



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 1 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
Permanent Facility					
1	CHEMICAL-ATMOSPHERIC POLLUTION	Ambient Air	Oxides of Nitrogen (NO ₂)	IS 5182 (Part 06)-2006, RA: 2017	6 µg/m ³ to 7500 µg/m ³
2	CHEMICAL-ATMOSPHERIC POLLUTION	Ambient Air	PM 2.5	NCB/ TL/ OP/ 04/ 2.1.3 based on CPCB Guidelines for Measurement of Ambient Air Pollutants- Vol I: 2016	11 µg/m ³ to 500 µg/m ³
3	CHEMICAL-ATMOSPHERIC POLLUTION	Ambient Air	PM10	IS 5182 (Part 23)-2006, RA: 2017	5 µg/m ³ to 2000 µg/m ³
4	CHEMICAL-ATMOSPHERIC POLLUTION	Ambient Air	Sulphur Dioxide (SO ₂)	IS 5182 (Part 02)-2001, RA: 2017	4 µg/m ³ to 1000 µg/m ³
5	CHEMICAL-ATMOSPHERIC POLLUTION	Ambient Air	Suspended Particulate Matter (SPM)	IS 5182 (Part 04)-1999, RA: 2014	5 µg/m ³ to 10000 µg/m ³
6	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Carbon Dioxide (CO ₂)	USEPA : Method 3A : 2017	0.1 % to 20 %
7	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Carbon Monoxide (CO)	USEPA : Method 10: 2017	0.1 % to 10.0 %
8	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Oxides of Nitrogen (NO)	USEPA : Method 7E: 2018	0.1 mg/Nm ³ to 6500 mg/Nm ³



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 2 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
9	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Oxides of Nitrogen (NO ₂)	IS 11255 (Part 7)-2005, RA: 2017	50 mg/Nm ³ to 3000 mg/Nm ³
10	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Oxides of Nitrogen (NO ₂)	USEPA : Method 7E: 2018	0.1 mg/Nm ³ to 2000 mg/Nm ³
11	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Oxygen (O ₂)	USEPA : Method 3A: 2017	0.1 % to 25 %
12	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Particulate Matter (PM)	IS 11255 (Part 1)-1985, RA: 2014	1 mg/Nm ³ to 500,000 mg/Nm ³
13	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Sulphur Dioxide (SO ₂)	USEPA : Method 6(C): 2017	0.1 mg/Nm ³ to 10000 mg/Nm ³
14	CHEMICAL-ATMOSPHERIC POLLUTION	Source / Stack Emissions	Sulphur Dioxide (SO ₂)	IS 11255 (Part 2)-1985, RA: 2014	2.6 mg/Nm ³ to 3000 mg/Nm ³
15	CHEMICAL- BUILDING MATERIAL	Aggregate	Alkali Aggregate Reactivity a. Silica Released	IS 2386 (Part 7)-1963, RA: 2016	1.50 mmol/l to 100 mmol/l
16	CHEMICAL- BUILDING MATERIAL	Aggregate	Alkali Aggregate Reactivity: b. Reduction in alkalinity	IS 2386 (Part 7)-1963, RA: 2016	20 mmol/l to 500 mmol/l



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 3 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
17	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Al ₂ O ₃	IS 1727-1967, RA: 2013	2.00 % to 45.00 %
18	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Available alkalies as Na ₂ O	IS 3812 (Part 1&2)- 2013, (Part2) RA: 2017	0.02 % to 5.00 %
19	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	CaO	IS 1727-1967, RA: 2013	0.50 % to 25.00 %
20	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Cl	IS 4032-1985, RA: 2014	0.002 % to 0.500 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 4 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
21	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Fe ₂ O ₃	IS 1727-1967, RA: 2013	0.05 % to 10.00 %
22	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	K ₂ O	NCB monograph (MS-14): 2010	0.02 % to 5.00 %
23	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Loss on Ignition	IS 1727-1967, RA: 2013	0.20 % to 15.00 %
24	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	MgO	IS 1727-1967, RA: 2013	0.10 % to 7.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 5 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
25	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Mn2O3	NCB monograph (MS-14): 2010	0.05 % to 2.00 %
26	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Moisture	IS 3812 (Part 1):2013 / IS 15388:2003, RA: 2017	0.01 % to 5.00 %
27	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Na2O	NCB monograph (MS-14): 2010	0.02 % to 5.00 %
