

CENTRE FOR QUALITY MANAGEMENT, STANDARDS AND CALIBRATION SERVICES



NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS
(Under the Administrative Control of Ministry of Commerce and Industry, Govt. of India)

CENTRE FOR QUALITY MANAGEMENT, STANDARDS AND CALIBRATION SERVICES

NCB's centre for Quality Management, Standards and Calibration Services (CQC) serves industry's needs through four programmes, namely: Total Quality Management, Standard Reference Materials, Interlaboratory Services and Calibration Services.

TOTAL QUALITY MANAGEMENT

- Laboratory Assessment and Proficiency Improvement services for testing laboratories.
- Quality Monitoring Service for input, process and output control and Quality Assurance in cement plants.
- Assistance in NABL accreditation of laboratories.
- Assessment of the Quality Assurance System in cement plants.
- Assistance in Statistical Process Control (SPC) and Statistical Quality Control (SQC) for process and product improvements.
- Application of TQM tools and techniques for Quality Improvement.
- Benchmarking Studies.
- Evaluation of Quality Performance and National Awards.



Calibration of Weighing Balance



Training Session for Senior Executives in progress at a Cement Plant site

STANDARD REFERENCE MATERIALS

Certified Reference Materials (CRMs), having known physical and chemical properties / composition, are required for calibration of analytical equipment, validation of testing procedures and optimizing the development and standardization of analytical techniques.

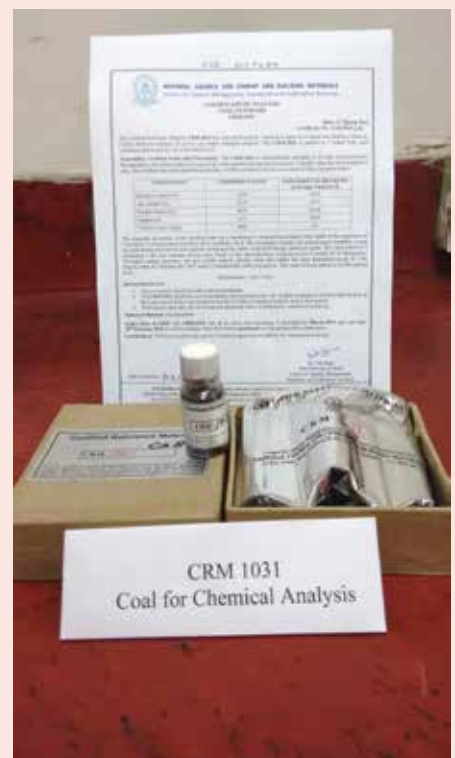
NCB has developed CRMs under its continuous programmed project (Standard Reference Materials) and so far more than 75 CRMs have been developed.



A few Certified Reference Materials

MATERIALS AVAILABLE

- Development and Supply of Certified Reference Materials (CRMs), including plant Specific Standards, for Calibration and Quality Control
- OPC, PPC, PSC, Fly Ash, CCP, WPC - Blaine Fineness & Specific Gravity (as per IS methods)
- OPC & PPC - Normal Consistency, Setting Time, Compressive Strength (as per IS methods)
- OPC, PPC, PSC - Chemical Parameters (as per IS methods)
- Gypsum, Limestone, Clay, Raw Meal, Clinker, Fly Ash and Granulated Slag - Chemical Parameters (as per IS methods)
- Coal - Moisture Content, Ash Content, Volatile Matter, Fixed Carbon, Sulphur and Calorific Value (as per IS methods)
- Hydrated Lime (for LR Test) - (as per IS method)
- OPC, Fly Ash & Sand - For checking residue on sieve (as per IS methods)



CALIBRATION SERVICES

ISO 17025 ACCREDITED (BY NABL)

NCB provides calibration services traceable to National / International Standards with measurement uncertainties as per ISO/IEC 17025 and NABL 141 guidelines. The calibration laboratory also follows the dynamic Quality System Accredited as per ISO/IEC 17025 by National Accreditation Board for Testing and Calibration Laboratories (NABL). The Centre is committed to providing Quality and Timely Service and ensuring Total Customer Satisfaction.

