R1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001% to 0.03%
		Vanadium (V)	SOP:TPM/MSK/1/S1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001 % to 0.1 %
		Moisture	IS 11690:1986, RA 2014	0.5 % to 15.0 %
			IS 1493(Part 1)-1981, RA 2016	0.5 % to 16.0 %
			ISO 3087:2011	0.5 % to 16.0 %
		Loss on ignition (LOI)	ISO 11536:2015	0.5 % to 10.0 %
		Flow Moisture Point (FMP) & Transportable Moisture Limit (TML)	IMSBC Code, Appendix 2, 2018 EDITION (Flow Table Method) SOP: TPM/MSK/1/U (Issue No. 02 dated 01.04.2011)	4.0 % to 15.0 %
		TML (Transportable Moisture Limit)	IMSBC Code, Appendix 2, 2018 (Modified Proctor Fagerberg Method)	4.0 % to 15.0 %
			ISO/TC 102 SC3N1166 / ISO/TC 102 SC3N1184	
2.	Manganese Ore	Silica (SiO <sub>2</sub> )	IS 1473 : 2004, RA 2016	1.0 % to 15.0 %
			ISO 5890:1981, RC 2016	1.0 % to 15.0 %

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		Barium Oxide (BaO)	SOP: TPM/MSK/2/B1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.10 % to 3.0 %
		Manganese (Mn)	IS 1473 : 2004, RC 2016 ISO 4298 :1984, RC 2018 (By Potentiometric method)	10.0 % to 60.0 %
		Manganese dioxide (MnO <sub>2</sub> )	IS 1473 : 2004, RA 2016	50.0 % to 95.0 %
		Iron (Fe)	IS 1473 : 2004, RA 2016	1.0 % to 22.5 %
			ISO 7990 : 1985 (Method A), RC 2016	1.0 % to 25.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 1473 : 2004, RA 2016 SOP: TPM/MSK/2/F2 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.5 % to 10.0 % 0.5 % to 7.0 %
		Titanium Dioxide (TiO <sub>2</sub> )	SOP: TPM/MSK/2/G1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.10 % to 2.0 %
		Calcium Oxide (CaO)	SOP: TPM/MSK/2/H1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01 % to 18.0 %
		Magnesium Oxide (MgO)	SOP: TPM/MSK/2/I1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01 % to 10.0 %

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		Sulphur (S)	SOP: TPM/MSK/2/J1 (Combustion Infra red absorption Method) (Issue No. 02 dated 01.04.2011)	0.10 % to 0.2 %
		Phosphorus (P)	IS 1473 : 2004, RA 2016	0.01 % to 0.60 %
			SOP: TPM/MSK/2/K1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01 % to 1.0 %
		Arsenic (As)	SOP: TPM/MSK/2/L1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01% to 0.5%
		Nickel (Ni)	SOP: TPM/MSK/2/M1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01% to 0.008%
		Copper (Cu)	SOP: TPM/MSK/2/N1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01% to 0.05 %
		Lead (Pb)	SOP: TPM/MSK/2/O1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001% to 0.01%

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		Zinc (Zn)	SOP: TPM/MSK/2/P1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.001% to 0.01%
		Sodium Oxide (Na <sub>2</sub> O)	SOP: TPM/MSK/2/Q1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.05 % to 1.0 %
		Potassium Oxide (K <sub>2</sub> O)	SOP: TPM/MSK/2/R1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.1% to 5.0 %
		Moisture	IS : 1449 :2016 & IS 1473 : 2004, RA 2016 ISO 4299 : 1989, RC 2016	4.0 % to 13.0 %
		Flow Moisture Point (FMP) & Transportable Moisture Limit (TML)	SOP: TPM/MSK/1/U (Issue No. 02 dated 01.04.2011) Flow Table Method as per IMSBC Code Appendix 2 , 2018	6.0 % to 15.0 %
3.	Chromite Ore (Chromium Ore)/ Chrome Concentrate	Silica (SiO <sub>2</sub> )	IS 4737 : 1982, RA 2016 SOP: TPM/MSK/3/A/1 (Issue No. 01 dated 01.08.2012) ISO 5997-1984 (Method B), RC 2016	0.5 % to 25.0 % 0.5% to 15.0 %

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		Chromic Oxide (Cr <sub>2</sub> O <sub>3</sub> )	IS 4737 : 1982, RA 2016 SOP:TPM/MSK/3/B/1 (Issue No. 01 dated 01.08.2012) ISO 6331:1983 , RC 2016	7.0 % to 62.0 %
		Total Iron (Fe)	IS 4737 : 1982, RA 2016 SOP:TPM/MSK/3/C/1 (Issue No. 01 dated 01.08.2012) ISO 6130:1985, RC 2016	5.0 % to 15.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 4737 : 1982, RA 2016 SOP:TPM/MSK/3/D/1 (Issue No. 01 dated 01.08.2012)	3.0 % to 20.0 %
		Calcium Oxide (CaO)	IS 4737 : 1982, RA 2016 SOP: TPM/MSK/3/E/1 (Issue No. 01 dated 01.08.2012)	0.20 % to 3.0 %
		Magnesium Oxide (MgO)	IS 4737 : 1982, RA 2016 SOP : TPM/MSK/3/F/1 (Issue No. 01 dated 01.08.2012)	10 % to 30 %
		Phosphorus (P)	SOP : TPM/MSK/3/G (Issue No. 02 dated 01.04.2011)	0.003% to 0.015%
		Moisture	IS : 8562:1977, RA 2017 & IS 4737 : 1982, RA 2016	4.0 % to 17.0 %

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		Flow Moisture Point (FMP) Transportable Moisture Limit (TML)	Flow Table Method as per IMSBC Code, Appendix 2, 2018 SOP: TPM/MSK/1/U (Issue No.02 dated 01.04.2011)	6.0 % to 15.0 %
4.	Aluminium Ore/ Bauxite	Loss on Ignition	IS 2000 : (Part1):1985, RA 2017	15.0 % to 30.0 %
		Silica (SiO <sub>2</sub> )	IS 2000 : (Part 2):1985, RA 2017	0.5 % to 10.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 2000 : (Part 3):1985, RA 2017	30.0 % to 90.0 %
		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	IS 2000 : (Part 4):1985, RA 2017	5.0 % to 20.0 %
		Titania (TiO <sub>2</sub> )	IS 2000 : (Part 5):1985, RA 2017	0.5 % to 12.0 %
			SOP: TPM/MSK/4/E2 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.50 % to 12.0 %
		Calcium Oxide (CaO)	SOP:TPM/MSK/4/F1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.01% to 3.0 %
Magnesium Oxide (MgO)	SOP:TPM/MSK/4/G1 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01% to 3.0 %		