28	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	P2O5	NCB monograph (MS-14): 2010	0.05 % to 2.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 6 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
29	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	R2O3 - Fe2O3	IS 1727-1967, RA: 2013	2.00 % to 40.00 %
30	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Reactive Silica	IS 3812 (Part 1): 2013	15.00 % to 65.00 %
31	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	SiO2	IS 1727-1967, RA: 2013	15.00 % to 99.00 %
32	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	SO3	IS 1727-1967, RA: 2013	0.05 % to 8.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 7 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
33	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Soda +Potash	NCB Monograph (MS-14): 2010	0.02 % to 5.00 %
34	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	TiO ₂	NCB monograph (MS-14): 2010	0.05 % to 5.00 %
35	CHEMICAL- BUILDING MATERIAL	CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Water Soluble Salts	IS 1727-1967, RA: 2013	0.02 % to 1.00 %
36	CHEMICAL- BUILDING MATERIAL	Clinker & Hydraulic Cement (Alternate Method)	Al ₂ O ₃	IS 12803-1989, RA: 2013	2.50 % to 8.0 %
37	CHEMICAL- BUILDING MATERIAL	Clinker & Hydraulic Cement (Alternate Method)	CaO	IS 12803-1989, RA: 2013	25.00 % to 67.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 8 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
38	CHEMICAL- BUILDING MATERIAL	Clinker & Hydraulic Cement (Alternate Method)	Fe ₂ O ₃	IS 12803-1989, RA: 2013	0.10 % to 5.00 %
39	CHEMICAL- BUILDING MATERIAL	Clinker & Hydraulic Cement (Alternate Method)	MgO	IS 12803-1989, RA: 2013	0.50 % to 4.50 %
40	CHEMICAL- BUILDING MATERIAL	Clinker & Hydraulic Cement (Alternate Method)	SiO ₂	IS 12803-1989, RA: 2013	15.00 % to 28.00 %
41	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag and GGBF Slag	Al ₂ O ₃	IS 4032-1985, RA: 2014	0.20 % to 40.00 %
42	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	CaO	IS 4032-1985, RA: 2014	8.00 % to 70.00 %
43	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Cl	IS 4032-1985, RA: 2014	0.005 % to 3.000 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 9 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
44	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Fe (Total)	IS 4032-1985, RA: 2014	0.05 % to 53.00 %
45	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Fe ₂ O ₃	IS 4032-1985, RA: 2014	0.05 % to 75.00 %
46	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Free Lime	IS 4032-1985, RA: 2014	0.05 % to 10.00 %
47	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Glass Content	IS 269:2015/ IS 12089:1987, RA: 2013	00 % to 100 %
48	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Insoluble Residue	IS 4032-1985, RA: 2014	0.10 % to 40.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 10 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
49	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	K ₂ O	NCB monograph (MS-13): 2010	0.02 % to 3.00 %
50	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Loss on Ignition	IS 4032-1985, RA: 2014	0.05 % to 10.00 %
51	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	MgO	IS 4032-1985, RA: 2014	0.20 % to 20.00 %
52	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Mn ₂ O ₃	IS 12423-1988, RA: 2014	0.02 % to 10.00 %
53	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	MnO	IS 12423-1988, RA: 2014	0.02 % to 9.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 11 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
54	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Na ₂ O	NCB monograph (MS-13): 2010	0.05 % to 3.00 %
55	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	P ₂ O ₅	IS 12423-1988, RA: 2014	0.02 % to 5.00 %
56	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Phosphorus (P)	IS 12423-1988, RA: 2014	0.10 % to 2.50 %
57	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Retained on 10 mm sieve	IS 269: 2015	0.00 % to 10.00 %