TEMPERATURE & RH

Sl.No.	Devices	Range	Calibration Measurement Capability
1	Liquid-in-glass thermometers, RTD / PRT / Temp. devices with Indicator	(-) 10 to 300°C	0.11/0.10/0.10°C
2	Thermo-couples / RTD with Indicator	300 °C to 600°C	0.2°C
3	Thermocouples with Indicator	600°C to 1200°C	1.5°C
4	Muffle Furnace	200°C to 1200°C	2.0°C
5	Hot Air Oven / Incubator	(-)10°C to 200°C	1.2°C
6	Humidity Indicator	30-95% RH	1.2% RH
7	Environmental Chamber	30-95% RH 15°C to 50°C	1.2% RH 0.28°C



Hygrometer Calibration



Calibration of Weights



Calibration of Pressure Gauge



Muffle Furnace Calibration

PRESSURE

Sl.No.	Devices	Range	Calibration Measurement Capability
1	Pressure Gauge / Transducers / Switches	3-61.1 Kg/cm ² 61.1-1200 Kg/cm ²	0.04% 0.01%

FORCE

Sl.No.	Devices	Range	Calibration Measurement Capability
1	CTM / UTM / FTM (Compression Mode)	3 kN to 3000 kN	0.30%

REVOLUTION

Sl.No.	Devices	Range	Calibration Measurement Capability
1	Tachometer (Contact/Non-Contact)	100 to 500 rpm	1.20%
2	Tachometer (Contact/Non-Contact)	500 to 1000 rpm	0.25%
3	Tachometer (Contact/Non-Contact)	1000 to 5000 rpm	0.10%
4	Tachometer (Non-Contact)	5000 to 10000 rpm	0.10%
5	Tachometer (Non-Contact)	10000 to 25000 rpm	0.10%
6	Vibrating Machine / Table / Planetary Mixer	11600 to 12400	0.10%
7	Planetary Mixer Low Speed	60 rpm to 64 rpm	0.25%
	High Speed	115 rpm to 135 rpm	0.25%
8	Flow Table	96 rpm to 104 rpm	0.30%
9	Loss Angles Machine	30 rpm to 33 rpm	0.60%

DIMENSION

Sl.No.	Devices	Range	Calibration Measurement Capability
1	Test Sieves (by Profile Projector)	45 µm to 850 µm 1 mm to 10 mm	3.2 µm 5.0 µm
2	Test Sieves (by Vernier Caliper)	> 10 mm to 150 mm	59.0 µm
3	Glass Scales (by Profile Projector)	Upto 50 mm >50 mm to 200 mm	58.0 µm 58.0 µm
4	Vernier Caliper	Upto 300 mm	15.0 µm
5	Dial Gauge	0 to 25 mm	4.09 µm
6	Steel Scale	Upto 200 mm	100 µm

MASS / VOLUME

Sl.No.	Devices	Range	Calibration Measurement Capability
1	Weighing Balances	0 to 200 g 5 Kg to 150 Kg	0.07 mg to 2.7 mg 85.5 mg to 500 mg
2	Standard Weights	1 mg to 100 Kg	0.015 mg to 0.54 g
3	Blaine Cell	-	0.0020 cm ²
4	Volumetric Glassware (Pipette, Burette, Measuring Cylinder & Flasks)	3 ml to 1000 ml	0.002 ml to 0.030 ml

MISCELLANEOUS (OUT OF NABL SCOPE)

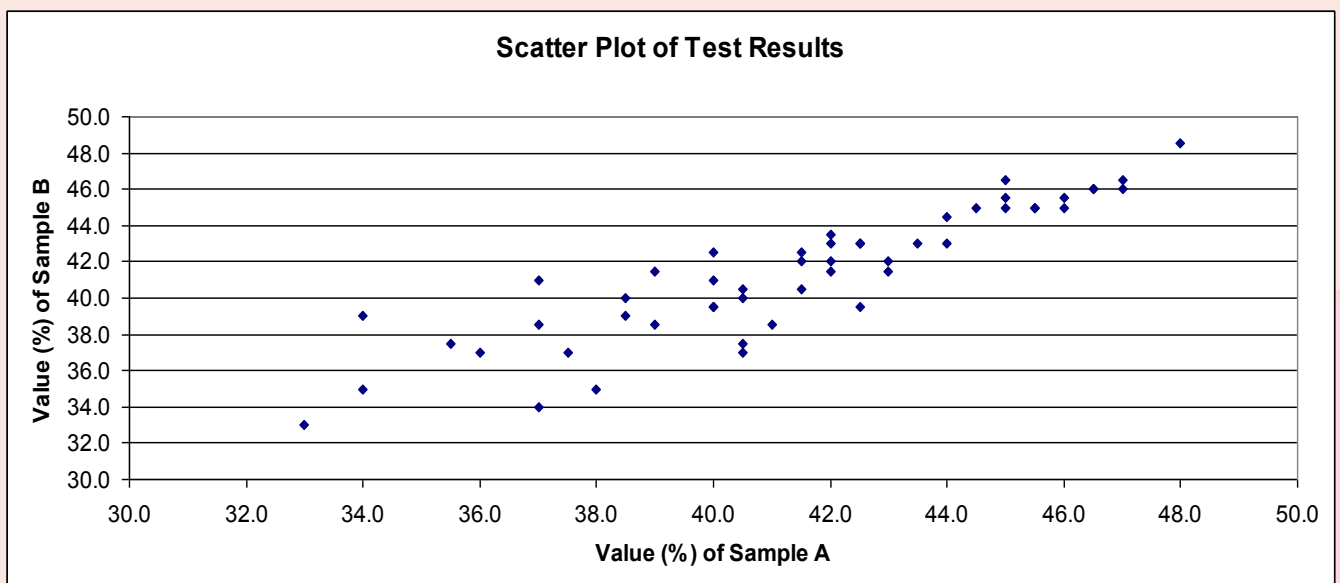
Sl.No.	Devices	Range
1	Concrete Test Hammer	Type 'N' & 'NR'
2	Stop Watch	Upto 30 Minutes
3	Load Indicators	Upto 3000 kN
4	Proving Rings / Load Cells / Dynamometers	3 kN to 3000 kN
5	Batching / RMC Plant	Upto 450 Kg