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		Tri Hydrate Alumina (THA)	SOP:TPM/MSK/4/I (Thermo Gravimetric Analysis) (Issue No.01 dated 01.04.2011)	2.0 % to 34.0 %
		Mono Hydrate Alumina (MHA)	SOP:TPM/MSK/4/I (Thermo Gravimetric Analysis) (Issue No.01 dated 01.04.2011)	2.0 % to 15.0%
		Reactive Silica (Reactive SiO <sub>2</sub> )	SOP:TPM/MSK/4/J (Issue No. 02 dated 01.04.2011)	0.20 % to 5.0 %
		Phosphorus (P)	IS 2000 (Part 7) :2001, RA 2017	0.10 % to 1.0 %
			SOP:TPM/MSK/4/H2 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 1.0 %
5.	Limestone	Loss on Ignition (LOI)	IS 1760 (Part 1):1991, RA 2017	40.0 % to 50.0 %
		Silica (SiO <sub>2</sub> )	IS 1760 (Part 2):1991, RA 2017	0.1 % to 10.0 %
		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	IS 1760 (Part 3):1992, RA 2017	0.2 % to 2.0 %
			SOP: TPM/MSK/5/C2 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 3.0 %

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		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 1760 (Part 3):1992, RA 2017	0.2 % to 2.0 %
			SOP: TPM/MSK/5/D1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05% to 4.0 %
		Titania (TiO <sub>2</sub> )	SOP :TPM/MSK/5/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005 % to 2.0 %
		Calcium Oxide (CaO)	IS 1760 (Part 3):1992, RA 2017	30.0 % to 56.0 %
		Magnesium Oxide (MgO)	IS 1760 (Part 3):1992, RA 2017	0.2 % to 10.0 %
		Sodium Oxide (Na <sub>2</sub> O)	SOP:TPM/MSK/5/H1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005 % to 1.0 %
		Potassium Oxide (K <sub>2</sub> O)	SOP:TPM/MSK/5/I1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005 % to 1.0 %
		Free Silica	IS 1760 (Part 6) : 2001, RA 2017	0.25 % to 5.0 %
<b>6.</b>	<b>Dolomite</b>	Loss on Ignition (LOI)	IS 1760 (Part 1):1991, RA 2017	40.0 % to 50.0 %
		Silica (SiO <sub>2</sub> )	IS 1760 (Part 2):1991, RA 2017	0.1 % to 10.0 %

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		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	IS 1760 (Part 3):1992, RA 2017	0.2 % to 2.0 %
			SOP: TPM/MSK/5/C2 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 3.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 1760 (Part 3):1992, RA 2017	0.2 % to 2.0 %
			SOP: TPM/MSK/5/D1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05% to 4.0 %
		Titanium dioxide (TiO <sub>2</sub> )	SOP :TPM/MSK/5/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005 % to 2.0 %
		Calcium Oxide (CaO)	IS 1760 (Part 3):1992, RA 2017	20.0 % to 35.0 %
		Magnesium Oxide (MgO)	IS 1760 (Part 3):1992, RA 2017	10.0 % to 25.0 %
		Sodium Oxide (Na <sub>2</sub> O)	SOP:TPM/MSK/5/H1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005 % to 1.0 %
		Potassium Oxide (K <sub>2</sub> O)	SOP:TPM/MSK/5/I1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005 % to 1.0 %

**Laboratory**

**Mitra S.K. Private Limited, Holding No. E-5-138/157, Ward no.23,  
Gangarampur Road, Phase-2 R.H.S. to Behala, Banerjeepara,  
P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas, West Bengal**

**Location 1:** Holding No. E-5-138/157, Ward No.23, Gangarampur Road, Phase-2  
R.H.S. to Behala, Banerjeepara, P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas,  
West Bengal

**Location 2:** Holding No. 22/107, Plot No.: 784, Ward No.:8, Khanjanachak, 1<sup>st</sup> Floor,  
Haldia, Dist Purba Medinipur, West Bengal

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

**Certificate Number** TC-7642 (in lieu of T-0148)

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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
		Free Silica	IS 1760 (Part 6) : 2001, RA 2017	0.25 % to 5.0 %
7.	Hydrated Lime	Ca(OH) <sub>2</sub>	IS 1540 (Part 2): 1990, RA 2015 & IS 1514:1990, RA 2015	50.0 % to 90.0 %
8.	Rock Phosphate	Total P <sub>2</sub> O <sub>5</sub>	IS 11224 : 1985, RA 2015	20.0 % to 40.0 %
		Silica (SiO <sub>2</sub> )	IS 11224 : 1985, RA 2015, (A-4)	3.0 % to 10.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	SOP:TPM/MSK/26/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 2.0 %
			IS 11224 : 1985, RA 2015, (A-7)	0.05 % to 2.0 %
		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	SOP:TPM/MSK/26/D1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.10 % to 2.0 %
			IS 11224 : 1985, RA 2015, (A-7.2)	0.1 % to 2.0 %
		Moisture	IS 11224 : 1985, RA 2015, (A-8)	0.5 % to 3.0 %
		Loss On Ignition (LOI)	IS 11224 : 1985, RA 2015, (A-11.1)	4.0 % to 8.0 %
		Carbon Dioxide (CO <sub>2</sub> )	SOP :TPM/MSK/26/H (Issue No.02 dated 01.04.2011)	0.5 % to 3.0 %
Organic Matter	IS 11224 : 1985, RA 2015, (A-11.0)	0.5 % to 3.0 %		

