

**Laboratory** Sun-Tech, 40P, Tupudana Industrial Area, Ranchi, Jharkhand

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

**Discipline** Chemical Testing **Issue Date** 31.03.2015

**Certificate Number** T-2090 **Valid Until** 30.03.2017

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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
<b>I. BUILDING MATERIALS</b>				
<b>1.</b>	<b>Cement (OPC)</b>	LOI	IS 4032: 1985, Cl. 4.2	1 % to 5 %
		SiO <sub>2</sub>	IS 4032: 1985, Cl. 4.3	10 % to 26 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 4032: 1985, Cl. 4.5	2 % to 8 %
		Al <sub>2</sub> O <sub>3</sub>	IS 4032: 1985, Cl. 4.6	2 % to 10 %
		CaO	IS 4032: 1985, Cl. 4.7	45 % to 66 %
		MgO	IS 4032: 1985, Cl. 4.8	0.5 % to 8 %
		Sulphate ( as SO <sub>3</sub> )	IS 4032: 1985, Cl. 4.9	0.05 % to 4 %
		Alkalies (as Na <sub>2</sub> O)	IS 4032: 1985, Cl. 4.11	0.05 % to 5 %
		IR	IS 4032: 1985, Cl. 4.10	0.5 % to 5 %
		Cl	IS 4032: 1985, Cl. 4.13 Amend No. 2 March, 2010	0.001 % to 0.1 %
<b>2.</b>	<b>Cement (PPC)</b>	LOI	IS 4032: 1985, Cl. 4.2	0.5 % to 6 %
		SiO <sub>2</sub>	IS 4032: 1985, Cl. 4.3	10 % to 40 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 4032: 1985, Cl. 4.5	1 % to 10 %
		Al <sub>2</sub> O <sub>3</sub>	IS 4032: 1985, Cl. 4.6	1 % to 16 %
		CaO	IS 4032: 1985, Cl. 4.7	40 % to 60 %
		MgO	IS 4032: 1985, Cl. 7.2	1 % to 8 %
		Sulphate (as SO <sub>3</sub> )	IS 4032: 1985, Cl. 4.9	0.05 % to 4 %

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	<b>Cement (PPC)</b>	Alkalies (as Na <sub>2</sub> O)	IS 4032: 1985, Cl. 4.11	0.05 % to 5 %
		IR	IS 4032: 1985, Cl. 4.10	1 % to 40 %
		Cl	IS 4032: 1985, Cl. 4.13 Amend No. 2 March, 2010	0.001 % to 0.1 %
<b>3.</b>	<b>Cement (PSC)</b>	LOI	IS 4032: 1985, Cl. 4.2	0.5 % to 6 %
		SiO <sub>2</sub>	IS 4032: 1985, Cl. 4.3	10 % to 40 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 4032: 1985, Cl. 4.5	0.5 % to 8 %
		Al <sub>2</sub> O <sub>3</sub>	IS 4032: 1985, Cl. 4.6	1 % to 26 %
		CaO	IS 4032: 1985, Cl. 4.7	40 % to 60 %
		MgO	IS 4032: 1985, Cl. 4.8	0.5 % to 12 %
		Sulphate (as SO <sub>3</sub> )	IS 4032: 1985, Cl. 6.11	0.5 % to 4 %
		Alkalies (as Na <sub>2</sub> O)	IS 4032: 1985, Cl. 4.11	0.05 % to 5 %
		Sulphide Sulphur (as S)	IS 4032: 1985, Cl. 6.12	0.01 % to 5 %
		IR	IS 4032: 1985, Cl. 4.10	0.1 % to 20 %
		Cl	IS 4032: 1985, Cl. 4.13 Amend No. 2, March 2010	0.001 % to 0.1 %
<b>4.</b>	<b>Concrete Admixture</b>	pH	IS 9103: 1999 (RA 2004) Annx E-5	1 to 14
		Dry Material Content (DMC)	IS 9103: 1999 (RA 2004) Annx E-1	1 % to 100 %