58	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Retained on 50 mm sieve	IS 269:2015/ IS 12089:1987, RA: 2013	0.00 % to 10.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 12 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
59	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	SiO ₂	IS 4032-1985, RA: 2014	8.00 % to 45.00 %
60	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	SO ₃	IS 4032-1985, RA: 2014	0.10 % to 7.00 %
61	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Sulphur as Sulphide	IS 4032-1985, RA: 2014	0.05 % to 2.50 %
62	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	TiO ₂	IS 12423-1988, RA: 2014	0.02 % to 2.00 %
63	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Water soluble K ₂ O	NCB Monograph (MS-13): 2010	0.02 % to 3.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 13 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
64	CHEMICAL- BUILDING MATERIAL	Clinker, Hydraulic Cement, Granulated Blast Furnace Slag, Copper Slag, Steel Slag, Lead Zinc Slag & GGBF slag	Water soluble Na ₂ O	NCB Monograph(MS-13): 2010	0.02 % to 3.00 %
65	CHEMICAL- BUILDING MATERIAL	Concrete Admixture	Ash Content	IS 9103-1999, RA: 2013	0.05 % to 40.00 %
66	CHEMICAL- BUILDING MATERIAL	Concrete Admixture	Chloride	IS 9103-1999, RA: 2013	0.005 % to 5.00 %
67	CHEMICAL- BUILDING MATERIAL	Concrete Admixture	Dry Material Content	IS 9103-1999, RA: 2013	1.00 % to 70.00 %
68	CHEMICAL- BUILDING MATERIAL	Concrete Admixture	pH value	IS 9103-1999, RA: 2013	1 to 14
69	CHEMICAL- BUILDING MATERIAL	Concrete Admixture	Relative Density	IS 9103-1999, RA: 2013	1.02 to 4.00
70	CHEMICAL- BUILDING MATERIAL	Pozzolanic Materials CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	Water Soluble Na ₂ O	NCB Monograph (MS-14): 2010	0.02 % to 5.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 14 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
71	CHEMICAL- BUILDING MATERIAL	Pozzolanic Materials CCP, Silica Fume, Metakaoline, Pulverised Fuel Ash, Coal/Pet Coke Ash, Rice Husk Ash & Spent Fluidized Catalytic Cracking Equilibrium Catalyst	water Soluble K ₂ O	NCB Monograph (MS-14): 2010	0.02 % to 5.00 %
72	CHEMICAL- BUILDING MATERIAL	Refractory	Al ₂ O ₃	IS 1527-1972, RA: 2017	1.00 % to 85.00 %
73	CHEMICAL- BUILDING MATERIAL	Refractory	CaO	IS 1527-1972, RA : 2017	0.20 % to 30.00 %
74	CHEMICAL- BUILDING MATERIAL	Refractory	Cl	IS 4032-1985, RA: 2014	0.005 % to 0.500 %
75	CHEMICAL- BUILDING MATERIAL	Refractory	Fe ₂ O ₃	IS 1527-1972, RA: 2017	1.00 % to 10.00 %
76	CHEMICAL- BUILDING MATERIAL	Refractory	K ₂ O	IS 1527-1972, RA: 2017	0.02 % to 3.00 %
77	CHEMICAL- BUILDING MATERIAL	Refractory	MgO	IS 1527-1972, RA: 2017	0.50 % to 85.00 %
78	CHEMICAL- BUILDING MATERIAL	Refractory	Mn ₂ O ₃	NCB monograph (MS-5): 1979	0.02 % to 3.00 %
79	CHEMICAL- BUILDING MATERIAL	Refractory	Na ₂ O	IS 1527-1972, RA: 2017	0.02 % to 3.00 %
80	CHEMICAL- BUILDING MATERIAL	Refractory	P ₂ O ₅	NCB monograph (MS-5): 1979	0.02 % to 5.00 %
81	CHEMICAL- BUILDING MATERIAL	Refractory	SiO ₂	IS 1527-1972, RA: 2017	10.00 % to 35.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 15 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
82	CHEMICAL- BUILDING MATERIAL	Refractory	TiO ₂	IS 1527-1972, RA: 2017	0.02 % to 5.00 %
83	CHEMICAL- BUILDING MATERIAL	Refractory	Loss on Ignition	IS 1527-1972, RA: 2017	0.20 % to 5.00 %
84	CHEMICAL- ORES & MINERALS	(Mineral & By product)	CaO	IS 1288-1982, RA: 2016	0.50 % to 32.00 %
85	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	CaSO ₄ .2H ₂ O(Purity)	IS 1288-1982, RA: 2016	2.00 % to 99.50 %
86	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Cl as NaCl	IS 1288-1982, RA: 2016	0.005 % to 0.500 %
87	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Combined water	IS 1288-1982, RA: 2016	0.10 % to 25.00 %
88	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Fluorine Content	NCB/F/13: 2010	0.05 % to 2.00 %
89	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Free moisture	IS 10170-1982, RA: 2014	0.02 % to 10.00 %
90	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Free water	IS 1288-1982, RA: 2016	0.02 % to 10.00 %