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		Chloride	IS 11224 : 1985, RA 2015, (A-10)	0.02 % to 2.0 %
		Calcium Oxide (CaO)	IS 9386:1979 , RA 2014	40.0 % to 55.0 %
		Magnesium Oxide (MgO)	IS 11224 : 1985, RA 2015	0.1 % to 4.0 %
			SOP :TPM/MSK/26/L1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 4.0 %
9.	Gypsum	Free Water	ASTM C471M - 17ae1 (Year 2017)	0.1 % to 1.0 %
			IS 1288: 1982, RA 2016	0.10 % to 1.0 %
		Combined Water	ASTM C471M - 17ae1 (Year 2017)	10.0 % to 22.0 %
			IS 1288: 1982, RA 2016	
		Silica (SiO <sub>2</sub> ) and Acid Insoluble	ASTM C471M - 17ae1 (Year 2017)	0.5 % to 10.0 %
			IS 1288: 1982, RA 2016	
		Mixed Oxide (Ferric Oxide +Alumina)	ASTM C471M - 17ae1 (Year 2017)	0.05 % to 2.0 %
			IS 1288: 1982, RA 2016	
Calcium Oxide (CaO)	ASTM C471M - 17ae1 (Year 2017)	25.0 % to 35.0 %		
	IS 1288: 1982, RA 2016 (Method 10.1)			
Magnesium Oxide (MgO)	ASTM C471M - 17ae1 (Year 2017)	0.50 % to 3.0 %		

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			IS 1288: 1982, RA 2016 (Method 11.1 )	
		Sulfur trioxide (SO <sub>3</sub> )	ASTM C471M - 17ae1 (Year 2017) IS 1288: 1982, RA 2016	25.0 % to 46.0 %
		Calcium Sulfate dihydrate (CaSO <sub>4</sub> .2H <sub>2</sub> O)/Purity	ASTM C471M - 17ae1 (Year 2017) IS 1288: 1982, RA 2016	48.0 % to 99.0 %
		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	SOP:TPM/MSK/31A/I (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 2.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	SOP:TPM/MSK/31A/1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 2.0 %
10.	Pyroxenite / Oliflux/ Olivine sand	Calcium Oxide (CaO)	SOP: TPM/MSK/43/A (Issue No.01 dated 01.04.2011)	0.2 % to 2.0 %
		Magnesium Oxide (MgO)	SOP: TPM/MSK/43/B (Issue No.01 dated 01.04.2011)	25.0 % to 50.0 %
		Silica (SiO <sub>2</sub> )	SOP: TPM/MSK/43/C (Issue No.01 dated 01.04.2011)	25.0 % to 45.0 %

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		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	SOP: TPM/MSK/43/D (Issue No.01 dated 01.04.2011)	5.0 % to 15.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	SOP: TPM/MSK/43/E (Issue No.01 dated 01.04.2011)	0.10 % to 10.0 %
		Loss On Ignition (LOI)	SOP: TPM/MSK/43/F (Issue No.01 dated 01.04.2011)	8.0 % to 14.0 %
		Chromic Oxide (Cr <sub>2</sub> O <sub>3</sub> )	SOP: TPM/MSK/43/G (Issue No.01 dated 01.04.2011)	0.2 % to 2.0 %
		Sodium Oxide (Na <sub>2</sub> O)	SOP: TPM/MSK/43/H (ICP-OES) (Issue No.01 dated 01.04.2011)	0.005 % to 0.1%
		Potassium oxide (K <sub>2</sub> O)	SOP: TPM/MSK/43/I (ICP-OES) (Issue No.01 dated 01.04.2011)	0.005 % to 0.1%
11.	Lead Ores/ Concentrates	Lead (Pb)	SOP: TPM/MSK/46/A (Issue No.01 dated 01.01.2013)	5.0 % to 50.0 %
			ISO 13545:2000, RC 2014	50.0 % to 80.0 %
			SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.05 % to 5.0 %

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		Silica (SiO <sub>2</sub> )	SOP: TPM/MSK/46/B (Issue No.01 dated 01.01.2013)	1.0 % to 60.0 %
		Copper (Cu)	SOP: TPM/MSK/46/C (Issue No.01 dated 01.01.2013)	0.05% to 10 %
			SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.05 % to 5.0%
		Zinc (Zn)	SOP: TPM/MSK/46/D (Issue No.01 dated 01.01.2013)	0.05 % to 10.0 %
			SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.05 % to 5 %
		Iron (Fe)	SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.50 % to 8.0 %
			SOP: TPM/MSK/46/E (Issue No.01 dated 01.01.2013)	0.5 % to 10.0 %
		Arsenic (As)	SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.20 % to 5.0 %



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		Sulphur(S)	SOP:TPM/MSK/46/F (Issue No.01 dated 01.01.2013)	1.0 % to 30.0 %
		Silver (Ag)	SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.001% to 5.0 %
			ISO 10378:2016 (Fire Assay)	0.025 % to 0.15 %
		Gold (Au)	ISO 10378:2016 (Fire Assay)	0.0001% to 0.025 %
		Phosphorus (P)	SOP: TPM/MSK/46/G (ICP-OES) (Issue No. 01 dated 01.01.2013)	0.05 % to 1.0 %
		Mercury (Hg)	SOP: TPM/MSK/46/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.001% to 1.0 %
12.	Copper Ore/ Concentrates	Copper (Cu)	SOP:TPM/MSK/47/A (Issue No.01 dated 01.01.2013)	1.0 % to 15 %
			ISO 10258:2018	15.0 % to 50.0 %
			SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.05 % to 5.0 %

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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
		Silica (SiO <sub>2</sub> )	SOP: TPM/MSK/47/B (Issue No.01 dated 01.01.2013)	0.2 % to 60.0 %
		Lead (Pb)	SOP: TPM/MSK/47/C (Issue No.01 dated 01.01.2013)	0.10 % to 10.0 %
			SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.10 % to 5.0 %
		Zinc (Zn)	SOP: TPM/MSK/47/D (Issue No.01 dated 01.01.2013)	0.50 % to 10.0 %
			SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.20 % to 5.0 %
		Iron (Fe)	SOP: TPM/MSK/47/E (Issue No.01 dated 01.01.2013)	0.50 % to 10.0 %
			SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.10 % to 5.0 %
		Arsenic (As)	SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.10 % to 5.0 %