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	<b>Concrete Admixture</b>	Ash Content (AC)	IS 9103: 1999 (RA 2004) Annx E-2	1 % to 100 %
		Relative Density	IS 9103: 1999 (RA 2004) Annx E-3	0.1 to 5.0
		Water soluble Chloride	IS 6925: 1973 (RA 1999)	0.001 % to 0.1 %
<b>5.</b>	<b>Aggregate</b>	Alkali-Aggregate Reactivity SiO <sub>2</sub>	IS 2386 (Part 7): 1963 (RA 2011)	0.1 % to 60 %
		R <sub>C</sub>	IS 2386 (Part 7): 1963 (RA 2011)	1 to 1000
<b>II.</b>	<b>WATER</b>			
<b>1.</b>	<b>Water (For Constructional Purpose)</b>	pH value	IS 3025 (Part 11): 1983 (RA 2002)	1 to 14
		Limits of Alkalinity	IS 3025 (Part 22): 1983 (RA 2002)	0.01 ml to 40 ml
		Limits of Acidity	IS 3025 (Part 23): 1983 (RA 2002)	0.01 ml to 20 ml
		TDS	IS 3025 (Part 15): 1984 (RA 2002)	5 mg/L to 5000 mg/L
		TSM	IS 3025 (Part 17): 1984 (RA 2002)	0.5 mg/L to 2000 mg/L
		Fixed Residue	IS 3025 (Part 18): 1984 (RA 2002)	0.1 mg/L to 3500 mg/L
		Volatile Residue	IS 3025 (Part 18): 1984 (RA 2002)	0.1 mg/L to 300 mg/L
		Sulphate (as SO <sub>3</sub> )	IS 3025 (Part 24): 1986 (RA 2003)	0.1 mg/L to 500 mg/L
		Chloride (as Cl)	IS 3025 (Part 32): 1988 (RA 2003)	0.01 mg/L to 2000 mg/L
<b>2.</b>	<b>Water (For Drinking Purpose)</b>	Turbidity	IS 3025 (Part 10): 1984 (RA 2002)	0 to 100 NTU
		pH value	IS 3025 (Part 11): 1983 (RA 2002)	1 to 14

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	<b>Water (For Drinking Purpose)</b>	Specific Conductance	IS 3025 (Part 14): 1984 (RA 2002)	0.1 µS/cm to 2000 µS/cm
		Total Residue (Dissolved & Suspended)	IS 3025 (Part 15): 1984 (RA 2002)	1 mg/L to 500 mg/L
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2002)	1 mg/L to 3000 mg/L
		Acidity	IS 3025 (Part 22): 1983 (RA 2002)	0.05 ml to 25 ml
		Alkalinity	IS 3025 (Part 23): 1983 (RA 2002)	0.05 ml to 25 ml
		Sulphate as BaSO <sub>4</sub> (gravimetric method)	IS 3025 (Part 24): 1986 (RA 2003)	More than 10 mg
		Chloride (as Cl)	IS 3025 (Part 32): 1988 (RA 2003)	0.01 mg/L to 200 mg/L
		Calcium (as Ca)	IS 3025 (Part 40): 1991	1 mg/L to 1000 mg/L
		Sodium	IS 3025 (Part 45): 1993 (RA 2003)	0.1 mg/L to 1000 mg/L
		Potassium	IS 3025 (Part 45): 1993 (RA 2003)	0.1 mg/L to 1000 mg/L
	Chloride (as Cl)	IS 3025 (Part 32): 1988 (RA 2003)	0.01 mg/L to 200 mg/L	

### **III. ORES & MINERALS**

<b>1. Iron Ore</b>	LOI	IS 1493 (Part 1): 1981 (RA 2001)	0.1 % to 25 %
	SiO <sub>2</sub>	IS 1493 (Part 1): 1981 (RA 2001)	0.1 % to 30 %
	Fe <sub>2</sub> O <sub>3</sub>	IS 1493 (Part 1): 1981 (RA 2001)	30 % to 90 %
	Al <sub>2</sub> O <sub>3</sub>	IS 1493 (Part 1): 1981 (RA 2001)	0.1 % to 30 %
	Sulphate as SO <sub>3</sub>	IS 1493 (Part 1): 1981 (RA 2001)	0.001 % to 5 %