91	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Iron & Alumina	IS 1288-1982,RA: 2016	0.10 % to 15.00 %
92	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	MgO	IS 1288-1982, RA: 2016	0.20 % to 8.00 %
93	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Mn ₂ O ₃	NCB monograph (MS-5): 1979	0.02 % to 2.00 %
94	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	P ₂ O ₅	NCB monograph (MS-5): 1979	0.02 % to 2.00 %
95	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	SiO ₂ & Acid Insoluble	IS 1288-1982, RA: 2016	0.10 % to 15.00 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 16 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
96	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	SO ₃	IS 1288-1982, RA: 2016	0.20 % to 46.00 %
97	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	Sodium Content as (Na)	IS 6046-1982, RA: 2014	0.002 % to 3.00 %
98	CHEMICAL- ORES & MINERALS	(Mineral & by Product)	TiO ₂	IS 12423-1988, RA: 2014	0.02 % to 2.00 %
99	CHEMICAL- ORES & MINERALS	Bauxite	CaO	NCB monograph (MS-14): 2010	0.4 % to 5.0 %
100	CHEMICAL- ORES & MINERALS	Bauxite	Cl	IS 4032-1985, RA: 2014	0.005 % to 1.000 %
101	CHEMICAL- ORES & MINERALS	Bauxite	Fe ₂ O ₃	IS 2000 (Part 4)-1985, RA: 2017	0.10 % to 18.00 %
102	CHEMICAL- ORES & MINERALS	Bauxite	K ₂ O	NCB monograph (MS-14): 2010	0.05 % to 5.00 %
103	CHEMICAL- ORES & MINERALS	Bauxite	Loss on Ignition	IS 2000 (Part 1)-1985, RA: 2017	0.20 % to 30.00 %
104	CHEMICAL- ORES & MINERALS	Bauxite	MgO	NCB monograph (MS-14): 2010	0.1 % to 3.0 %
105	CHEMICAL- ORES & MINERALS	Bauxite	Mn ₂ O ₃	NCB monograph (MS-5): 1979	0.02 % to 2.00 %
106	CHEMICAL- ORES & MINERALS	Bauxite	Na ₂ O	NCB monograph (MS-14): 2010	0.05 % to 5.00 %
107	CHEMICAL- ORES & MINERALS	Bauxite	P ₂ O ₅	IS 2000 (Part 7)-2001, RA: 2017	0.02 % to 2.00 %
108	CHEMICAL- ORES & MINERALS	Bauxite	SiO ₂	IS 2000 (Part 2)-1985, RA: 2017	0.50 % to 10.0 %
109	CHEMICAL- ORES & MINERALS	Bauxite	TiO ₂	IS 2000 (Part 5)-1985, RA: 2017	0.5 % to 10.0 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 17 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
110	CHEMICAL- ORES & MINERALS	Buxite	Al ₂ O ₃	IS 2000 (Part 3)-1985, RA: 2017	0.10 % to 70.00 %
111	CHEMICAL- ORES & MINERALS	IRON ORE	Al ₂ O ₃	IS 1493 (Pt-1)-1981 RA: 2016	0.20 % to 20.00 %
112	CHEMICAL- ORES & MINERALS	IRON ORE	Fe ₂ O ₃	IS 1493 (Part 1)-1981,RA: 2016	0.50 % to 95.00 %
113	CHEMICAL- ORES & MINERALS	IRON ORE	K ₂ O	NCB Monograph (MS-14): 2010	0.05 % to 1.00 %
114	CHEMICAL- ORES & MINERALS	IRON ORE	Mn ₂ O ₃	NCB monograph (MS-5): 1979	0.02 % to 5.00 %
115	CHEMICAL- ORES & MINERALS	IRON ORE	Moisture	IS1493(Pt1)-1981,RA : 2016	0.20 % to 20.00 %
116	CHEMICAL- ORES & MINERALS	IRON ORE	Na ₂ O	NCB Monograph (MS-14): 2010	0.05 % to 1.00 %
117	CHEMICAL- ORES & MINERALS	IRON ORE	P ₂ O ₅	NCB monograph (MS-5): 1979	0.04 % to 1.00 %
118	CHEMICAL- ORES & MINERALS	IRON ORE	SiO ₂	IS 1493 (Part 1)-1981,RA: 2016	0.50 % to 10.00 %
119	CHEMICAL- ORES & MINERALS	IRON ORE	TiO ₂	IS 12423-1988,RA: 2014	0.02 % to 2.00 %
120	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Al ₂ O ₃	IS 1760 (Part 3)-1992,RA: 2017	0.20 % to 10.00 %
121	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	CaCO ₃	IS 1760 (Part 3)-1992,RA: 2017	10.00 % to 99.00 %
122	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	CaO	IS 1760 (Part 3)-1992,RA: 2017	5.00 % to 60.00 %
123	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Cl	IS 1760(Part 5)-1991,RA: 2017	0.005 % to 0.500 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 18 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
124	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Fe ₂ O ₃	IS 1760 (Part 3)-1992,RA: 2017	0.15 % to 8.00 %
125	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Free Silica	IS 1760 (Part 6)-2001,RA: 2017	0.20 % to 15.00 %
126	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	K ₂ O	NCB monograph (MS-13): 2010	0.02 % to 3.00 %
127	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Loss on Ignition	IS 1760 (Part 1)-1991,RA: 2017	40.0 % to 50.0 %