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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
		Sulphur(S)	SOP: TPM/MSK/47/F (Issue No.01 dated 01.01.2013)	0.50 % to 40.0 %
		Silver (Ag)	SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.005 % to 5.0 %
			ISO 10378:2016 (Fire Assay)	0.0025 % to 0.15%
		Gold (Au)	ISO 10378:2016 (Fire Assay)	0.00005 % to 0.03 %
		Phosphorus (P)	SOP: TPM/MSK/47/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.01% to 1.0 %
13.	Zinc Ore/ Concentrate	Zinc (Zn)	SOP: TPM/MSK/48/A (Issue No.01 dated 01.01.2013)	5.0 % to 60.0 %
			ISO 13658:2000, RC 2014	10.0 % to 60.0 %
			SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.05 % to 5.0 %
		Silica (SiO <sub>2</sub> )	SOP: TPM/MSK/48/B (Issue No.01 dated 01.01.2013)	0.50 % to 60.0 %
		Lead (Pb)	SOP: TPM/MSK/48/C (Issue No.01 dated 01.01.2013)	0.10 % to 10.0 %

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			SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.05 % to 5.0 %
		Iron (Fe)	SOP: TPM/MSK/48/D (Issue No.01 dated 01.01.2013)	0.50 % to 10.0 %
			SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.50 % to 5.0 %
		Copper (Cu)	SOP: TPM/MSK/48/E (Issue No.01 dated 01.01.2013)	0.10 % to 10.0 %
			SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.10 % to 5.0 %
		Arsenic (As)	SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.005 % to 5.0 %
		Silver (Ag)	SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.005 % to 5.0 %
			ISO 10378:2016 (Fire Assay)	0.001 % to 0.08 %

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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
		Gold (Au)	ISO 10378:2016 (Fire Assay)	0.0001% to 0.0012 %
		Sulphur(S)	SOP:TPM/MSK/48/F (Issue No.01 dated 01.01.2013)	0.50 % to 40.0 %
		Phosphorus (P)	SOP: TPM/MSK/48/G (ICP-OES) (Issue No.01 dated 01.01.2013)	0.10 % to 1.0 %
14.	Nickel Ores/ Concentrates	Nickel (Ni)	SOP: TPM/MSK/49/A (Issue No.01 dated 01.01.2013)/ JIS M 8126-1994	0.20 % to 7.0 %
			SOP: TPM/MSK/49/H (ICP-OES) (Issue No.01 dated 01.01.2013)	0.10 % to 7.0 %
		Silica (SiO <sub>2</sub> )	SOP: TPM/MSK/49/B (Issue No.01 dated 01.01.2013)	10.0 % to 60.0 %
		Iron (Fe)	SOP: TPM/MSK/49/C (Issue No.01 dated 01.01.2013)	10.0 % to 60.0 %
		Calcium Oxide (CaO)	SOP: TPM/MSK/49/D (Issue No.01 dated 01.01.2013)	0.1 % to 10.0 %

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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
		Magnesium Oxide (MgO)	SOP: TPM/MSK/49/E (Issue No.01 dated 01.01.2013)	1.0 % to 35.0 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	SOP: TPM/MSK/49/F (Issue No.01 dated 01.01.2013)	1.0 % to 25.0 %
		Cobalt (Co)	SOP: TPM/MSK/49/H (ICP-OES) (Issue No.01 dated 01.01.2013)	0.005% to 1.0 %
		Sulphur (S)	SOP: TPM/MSK/49/G (Issue No.01 dated 01.01.2013)	0.50 % to 10.0 %
		Phosphorus (P)	SOP: TPM/MSK/49/H (ICP-OES) (Issue No.01 dated 01.01.2013)	0.005 % to 1.0 %
<b>15.</b>	<b>Quartz</b>	Silica (SiO <sub>2</sub> )	IS :1917 (Part 3):1992, RA 2005	90 % to 99.80 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	SOP:TPM/MSK/25/B1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05% to 4 %
		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	SOP:TPM/MSK/25/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05% to 5.0 %

**Laboratory**

**Mitra S.K. Private Limited, Holding No. E-5-138/157, Ward no.23,  
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P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas, West Bengal**

**Location 1:** Holding No. E-5-138/157, Ward No.23, Gangarampur Road, Phase-2  
R.H.S. to Behala, Banerjee para, P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas,  
West Bengal

**Location 2:** Holding No. 22/107, Plot No.: 784, Ward No.:8, Khanjan chak, 1<sup>st</sup> Floor,  
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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
		Sodium Oxide (Na <sub>2</sub> O)	SOP:TPM/MSK/25/D1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.001% to 0.05 %
		Potassium Oxide (K <sub>2</sub> O)	SOP:TPM/MSK/25/D1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.001 % to 0.05 %
		Titanium Dioxide (TiO <sub>2</sub> )	SOP: TPM/MSK/25/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.01% to 1.0 %
<b>II.</b>	<b>SOLID FUELS</b>			
<b>1.</b>	<b>Coal &amp;Coke</b>	Total Moisture in Coal	IS 1350 (Part 1): 1984, RA 2013 ASTM D3302 / D3302M -17 ISO 589:2008 , RC 2018	1.0 % to 32 %
		Total Moisture in Coke	ISO 579:2013 IS 1350 (Part 1): 1984, RA 2013	1.0 % to 32 %
		Moisture in Coal	IS 1350 (Part 1): 1984, RA 2013 ASTM D3173 / D3173-17a ISO 11722:2013 ASTM D7582 – 15	0.1 % to 25 %
		Equilibrated Moisture (at 40°C and 60 % Relative Humidity ) in Coal	IS 1350 (Part 1): 1984, RA 2013	0.5% to 18%