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	<b>Iron Ore</b>	Phosphorus as P	IS 1493 (Part 1): 1981 (RA 2001)	0.001 % to 10 %
<b>2.</b>	<b>Bauxite</b>	LOI	IS 2000 (Part 1): 1985 (RA 2001)	0.1 % to 30 %
		SiO <sub>2</sub>	IS 2000 (Part 2): 1985 (RA 2001)	0.1 % to 20 %
		Al <sub>2</sub> O <sub>3</sub>	IS 2000 (Part 3): 1985 (RA 2001)	5 to 70 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 2000 (Part 4): 1985 (RA 2001)	0.5 % to 40 %
		Titanium as TiO <sub>2</sub>	IS 2000 (Part 5): 1985 (RA 2001)	0.1 % to 12 %
<b>3.</b>	<b>Limestone, Dolomite &amp; Allied Material</b>	LOI	IS 1760 (Part 1): 1991 (RA 2001)	1 % to 60 %
		SiO <sub>2</sub>	IS 1760 (Part 2): 1991 (RA 2001)	0.5 % to 50 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 1760 (Part 3): 1991 (RA 2001)	0.2 % to 5 %
		Al <sub>2</sub> O <sub>3</sub>	IS 1760 (Part 3): 1991 (RA 2001)	0.1 % to 25 %
		CaO	IS 1760 (Part 3): 1991 (RA 2001)	30 % to 60 %
		MgO	IS 1760 (Part 3): 1991 (RA 2001)	0.5 % to 20 %
		Chloride as Cl	IS 1760 (Part 5): 1991 (RA 2001)	0.001 % to 5 %
<b>4.</b>	<b>Graphite</b>	Moisture Content (MC)	IS 11321: 1985 (RA 1998)	0.05 % to 10 %
		Ash Content (AC)	IS 11321: 1985 (RA 1998)	0.1 % to 99 %
		Volatile Matter (VM)	IS 11321: 1985 (RA 1998)	0.5 % to 20 %
		Fixed Carbon (FC)	IS 11321: 1985 (RA 1998)	0.1 % to 90 %
<b>5.</b>	<b>Quartz</b>	Silica as SiO <sub>2</sub>	IS 1917 (Part 3): 1992 (RA 2005)	70 % to 100 %

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	<b>Quartz</b>	Fe <sub>2</sub> O <sub>3</sub>	IS 1917 (Part 4): 1992 (RA 2005)	0.01 % to 2 %
		Al <sub>2</sub> O <sub>3</sub>	IS 1917 (Part 5): 1992 (RA 2005)	0.01 % to 2 %
<b>IV. COAL, COKE &amp; OTHER SOLID FUEL</b>				
<b>1.</b>	<b>Coal/Coke (Proximate Analysis)</b>	Moisture Content (MC)	IS 1350 (Part 1): 1984 (RA 2001)	1 % to 30 %
		Ash Content (AC)	IS 1350 (Part 1): 1984 (RA 2001)	0.1 % to 60 %
		Volatile Matter (VM)	IS 1350 (Part 1): 1984 (RA 2001)	0.5 % to 60 %
		Fixed Carbon (FC) – By Difference	IS 1350 (Part 1): 1984 (RA 2001)	0.1 % to 60 %
<b>2.</b>	<b>Coal / Coke Ash</b>	LOI	IS 1355: 1984	0.5 % to 6 %
		SiO <sub>2</sub>	IS 1355: 1984	10 % to 80 %
		Fe <sub>2</sub> O <sub>3</sub>	IS 1355: 1984	0.5 % to 15 %
		Al <sub>2</sub> O <sub>3</sub>	IS 1355: 1984	10 % to 40 %
		CaO	IS 1355: 1984	Upto 20 %
		MgO	IS 1355: 1984	0.01 % to 8 %
		Sulphate as SO <sub>3</sub>	IS 1355: 1984	0.001 % to 5 %
		Cl	IS 4032: 1985, Cl. 4.13 Amend No. 2 March, 2010	0.001 % to 0.5 %

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<b>V. METALS &amp; ALLOYS</b>				
	<b>Steel</b>	Phosphorus – By Alkalimetric Method	IS 228 (Part 3): 1987	0.01 % to 5 %
		Sulphur – By Evaluation Method	IS 228 (Part 9): 1989	0.01 % to 5 %

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