INTERLABORATORY SERVICES



ISO 17025 ACCREDITED (BY NABL) PROFICIENCY TESTING SERVICES

PT schemes are conducted by CQC through Interlaboratory Services (ILS) programme in accordance with ISO/IEC 17043:2010. Introduction of ISO 17043:2010, which lays down the requirements for proficiency testing providers, has galvanized the testing and calibration laboratories in all sectors to look for accredited PT providers. It is a matter of pride that National Council for Cement and Building Materials (NCB) has become the *first NABL accredited PT provider in the country*, in accordance with ISO 17043:2010. The scope of accreditation in chemical and mechanical field is given below.



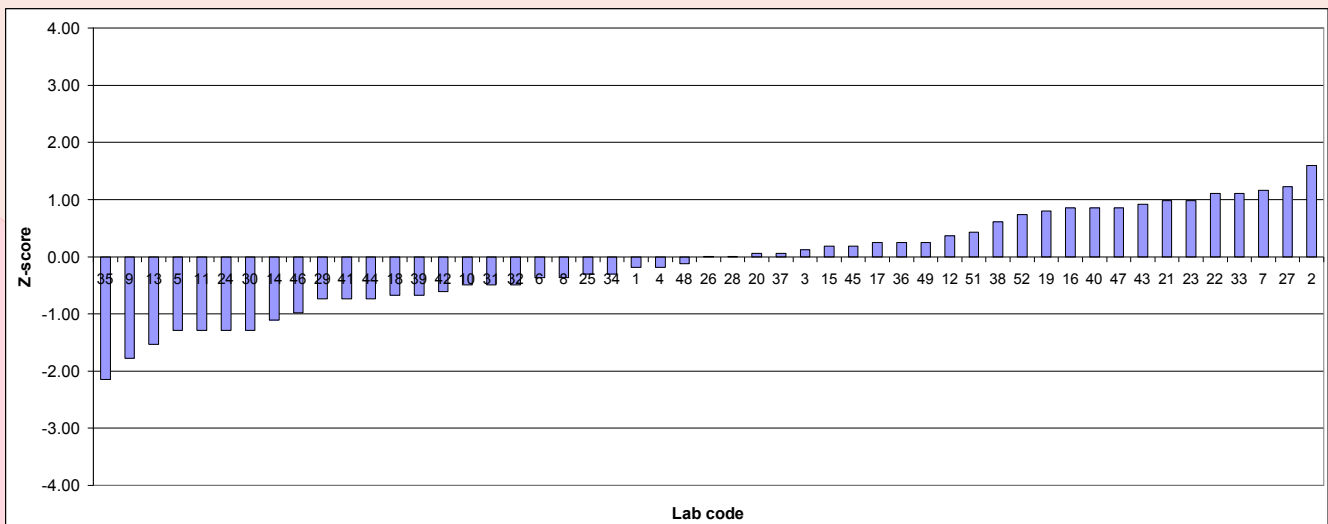
Scatter Plot of 7-day (168 hrs.) Compressive Strength Results in OPC