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		Moisture in Coke	IS 1350 (Part 1): 1984, RA 2013 ASTM D3173 / D3173M – 17a ISO 687:2010, RC 2016 ASTM D 7582 – 15	0.1 % to 10 %
		Volatile Matter in Coal	IS 1350 (Part 1): 1984, RA 2013 ASTM D3175 – 17 ISO 562:2010, RC 2016 ASTM D7582 – 15	0.5 % to 50 %
		Volatile Matter in Coke	IS 1350 (Part 1): 1984, RA 2013 ASTM D3175 – 17 ISO 562:2010, RC 2016 ASTM D7582 – 15	0.5 % to 10.0% 0.5 % to 10.0%
		Ash in Coal	IS 1350 (Part 1): 1984, RA 2013 ASTM D3174-12 ISO 1171:2010, RC 2016 ASTM D 7582 – 15	0.5 % to 60.0 %
		Ash in Coke	IS 1350 (Part 1): 1984, RA 2013 ASTM D3174-12 ISO 1171:2010, RC 2016 ASTM D 7582 – 15	0.30 % to 45.0%
		Fixed Carbon in Coal	IS 1350 (Part 1): 1984, RA 2013	By calculation



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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
			ASTM D 3172-13 ASTM D 7582 – 15 ISO 17246 : 2010, RC 2016	
		Fixed Carbon in Coke	IS 1350 (Part 1): 1984, RA 2013 ASTM D 3172-13 ASTM D 7582 – 15 ISO 17246 : 2010, RC 2016	By calculation
		Gross Calorific Value in Coal (different basis)	IS 1350 (Part 2): 2017 ASTM D5865-13 ISO 1928:2009, RC 2016	1500 kcal/kg to 8333 kcal/kg
		Gross Calorific Value in Coke (different basis)	IS 1350 (Part 2): 2017 ASTM D5865-13 ISO 1928:2009, RC 2016	3333 kcal/kg to 8333 kcal/kg
		Total Sulphur in Coal & Coke	IS:1350 (Part 3): 1969, RA 2015 ASTM D4239 – 17 ISO 334:2013 ISO 19579:2006, RC 2018	0.20 % to 5 %
		<b>Forms of Sulphur:</b>		
		Pyritic Sulphur	IS:1350 (Part 3): 1969, RA 2015	0.01 % to 6 %
		Organic Sulphur		
		Sulphate Sulphur		
		Chlorine	IS:1350 (Part 5): 2017	0.015 % to 1 %
		Phosphorus	IS:1350 (Part 5): 2017	0.01 % to 1 %

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			SOP:TPM/MSK/6/M/6 (ICP-OES) (Issue No. 02 dated 01.04.2011)	0.01 % to 1 %
			ISO 622:2016	0.01 % to 1 %
		Crucible Swelling Number (CSN)	IS 1353 : 1993, RA 2015 ASTM D720/D720M-15e1	0 to 9
		Hardgrove Grindability Index (HGI)	ISO 5074:2015 IS 4433 - 1979, RA 2010 ASTM D409 / D409M – 16	35 to 98
		<b>Ash Analysis</b>		
		Silica (SiO <sub>2</sub> )	IS 1355 : 1984, RA 2007 ASTM D 6349-13	20 % to 68 %
		Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	IS 1355 : 1984, RA 2007 ASTM D 6349-13	0.50 % to 25 %
		Alumina (Al <sub>2</sub> O <sub>3</sub> )	IS 1355 : 1984, RA 2007 ASTM D 6349-13	15.0 % to 35 %
		Titania (TiO <sub>2</sub> )	IS 1355 : 1984, RA 2007 ASTM D 6349-13	0.20 % to 3 %
		Calcium Oxide (CaO)	IS 1355 : 1984, RA 2007 ASTM D 6349-13	1.0 % to 15 %
		Magnesium Oxide (MgO)	IS 1355 : 1984, RA 2007 ASTM D 6349-13	1 % to 7.0 %
		Manganous Oxide (MnO)	IS 1355 : 1984, RA 2007 ASTM D 6349-13	0.1 % to 0.5 % 0.01% to 0.1 %
			IS 1355 : 1984, RA 2007	0.30 % to 1.5 %

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		Phosphorus Pentoxide (P <sub>2</sub> O <sub>5</sub> )	ASTM D 6349-13		
		Sulphur Trioxide (SO <sub>3</sub> )	IS 1355 : 1984, RA 2007	0.5 % to 15 %	
			ASTM D 6349-13	0.50 % to 15 %	
		Sodium Oxide (Na <sub>2</sub> O)	IS 1355 : 1984, RA 2007	0.10 % to 5 %	
			ASTM D 6349-13		
		Potassium Oxide (K <sub>2</sub> O)	IS 1355 : 1984, RA 2007	0.10 % to 5 %	
			ASTM D 6349-13		
		<b>Ultimate Analysis</b>			
		Carbon (C)	ASTM D5373 – 16	54.9 % to 84.70 %	
		Hydrogen (H)		3.25% to 5.1 %	
		Nitrogen (N)		0.50 % to 2.0 %	
		Carbon (C)	ISO 29541:2010, RC 2016	54.9 % to 84.70 %	
		Hydrogen (H)			3.25% to 5.1 %
		Nitrogen (N)			0.50 % to 2.0 %
		Sulphur (S)	IS:1350 (Part 3): 1969, RA 2015	0.20 % to 5 %	
			ASTM D4239 – 17		
			ISO 19579:2006 , RC 2018		
		Oxygen (O)	ISO 1170:2013	By calculation	
			ASTM D3176-15		
		<b>Reactivity of coke</b>			
		Coke Reactivity Index	IS 4023:1991, RA 2013	18 to 31	

**Laboratory**

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		(CRI)	ASTM D5341 / D5341M - 17a ISO 18894:2018	
		Coke Strength after Reaction(CSR)	IS 4023:1991, RA 2013 ASTM D5341 / D5341M - 17a ISO 18894:2018	55 to 72
		<b>Coal &amp; Coke Ash (Fusibility Test )</b>		
		IT (Initial Deformation Temperature)	ASTM D1857 / D1857M - 17a (Oxidizing & Reducing) (Year-2017)	800°C to 1500°C
		ST (Spherical Temperature)		
		HT(Hemispherical Temperature)		
		FT(Fluidity Temperature)		
2.	Petroleum Coke	Moisture (As received)/ Gross Moisture	IS 1448 (Part 132): 2018 ASTM D4931 – 06 (Reapproved2017)	1% to 20% 1% to 20%
		Moisture	IS 1448 (Part 132): 2018	0.4% to 2%
		Volatile Matter	IS 1448 (Part 134) 1989, RA 2013 ASTM D6374 – 12 (Reapproved2017)e1	0.5% to 15%
		Ash	IS:1448 (Part 126) 1988, RA 2016 ASTM D4422–13	0.20 % to 2%