128	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Na ₂ O	NCB monograph (MS-13): 2010	0.05 % to 3.00 %
129	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	P ₂ O ₅	NCB monograph (MS-5): 1979	0.02 % to 2.00 %
130	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	SiO ₂	IS 1760 (Part 2)-1991,RA: 2017	0.20 % to 30.00 %
131	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	SO ₃	ASTM C-25: 2017	0.05 % to 5.00 %
132	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	TiO ₂	IS 12423-1988,RA: 2014	0.02 % to 2.00 %
133	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	MgO	IS 1760 (Part 3)-1992,RA: 2017	0.15 % to 22.00 %
134	CHEMICAL- ORES & MINERALS	Limestone, Dolomite and Allied Materials	Mn ₂ O ₃	NCB monograph (MS-5): 1979	0.02 % to 2.00 %
135	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Acidity as CaCO ₃	IS: 3025 (Part 22)-1986, RA: 2014	0.5 mg/l to 500 mg/l
136	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Alkalinity as CaCO ₃	IS: 3025 (Part 23)-1986, RA: 2014	0.5 mg/l to 500 mg/l



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 19 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
137	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Calcium	IS: 3025 (Part 40)-1991, RA: 2014	1.0 mg/l to 500 mg/l
138	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Chloride	IS: 3025 (Part 32)-1988, RA: 2014	20 mg/l to 5000 mg/l
139	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Fluoride	IS:3025(Part 60)-2008, RA: 2013	0 mg/l to 20 mg/l
140	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Hardness as CaCO ₃	IS:3025 (Part 21)-2009, RA: 2014	10 mg/l to 1900 mg/l
141	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Magnesium	IS: 3025 (Part 46)-1994, RA: 2014	1.0 mg/l to 500 mg/l
142	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Odour	IS: 3025 (Part 5)-1983, RA: 2017	Qualitative(----)
143	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	pH	IS: 3025 (Part 11)-1983, RA: 2017	1 to 13
144	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Potassium	IS: 3025 (Part 45)-1993, RA: 2014	0 mg/l to 1000 mg/l
145	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Sodium	IS: 3025 (Part 45)-1993,RA: 2014	0 mg/l to 1000 mg/l
146	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Sp. Conductance	IS:3025 (Part 14)-1984, RA: 2013	0 μ mhos/cm to 10000 μ mhos/cm



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 20 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
147	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Sulphate	IS: 3025 (Part 24)-1986, RA: 2014	20 mg/l to 2000 mg/l
148	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Suspended Matter / Total Suspended Solids	IS: 3025 (Part 17)-1984, RA: 2017	5 mg/l to 2000 mg/l
149	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Temperature	IS: 3025 (Part 9)-1984, RA: 2017	10 °C to 80 °C
150	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Total Dissolved Solids / Filterable Residue	IS: 3025 (Part 16)-1984, RA: 2017	10 mg/l to 10000 mg/l
151	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Total Solids (Dissolved & Suspended)	IS:3025 (Part 15)-1984, RA: 2014	5 to 12000
152	CHEMICAL- POLLUTION & ENVIRONMENT	Water / Waste Water	Turbidity	IS: 3025 (Part 10)-1984: 2017	0 NTU to 1000 NTU
153	CHEMICAL- SOIL AND ROCK	SOIL	Calcium Carbonate	IS 2720(Part-23)-1976, RA: 2015	1.00 % to 20.00 %
154	CHEMICAL- SOIL AND ROCK	SOIL	Organic Matter	IS 2720(Part-22)-1972, RA: 2015	0.05 % to 5.00 %
155	CHEMICAL- SOIL AND ROCK	SOIL	pH Value	IS 2720(Part-26)-1987, RA: 2016	1 to 13
156	CHEMICAL- SOIL AND ROCK	SOIL	Total Soluble Solids	IS 2720(Part-21)-1977, RA: 2015	0.01 % to 2.00 %
157	CHEMICAL- SOIL AND ROCK	SOIL	Total Soluble Sulphate as Na ₂ SO ₄	IS 2720(Part-27)-1977, RA: 2015	0.001 % to 5.00 %
158	CHEMICAL- SOIL AND ROCK	SOIL	Total Soluble Sulphate as SO ₄	IS 2720(Part-27)-1977, RA: 2015	0.001 % to 5.00 %

This is annexure to 'Certificate of Accreditation' and does not require any signature.