CHEMICAL TESTING

Sl. No.	Proficiency Testing Item	Parameter
1	Limestone	Loss on Ignition, Silicon Dioxide, Iron Oxide, Aluminium Oxide, Calcium Oxide, Magnesium Oxide, Sodium Oxide, Potassium Oxide, Free Silica
2	Clinker	Loss on Ignition, Silicon Dioxide, Iron Oxide, Aluminium Oxide, Calcium Oxide, Magnesium Oxide, Sulphur Trioxide, Insoluble Residue, Sodium Oxide, Potassium Oxide, Chloride
3	Cement	Loss on Ignition, Silicon Dioxide, Iron Oxide, Aluminium Oxide, Calcium Oxide, Magnesium Oxide, Sulphur Trioxide, Insoluble Residue, Sodium Oxide, Potassium Oxide, Chloride
4	Fly Ash	Loss on Ignition, Silicon Dioxide, Iron Oxide, Aluminium Oxide, Calcium Oxide, Magnesium Oxide, Sulphur Trioxide, Sodium Oxide, Potassium Oxide
5	Concrete Admixture	Dry Material Content, Ash Content, pH, Chloride Ion Content
6	Water for Concrete	Organic (volatile) Filterable Residue, Inorganic (fixed) Filterable Residue, Suspended (non-filterable) Matter, Sulphates, Chlorides, pH, Acidity / Alkalinity
7	Coal/Coke/Pet coke	Moisture, Ash, Volatile Matter, Sulphur, Calorific Value

MECHANICAL TESTING

Sl. No.	Proficiency Testing Item	Parameter
1	Cement	Specific Surface (Blaine fineness), Normal Consistency, Setting Time, Compressive Strength, Residue on 90 μm Sieve
2	Fly ash	Retention on 45 μm Sieve, Blaine Fineness, Lime Reactivity, Compressive Strength
3	Aggregate	Sieve Analysis, Apparent Specific Gravity, Water Absorption, Bulk Density, Crushing Value, 10% Fines Value, Impact Value, Abrasion Value, Flakiness Index, Elongation Index
4	Mortar/Concrete	Compressive Strength
5	Tile (Ceramic)	Water Absorption
6	Burnt Clay Building Brick	Water Absorption, Compressive Strength
7	Steel Bar	Normal Mass, Yield Stress, Elongation, Tensile Strength



Bar Chart of Reproducibility – 7-day (168 hrs.) Compressive Strength in OPC



ABOUT THE COUNCIL

The six corporate Centres of the Council guide the activities at the different units. The Centres and their main areas of activity are :

Centre for Cement Research and Independent Testing (NCB-CRT) - Fundamental and Basic Research, Cement and Other Binders, Wastes Utilisation, Refractories & Ceramics and Testing Services.

Centre for Mining, Environment, Plant Engineering and Operations (NCB-CME) - Geology, Mining & Raw Materials, Process Optimisation & Productivity Enhancement, Energy Management, Plant Maintenance, Project Engineering & System Design, Environmental Management.

Centre for Construction Development and Research (NCB-CDR) - Structural Optimisation & Design, Structural Assessment & Rehabilitation, Concrete Technology, Construction Technology and Management.

Centre for Industrial Information Services (NCB-CIS) - Industrial Information and Data Bank, Integrated IT Solution, Publication, Seminars & Conferences, International & National Linkages, Image Building.

Centre for Continuing Education Services (NCB-CCE) - Long Term & Short Term Courses, Special Group Training Programmes, Simulator Based Courses, Distance Learning Correspondence Courses, Workers' Development Programmes.

Centre for Quality Management, Standards & Calibration Services (NCB-CQC) - Total Quality Management, Calibration Services, Standard Reference Materials, Interlaboratory Services.

FOR FURTHER DETAILS, PLEASE CONTACT:

DIRECTOR GENERAL

National Council for Cement and Building Materials
34 km Stone, Delhi-Mathura Road (NH-2), Ballabgarh 121 004, Haryana, INDIA
Phone : 91-129-2242051; 4192222 • Fax : 91-129-2242100, 2246175
E-mail : nccbm@ncbindia.com • Website: www.ncbindia.com

HYDERABAD UNIT

NCB Bhavan, Old Mumbai Road,
Gachibowli-Mehdipatnam Road,
Hyderabad - 500 104, Telangana, INDIA
Phone : 91-40-23180400, 23180426
Fax : 91-40-23000343
E-mail : hyd2_ncbhyd@bsnl.in

AHMEDABAD UNIT

Smeet Bungalows, B/h, Planet House-2 (PH-2)
Opp. Shukan Shubh-Labh Aptt.
Off. Judges Bangalows Road, Boadakdev,
Ahmedabad - 380 054, Gujarat, INDIA
Phone : 91-79-26855840 • Fax : 91-79-40305841
E-mail : brcncb@rediffmail.com