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		Fixed Carbon	IS 1350 (Part 1): 1984, RA 2013 ASTM D 3172-13	By calculation
		Sulphur	IS 1448 (Part 33) 1991, RA 2013	2 % to 10%
		Gross Calorific Value	IS 1350 (Part 2): 2017 ASTM D5865-13	7000 kcal/kg to 9000 kcal/kg
3.	Graphite	Moisture	IS 11321:1985, RA 2014	0.10 % to 2 %
		Volatile Matter	IS 11321:1985, RA 2014	0.20% to 10 %
		Ash	IS 11321:1985, RA 2014	0.20 % to 25 %
		Fixed Carbon	IS 11321:1985, RA 2014	By calculation
		Sulphur	IS 11321:1985, RA 2014	0.10 % to 1.0 %
		Petroleum Ether soluble Matter	IS 495:1967, RA 2013	0.05 % to 1 %
		Loss on Heating	IS 495:1967, RA 2013	0.20 % to 2 %
		Water soluble matter	IS 495:1967, RA 2013	0.05% to 1 %
		Non Graphitic Carbon	IS 495:1967, RA 2013	0.10% to 5 %
III.	<b>METALS AND ALLOYS</b>			
1.	Ferro Chrome	Silicon (Si) in HCFC	IS 13452 (Part 1):1992, RA 2018	1.0 % to 6.0 %
		Silicon (Si) in LCFC	IS 13452 (Part 2):1992, RA 2018	0.2 % to 2.0 %
		Chromium (Cr) in HCFC	IS 13452 (Part 5) : 2003, RA 2018 ISO 4140 : 1979, RC 2016	50 % to 70 %

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		Chromium (Cr) in LCFC	IS 13452 (Part 6):1997, RA 2018	60 % to 70 %
		Phosphorus (P) in Ferro Chromium	IS 13452 (Part 7) :2003: RA 2014	0.01 % to 0.06 %
	SOP: TPM/MSK/8/C /2 (Issue No.02 dated 01.04.2011)		0.01 % to 0.10 %	
	SOP:TPM/MSK/8/C/1 (ICP-OES) (Issue No.01 dated 01.01.2013)		0.01% to 0.06 %	
		Phosphorus (P) in LCFC	IS 13452 (Part 7) :2003: RA 2014	0.01% to 0.06 %
	SOP: TPM/MSK/8/C (Issue No.02 dated 01.04.2011)		0.01% to 0.06 %	
	SOP:TPM/MSK/8/C/1 (ICP-OES) (Issue No.01 dated 01.01.2013)		0.01% to 0.06 %	
		Carbon (C) in HCFC/LCFC	ISO 15350:2000, RC 2018	0.10 % to 4.30 %
	ASTM E1915-13		0.08 % to 10 %	
		Sulphur (S) in HCFC/LCFC	ISO 15350:2000 RC 2018	0.011 % to 0.33 %
	ASTM E1915-13		0.010 % to 0.50%	

**Laboratory**

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		Mn in Ferrochrome	SOP: TPM/MSK/8/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.08 % to 1.5 %
		Ti in Ferrochrome	SOP: TPM/MSK/8/F1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.08 % to 1 %
		Ni in Ferrochrome	SOP: TPM/MSK/8/G1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.08 % to 1 %
2.	Ferro- Manganese	Silicon (Si)	IS 1559 : 1961, RA 2018	0.2 % to 4 %
		Manganese (Mn)	IS 1559 : 1961, RA 2018 ISO 4159:1978, RC 2015	55 % to 95 %
		Phosphorus (P)	IS 1559 : 1961, RA 2018 SOP: TPM/MSK/9/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.1 % to 0.5 % 0.05% to 0.5 %
		Sulphur (S)	ISO 15350:2000 RC 2018 ASTM E1915-13	0.01% to 0.15 % 0.01 % to 0.50%
		Carbon (C)	ASTM E1915-13	0.50 % to 10 %
3.	Ferro- Silicon	Silicon (Si)	IS 1559 (Part 1) :1988, RA 2014 ISO 4158 : 1978 , RC 2015	15 % to 85 % 8 % to 95 %
		Aluminium (Al)	IS 1559 (Part 5) :2003, RA 2014	0.25 % to 8 %

**Laboratory**

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			SOP:TPM/MSK/10/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.1 % to 2 %
		Phosphorus (P)	IS 1559 (Part IV) :1982, RA 2012	0.05% to 0.15 %
			SOP:TPM/MSK/10/B1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.005% to 0.15 %
		Sulphur (S)	ISO 15350:2000, RC2018 ASTM E1915-13	0.005% to 0.3 % 0.023 % to 0.8 %
		Carbon (C)	ISO 15350:2000, RC2018 ASTM E1915-13	0.1 % to 1 % 0.8 % to 10.0 %
		Calcium (Ca)	IS 1559 (Part VI) :1982, RA 2012 SOP:TPM/MSK/10/D1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.2 % to 3 % 0.2 % to 3 %
4.	<b>Silico Manganese</b>	Silicon (Si)	IS 1559 : 1961, RA 2012 ISO 4158:1978, RC 2015	10 % to 30 %
		Manganese (Mn)	IS 1559 : 1961, RA 2012 ISO 4159:1978, RC 2015	50 % to 70 % 55 % to 70 %
		Phosphorus (P)	IS 1559 : 1961, RA 2012	0.05% to 5 %