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 21 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
159	CHEMICAL- SOLID FUELS	Coal and Coke (Ultimate Analysis)	Nitrogen	IS:16612: 2018	0.50 % to 3.00 %
160	CHEMICAL- SOLID FUELS	Coal and Coke(Proximate Analysis)	Ash	IS 1350 (Part 1)-1984, RA: 2013	0.10 % to 60.00 %
161	CHEMICAL- SOLID FUELS	Coal and Coke(Proximate Analysis)	Carbon	IS:16612: 2018	0.50 % to 90.00 %
162	CHEMICAL- SOLID FUELS	Coal and Coke(Proximate Analysis)	Volatile Matter	IS 1350 (Part 1)-1984, RA: 2013	0.20 % to 55.00 %
163	CHEMICAL- SOLID FUELS	Coal and Coke(Ultimate Analysis)	Calorific value	IS 1350 (Part 2): 2017	200 Kcal/Kg to 9000 Kcal/Kg
164	CHEMICAL- SOLID FUELS	Coal and Coke(Ultimate Analysis)	Chlorine	IS 1350 (Part 5): 2017	0.002 % to 0.500 %
165	CHEMICAL- SOLID FUELS	Coal and Coke(Ultimate Analysis)	Sulphur	IS:16609-2018/ IS1350 (Pt-3): 1969	0.10 % to 15.00 %
166	CHEMICAL- SOLID FUELS	Coal and Coke(Ultimate Ananalysis)	Hydrogen	IS:16612: 2018	0.50 % to 8.00 %
167	CHEMICAL- SOLID FUELS	Coal and Coke(Ultimate Anlysis)	Hard Grove Grindability Index	ASTM D 409:2016/ IS 4433-1979, RA: 2015	30 to 95
168	CHEMICAL- WATER	Water for Construction	0.02N H2SO4 used to neutralize 100 ml sample	IS 456:2000/IS: 3025 (Part 23)-1986, RA: 2014	0.1 ml to 50 ml



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 22 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
169	CHEMICAL- WATER	Water for Construction	0.02N NaOH used to neutralize 100ml sample	IS456:2000/IS: 3025 (Part 22)-1986, RA: 2014	0.1 ml to 15 ml
170	CHEMICAL- WATER	Water for Construction	Chloride	IS: 3025 (Part 32)-1988, RA: 2014	20 mg/l to 5000 mg/l
171	CHEMICAL- WATER	Water for Construction	Inorganic matter (Fixed Residue)	IS: 3025 (Part 18)-1984, RA: 2017	50 mg/l to 6000 mg/l
172	CHEMICAL- WATER	Water for Construction	Organic matter (Volatile Residue)	IS456:2000/IS: 3025 (Part 18)-1984, RA: 2017	5 mg/l to 1000 mg/l
173	CHEMICAL- WATER	Water for Construction	pH	IS 456:2000 / IS: 3025 (Part 11)-1983, RA: 2017	1 to 14
174	CHEMICAL- WATER	Water for Construction	Sulphate	IS 456:2000/ IS: 3025 (Part 24)-1986, RA: 2014	20 mg/l to 2000 mg/l
175	CHEMICAL- WATER	Water for Construction	Suspended Matter / Total Suspended Solids	IS 456:2000/ IS: 3025 (Part 17)-1984, RA: 2017	5 mg/l to 2000 mg/l
176	MECHANICAL- BUILDINGS MATERIALS	Silica Fume	Specific Surface area by BET Method	IS: 15388: 2003	10 m ² /g to 20 m ² /g
177	MECHANICAL- BUILDINGS MATERIALS	BUILDING BRICKS (Burnt Clay & Lime Pulverized Fuel ash)	Compressive Strength	IS 3495 (Part I): 1992	1 N/mm ² to 50 N/mm ²
178	MECHANICAL- BUILDINGS MATERIALS	BUILDING BRICKS (Burnt Clay & Lime Pulverized Fuel ash)	Dimension (Height)	IS 1077: 1992	1000 mm to 3000 mm



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name	NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA		
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	TC-5296	Page No. :	23 / 30
Validity	17/03/2019 to 16/03/2021	Last Amended on	29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
179	MECHANICAL-BUILDINGS MATERIALS	BUILDING BRICKS (Burnt Clay & Lime Pulverized Fuel ash)	Dimension (Length)	IS 1077: 1992	3000 mm to 6000 mm
180	MECHANICAL-BUILDINGS MATERIALS	BUILDING BRICKS (Burnt Clay & Lime Pulverized Fuel ash)	Dimension (Width)	IS 1077: 1992	1500 mm to 3000 mm
181	MECHANICAL-BUILDINGS MATERIALS	BUILDING BRICKS (Burnt Clay & Lime Pulverized Fuel ash)	Efflorescence	IS 3495 (Part III): 1992	Qualitative
182	MECHANICAL-BUILDINGS MATERIALS	BUILDING BRICKS (Burnt Clay & Lime Pulverized Fuel ash)	Water Absorption	IS 3495 (Part II): 1992	1 % to 30 %
183	MECHANICAL-BUILDINGS MATERIALS	Ceramic Glazed Tiles	Crazing Resistance	IS:13630 (Part-9): 2006	Qualitative
184	MECHANICAL-BUILDINGS MATERIALS	Ceramic Glazed Tiles	Modulus of Rupture	IS:13630 (Part-6): 2006	11 N/mm ² to 100 N/mm ²
185	MECHANICAL-BUILDINGS MATERIALS	Ceramic Glazed Tiles	Water Absorption	IS: 13630(Part-2) : 2006	5 % to 25 %
186	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Compressive Strength	IS 4031 (Pt-6): 1988	05 MPa to 80 MPa
187	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Density	IS 4031 (Pt-11): 1988	1.50 to 4.00
188	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Drying Shrinkage	IS 4031 (Pt-10): 1988	0.01 % to 0.75 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 24 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
189	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Final Setting Time	IS 4031 (Pt-5): 1988	100 minutes to 600 minutes
190	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Fineness by wet sieving	IS 4031 (Pt-15): 1988	1.0 % to 40.0 %
191	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Heat of Hydration	IS 4031 (Pt-9): 1988	50 KJ/kg to 450 KJ/kg
192	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Initial Setting Time	IS 4031 (Pt-5): 1988	10 minute to 300 minute
193	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Soundness (Autoclave Expansion)	IS 4031(Part3): 1988	0.01 % to 2.00 %
194	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Soundness(Le Chatelier Expansion)	IS 4031 (Pt-3): 1988	0.5 mm to 15 mm
195	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Specific Surface area by Blaine Air Permeability Method	IS 4031 (Pt-2): 1999	150 m ² /kg to 600 m ² /kg
196	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Standard Consistency	IS 4031 (Pt-4): 1988	20 % to 45 %
197	MECHANICAL-BUILDINGS MATERIALS	Clinker & Hydraulic Cement	Whiteness of Cement	IS 8042: 2015	40 % to 96 %
198	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggegate	Crushing Value	IS 2386 (Pt-4)-1963, RA: 2016	5 % to 60 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 25 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
199	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	10% Fine Value	IS 2386 (Pt-4)-1963, RA : 2016	5 T to 50 T
200	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Abrasion Value (Los Angeles)	IS 2386 (Pt-4)-1963, RA: 2016	5 % to 60 %
201	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Alkali Aggregate Reactivity	IS 2386 (Pt-7)-1963, RA: 2016	0.01 % to 2.0 %
202	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Bulk Density	IS 2386 (Pt-3)-1963, RA: 2016	1.50 kg/l to 4.50 kg/l
203	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Deleterious Material	IS 2386 (Pt-2)-1963, RA: 2016	0.1 % to 10 %
204	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Elongation Index	IS 2386 (Pt-1)-1963, RA: 2016	5 % to 50 %
205	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Flakiness Index	IS 2386 (Pt-1)-1963, RA: 2016	5 % to 50 %
206	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Impact Value	IS 2386 (Pt-4)-1963, RA: 2016	5 % to 60 %
207	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Sieve Analysis	IS 2386 (Pt-1)-1963, RA: 2016	80 to 2.36
208	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Soundness	IS 2386 (Pt-5)-1963, RA: 2016	0.01 % to 15 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 26 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
209	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Specific Gravity	IS 2386 (Pt-3)-1963, RA: 2016	2 to 4
210	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Voids	IS 2386 (Pt-3)-1963, RA: 2016	10 % to 60 %
211	MECHANICAL-BUILDINGS MATERIALS	Coarse Aggregate	Water absorption	IS 2386 (Pt-3)-1963, RA: 2016	0.1 % to 5.0 %
212	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Alkali Aggregate Reactivity	IS 2386 (Pt-7)-1963, RA: 2016	0.01 % to 2.0 %
213	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Bulk density	IS 2386 (Pt-3)-1963, RA: 2016	1.50 kg/l to 4.50 kg/l
214	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Deleterious Material	IS 2386 (Pt-2)-1963, RA: 2016	0.1 % to 10 %
215	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Material finer than 75 μ sieve	IS 2386 (Pt-1)-1963, RA: 2016	0.5 % to 20 %
216	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Mortar Making Properties	IS 2386 (Pt-6)-1963, RA: 2016	50 % to 100 %
217	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Organic Impurities	IS 2386 (Pt-2)-1963, RA: 2016	Qualitative
218	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Sieve Analysis	IS 2386 (Pt-1)-1963, RA: 2016	10 mm to 150 micron



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 27 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