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			SOP:TPM/MSK/11/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05% to 3 %
		Sulphur (S)	ISO 15350:2000 , RC 2018 ASTM E1915-13	0.01 % to 0.25 % 0.023 % to 0.8 %
		Carbon (C)	ISO 15350:2000, RC 2018 ASTM E1915-13	0.02 % to 4 % 0.8 % to 10.0 %
		Boron (B)	SOP:TPM/MSK/11/E (ICP-OES) (Issue No.02 dated 01.04.2011)	0.0015% to 0.02%
5.	<b>Ferro Titanium</b>	Titanium (Ti)	IS 1559 : 1961, RA 2018 SOP:TPM/MSK/12/A1 (Issue No.02 dated 01.04.2011)	15 % to 70 %
		Silicon (Si)	IS 1559 : 1961, RA 2018	2 % to 25 %
6.	<b>Ferro Vanadium</b>	Vanadium (V)	IS 1559 : 1961, RA 2018 ISO 4140 : 1979, RC 2016	40 % to 60 %
		Silicon (Si)	IS 1559 : 1961, RA 2018	0.5 % to 5 %
7.	<b>Ferro Molybdenum</b>	Molybdenum (Mo)	IS 1559 : 1961, RA 2018 ISO 4173 : 1980 SOP TPM/MSK/14/A1 (Issue. 02 Dated. 01.04.2011)	50 % to 70 %
		Silicon (Si)	IS 1559 : 1961, RA 2012	0.1 % to 5.0 %

**Laboratory**

**Mitra S.K. Private Limited, Holding No. E-5-138/157, Ward no.23,  
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P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas, West Bengal**

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R.H.S. to Behala, Banerjee para, P.O.-Raipur, P.S.- Mahesatala, South 24 Parganas,  
West Bengal

**Location 2:** Holding No. 22/107, Plot No.: 784, Ward No.:8, Khanjan chak, 1<sup>st</sup> Floor,  
Haldia, Dist Purba Medinipur, West Bengal

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

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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
		Sulphur (S)	ISO 15350:2000 , RC 2018	0.005 % to 0.05 %
		Carbon (C)	ISO 15350:2000 , RC 2018	0.008 % to 0.05 %
8.	Pig iron / Cast iron	Carbon (C)	ISO 15350:2000 , RC 2018	2.0 % to 4.30 %
		Sulphur (S)	ISO 15350:2000 , RC 2018	0.005% to 0.30%
		Chromium (Cr)	IS 12308(Part 8):1997, RA 2018	0.1% to 28%
			SOP:TPM/MSK/16/B1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.10 % to 0.5 %
		Manganese (Mn)	IS 12308(Part 10):1991, RA 2012	0.50 % to 7 %
			SOP:TPM/MSK/16/C/1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.10 % to 2 %
		Silicon (Si)	IS 12308 (Part 6):1991, RA 2012	0.2 % to 6%
		Phosphorus (P)	IS 12308 (Part 5):1991, RA 2012	0.1 % to 0.5 %
			SOP:TPM/MSK/16/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.01% to 0.5 %
		Nickel (Ni)	IS 12308 (Part 7):1991, RA 2012	0.5 % to 36 %

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West Bengal  
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			SOP:TPM/MSK/16/F1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.10 % to 5 %
9.	Steel	Carbon (C)	ISO 15350:2000 , RC 2018 ISO 9556-1989, RC 2016	0.010 % to 4.30 %
		Sulphur (S)	ISO 15350:2000 , RC 2018 ISO 4935-1989, RC 2016	0.006 % to 0.33 % 0.010 % - 0.10 %
		Manganese (Mn)	IS 228 (Part 2):1987, RA 2012 SOP:TPM/MSK/17/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.4 % to 1.5 % 0.1 % to 2.5%
		Silicon (Si)	IS 228 (Part 8):1989, RA 2014	0.05 % to 1.0 %
		Phosphorus (P)	IS 228 (Part 3):1987, RA 2012	0.1 % to 0.25 %
			SOP: TPM/MSK/17/E1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.006 % to 0.25 %
		Nickel (Ni)	IS 228 (Part 5):1987, RA 2014	1 % to 10.0 %

**Laboratory**

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			SOP: TPM/MSK/17/F1 (ICP-OES) (Issue No.02 dated 01.04.2011) (Issue No.02 dated 01.04.2011)	0.2 % to 10.0 %
		Chromium (Cr)	IS 228 (Part 6):1987, RA 2014	0.5 % to 20.0 %
			SOP:TPM/MSK/17/G1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.5 % to 20.0 %
		Copper (Cu)	SOP: TPM/MSK/17/H1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.05 % to 0.5 %
10.	Copper base alloy (brass)	Copper (Cu)	IS 3685 : 1966, RA 2018	55.0 % to 72.0 %
		Lead (Pb)	SOP:TPM/MSK/32/A1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.50 % to 3.0 %
			IS 3685 : 1966, RA 2018	1 % to 3 %
		Zinc (Zn)	IS 3685 : 1966, RA 2018	20 % to 45 %
		Tin (Sn)	SOP:TPM/MSK/32/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.10 % to 0.4 %

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11.	Bronze	Copper (Cu)	IS 4027 (Part 1):1987, RA 2018	75 % to 96 %
		Lead (Pb)	IS 4027 (Part 1):1987, RA 2018	3 % to 5.5 %
		Zinc (Zn)	IS 4027 (Part 6):1987, RA 2018	4 % to 10 %
		Tin (Sn)	SOP: TPM/MSK/33/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.50 % to 5.5 %
12.	High Grade Primary Aluminium	Silicon (Si)	SOP:TPM/MSK/36 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.01 % to 1%
		Iron (Fe)		0.0001% to 2 %
		Zinc (Zn)		0.0005 % to 0.35%
		Gallium (Ga)		0.003 % to 0.4 %
		Vanadium (V)		0.001% to 0.3 %
		Copper (Cu)		0.0005 % to 0.5%
		Chromium (Cr)		0.0002 % to 0.05%
		Manganese (Mn)		0.0004 % to 0.05%
		Magnesium (Mg)		0.0002 % to 0.05%
13.	Tin	Titanium (Ti)	SOP:TPM/MSK/37 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.0004 % to 0.05%
		Aluminium (Al)		0.0002 % to 0.01%
		Arsenic (As)		0.0005% to 0.3%
		Bismuth (Bi)		0.0002 % to 0.3%
		Cadmium (Cd)		0.0002 % to 0.03%
		Copper (Cu)		0.0002 % to 0.5%
		Iron (Fe)		0.0002 % to 2%
		Lead (Pb)		0.0003 % to 0.5%
		Antimony (Sb)		0.0005% to 0.5%
	Zinc (Zn)	0.0002 % to 0.31%		

**Laboratory**

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14	Special High Grade Zinc	Lead (Pb)	SOP :TPM/MSK/38 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.0001% to 0.5%
		Cadmium (Cd)		0.0005 % to 0.03%
		Iron (Fe)		0.0002% to 2%
		Tin (Sn)		0.0010% to 0.05%
		Copper (Cu)		0.0005 % to 0.5%
		Aluminium (Al)		0.0002% to 0.01%
15.	Standard Lead	Silver (Ag)	SOP :TPM/MSK/39 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.0002% to 0.05%
		Arsenic (As)		0.002 % to 0.3%
		Bismuth (Bi)		0.0002 % to 0.3%
		Cadmium (Cd)		0.0004 % to 0.03%
		Copper (Cu)		0.0001% to 0.5%
		Nickel (Ni)		0.0001% to 0.01%
		Antimony (Sb)		0.0005 % to 0.05%
		Tin (Sn)		0.0005% to 0.05%
16.	Primary Nickel	Cobalt (Co)	SOP:TPM/MSK/40 (ICP- OES) (Issue No.02 dated 01.04.2011)	0.0005 % to 1.5%
		Copper (Cu)		0.0005 % to 0.5%
		Iron (Fe)		0.0005 % to 2%
		Sulphur (S)		0.001 % to 0.10%
		Phosphorus (P)		0.0001 % to 0.05%
		Manganese (Mn)		0.0002 % to 0.05%
		Silicon (Si)		0.0002 % to 0.05%
		Arsenic (As)		0.0005% to 0.35%
		Lead (Pb)		0.0002 % to 0.5%
		Antimony (Sb)		0.0005% to 0.5%
		Bismuth (Bi)		0.0001 % to 0.3%
		Tin (Sn)		0.0005 % to 0.05%

**Laboratory**

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17.	Copper	Zinc (Zn)	SOP:TPM/MSK/41 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.0003 % to 0.35%
		Silver (Ag)		0.0002 % to 0.05%
		Arsenic (As)		0.0005% to 0.3%
		Bismuth (Bi)		0.0002 % to 0.3%
		Cadmium (Cd)		0.0002 % to 0.03%
		Cobalt (Co)		0.0004 % to 1.5%
		Chromium (Cr)		0.0004 % to 0.05%
		Iron (Fe)		0.0003 % to 2%
		Manganese (Mn)		0.0002 % to 0.05%
		Nickel (Ni)		0.0003 % to 0.01%
		Phosphorus (P)		0.0003 % to 0.05%
		Lead (Pb)		0.0003 % to 0.5%
		Sulphur (S)		0.001 % to 0.10%
		Antimony (Sb)		0.0005% to 0.5%
		Selenium (Se)		0.0005% to 0.002%
		Silicon (Si)		0.001% to 0.05%
Tin (Sn)	0.0005 % to 0.05%			
Tellurium (Te)	0.0002 % to 0.002%			
Zinc (Zn)	0.0004 % to 0.03%			
18.	Cobalt	Beryllium (Be)	SOP:TPM/MSK/42 (ICP-OES) (Issue No.02 dated 01.04.2011)	0.0003 % to 0.5 %
		Magnesium (Mg)		0.0003 % to 0.5 %
		Aluminium (Al)		0.0002 % to 0.05%
		Titanium (Ti)		0.0002 % to 0.05%
		Vanadium (V)		0.0002 % to 0.3 %
		Chromium (Cr)		0.0002 % to 0.05%
		Manganese(Mn)		0.0003 % to 0.05%
Iron (Fe)	0.0002 % to 2%			

**Laboratory**

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		Nickel (Ni)		0.0002 % to 0.1%
		Copper (Cu)		0.0003 % to 0.5%
		Zinc (Zn)		0.0002 % to 0.03%
		Gallium (Ga)		0.0003 % to 0.05 %
		Germanium (Ge)		0.0002 % to 0.05%
		Arsenic (As)		0.0005% to 0.05%
		Selenium (Se)		0.0005% to 0.002%
		Molybdenum(Mo)		0.0002 % to 0.05 %
		Silver(Ag)		0.0002 % to 0.05%
		Cadmium (Cd)		0.0003 % to 0.03%
		Tin (Sn)		0.0005 % to 0.05%
		Antimony (Sb)		0.0005% to 0.05%
		Barium (Ba)		0.0003 % to 0.05%
		Platinum (Pt)		0.0002 % to 0.005%
		Gold (Au)		0.0001 % to 0.005%
		Lead (Pb)		0.00003% to 0.5%
<b>IV.</b>	<b>FERTILIZERS</b>			
<b>1.</b>	<b>Urea</b>	Moisture	IS 6092 (Part 6) :1985, RA 2017 (4.3 Method 3)	0.1 % to 2 %
		Total Nitrogen	IS 6092 (Part 2/ Sec 5): 2004, RA 2017	40 % to 46.65 %
		Biuret	IS 6092(Part 6):1985, RA 2017 (Method 5.1.2 )	0.1 % to 1.5%



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			SOP:TPM/MSK/27/C1 (ICP-OES) (Issue No.02 dated 01.04.2011)	
2.	<b>Di-Ammonium Phosphate</b>	Moisture	IS 6092 (Part 6): 1985, RA 2017 (4.2 Method 2)	0.1 % to 2 %
		Total phosphate (as P <sub>2</sub> O <sub>5</sub> )	IS 6092 (Part 3): 1985, RA 2016 (Method 6.3)	40 % to 50 %
		Water Soluble phosphate (as P <sub>2</sub> O <sub>5</sub> )	IS 6092 (Part 3): 1985, RA 2016 (Method 7.3.2)	40 % to 50 %
		Neutral Ammonium Citrate Soluble Phosphate (as P <sub>2</sub> O <sub>5</sub> )	IS 6092 (Part 3): 1985, RA 2016	40 % to 50 %
		Total Nitrogen	IS 6092 (Part 2) : Sec 5 : 2004 , RA 2017	15 % to 22 %
		Ammoniacal Nitrogen	IS 6092 (Part 2) :1985, RA 2016	15 % to 20 %

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<u>Location : 2</u>				
I.	ORES & MINERALS			
1.	Iron Ore	Moisture	IS 11690:1986, RA 2014 IS 1493 (Part 1)-1981, RA 2016	0.5 % to 15 % 0.5 % to 15 %