219	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Soundness	IS 2386 (Pt-5)-1963, RA: 2016	0.01 % to 20 %
220	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Specific Gravity	IS 2386 (Pt-3)-1963, RA: 2016	2 to 4
221	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Voids	IS 2386 (Pt-3): 1963	10 % to 60 %
222	MECHANICAL-BUILDINGS MATERIALS	Fine Aggregate	Water absorption	IS 2386 (Pt-3): 1963	0.1 % to 5.0 %
223	MECHANICAL-BUILDINGS MATERIALS	Fresh Concrete	Air Content	IS:1199: 1959	0.1 % to 15 %
224	MECHANICAL-BUILDINGS MATERIALS	Fresh Concrete	Bleeding	IS:9103: 1999	0 % to 10 %
225	MECHANICAL-BUILDINGS MATERIALS	Fresh Concrete	Final Setting Time	IS:8142: 1976	30 minute to 2880 minute
226	MECHANICAL-BUILDINGS MATERIALS	Fresh Concrete	Initial Setting Time	IS:8142: 1976	30 minute to 2880 minute
227	MECHANICAL-BUILDINGS MATERIALS	Fresh Concrete	Workability of Concrete by Slump test	IS:1199: 1959	25 mm to 180 mm
228	MECHANICAL-BUILDINGS MATERIALS	Hardened Concrete	Compressive Strength	IS: 516: 1959	100 Kg/cm ² to 1200 Kg/cm ²



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 28 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
229	MECHANICAL-BUILDINGS MATERIALS	Hardened Concrete	Electrical Indication of Concrete's ability to resist Chloride Ion Penetration	ASTM: C1202: 2012	0 Coulombs to 5000 Coulombs
230	MECHANICAL-BUILDINGS MATERIALS	Hardened Concrete	Flexural Strength	IS: 516: 1959	20 Kg/cm ² to 100 Kg/cm ²
231	MECHANICAL-BUILDINGS MATERIALS	Hardened Concrete	Water Permeability of Hardened Concrete	IS 516 (Part-2-Sec-1): 2018	1 mm to 150 mm
232	MECHANICAL-BUILDINGS MATERIALS	Pulverized fuel Ash and Metakaoline	Specific Surface area by Blaine air Permeability Method	IS 1727 : 1967	150 m ² /kg to 600 m ² /kg
233	MECHANICAL-BUILDINGS MATERIALS	Pulverized fuel Ash, Metakaoline and Silica Fume	Compressive Strength at 07 days (w.r.t. control sample)	IS: 15388: 2003	70 % to 120 %
234	MECHANICAL-BUILDINGS MATERIALS	Pulverized fuel Ash, Metakaoline and Silica Fume	Compressive Strength at 28 days (w.r.t. control sample)	IS 1727: 1967	60 % to 110 %
235	MECHANICAL-BUILDINGS MATERIALS	Pulverized fuel Ash, Metakaoline and Silica Fume	Lime Reactivity	IS 1727: 1967	02 MPa to 20 MPa
236	MECHANICAL-BUILDINGS MATERIALS	Pulverized fuel Ash, Metakaoline and Silica Fume	Retained on 45 micron sieve	IS 1727: 1967	05 % to 50 %
237	MECHANICAL-BUILDINGS MATERIALS	Pulverized fuel Ash, Metakaoline and Silica Fume	Soundness (Autoclave Expansion)	IS 1727: 1967	0.01 % to 2.0 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 29 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
238	MECHANICAL- BUILDINGS MATERIALS	Pulverized fuel Ash, Metakaoline and Silica Fume	Specific Gravity	IS 1727: 1967	1.5 to 4.0
239	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Reinforcement Steel Bar	Bend Test	IS:1599: 2012	Qualitative
240	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Reinforcement Steel Bar	Elongation	IS: 1608 (Part-1): 2018	10 % to 40 %
241	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Reinforcement Steel Bar	Mass per meter run	IS: 1786: 2008	0.3 Kg to 8.5 Kg
242	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Reinforcement Steel Bar	Rebend Test	IS:1786: 2008	Qualitative
243	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Reinforcement Steel Bar	Tensile Strength	IS: 1608 (Part-1): 2018	250 N/mm ² to 800 N/mm ²
244	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Reinforcement Steel Bar	Yield Strength or 0.2 % proof stress	IS: 1608 (Part-1): 2018	250 N/mm ² to 800 N/mm ²



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (TESTING LABORATORIES), 34 KM STONE, DELHI- MATHURA ROAD, NH-2, BALLABGARH, FARIDABAD, HARYANA, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5296 Page No. : 30 / 30

Validity 17/03/2019 to 16/03/2021 Last Amended on 29/05/2019

S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
Site Facility					
1	NON-DESTRUCTIVE-BUILDING MATERIALS - REINFORCED CONCRETE STRUCTURES	Concrete	Rebound Hammer Test	IS 13311(part 2): 1992	10 N/mm ² to 70 N/mm ²
2	NON-DESTRUCTIVE-BUILDING MATERIALS - REINFORCED CONCRETE STRUCTURES	Concrete	Ultrasonic Pulse Velocity Test	IS 13311(part 1): 1992	1.5 km/s to 5.5 km/s