

**Laboratory** Independent Calibration Laboratories, National Council for Cement and Building Materials, 34, KM Stone, NH-2, Delhi-Mathura Road, Ballabgarh, Haryana

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

**Certificate Number** CC-2625

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**Validity** 12.08.2018 to 11.08.2020

**Last Amended on** -

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>MECHANICAL CALIBRATION</u></b>				
<b>I. DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)</b>				
1.	Test Sieves <sup>s</sup>	45 $\mu$ m to 850 $\mu$ m 1 mm to 10 mm  > 10 mm to 150 mm	3 $\mu$ m 5 $\mu$ m  53 $\mu$ m	Using Profile Projector by Comparison Method  Using Vernier Caliper by Comparison Method
2.	Steel Scale <sup>s</sup>	Upto 600 mm	0.50 L (L is in mtr.)	Using Profile Projector by Comparison Method
3.	Vernier Caliper <sup>s</sup>	Upto 300 mm	15 $\mu$ m	Using Caliper Checker by Comparison Method
4.	Dial Gauge <sup>s</sup> (Plunger) L.C.: 0.001 mm	0 to 25 mm	8 $\mu$ m	Using Dial Gauge Calibrator by Comparison Method
5.	Measuring Tape <sup>s</sup>	Upto 5 m	0.12 L (L is in mtr.)	
<b>II. PRESSURE INDICATING DEVICES</b>				
1.	Pressure <sup>s</sup> (Pressure Gauge, Calibrator, Pressure Switch)	3 kg/cm <sup>2</sup> to 61.1kg/cm <sup>2</sup> 61.1 kg/cm <sup>2</sup> to 1222 kg/cm <sup>2</sup>	0.04 % rdg 0.050 % rdg	Using Dead Weight Tester & DWT
<b>III. UTM, TENSION CREEP AND TORSION TESTING MACHINE</b>				
1.	Force Measuring System of UTM <sup>s</sup> (Compression Mode) Class 1 and Coarser	3 kN to 3000 kN	0.31 %	Using Proving Rings/ Bow Dynamometer/ Load Cell with display

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Convenor

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Program Manager

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<b>IV.</b>	<b>ACCELERATION AND SPEED</b>			
1.	Tachometer <sup>s</sup> (Non-Contact)	60 rpm to 4999 rpm 5000 rpm to 25000 rpm	1.5 % 0.10 %	Using Digital Tachometer by Comparison Method
	Contact	20 rpm to 4999 rpm 5000 to 12000 rpm	1.5 % 0.10 %	
2.	RPM of Vibrating Machine <sup>#</sup>	11600 rpm to 12400 rpm	0.10 %	Using Digital Tachometer
3.	RPM of Planetary Mixer <sup>#</sup> Low Speed High Speed	57 rpm to 67 rpm	5.4 %	Using Digital Tachometer
		115 rpm to 135 rpm	2.7 %	
4.	RPM of Flow Table <sup>#</sup>	96 rpm to 104 rpm	3.5 %	Using Digital Tachometer
5.	RPM of Loss Angeles Machine <sup>#</sup>	30 rpm to 33 rpm	10.9 %	Using Digital Tachometer
<b>V.</b>	<b>WEIGHTS</b>			
1.	Weight <sup>s</sup> F2 Class or Coarser	1 mg	0.010 mg	Using E2 Class Weights and Precision Balance by Substitution Method based on ABA Cycle as per OIML R 111 (2004)
		2 mg	0.010 mg	
5 mg		0.010 mg		
10 mg		0.010 mg		
20 mg		0.010 mg		
50 mg		0.010 mg		
F1 Class or Coarser	100 mg	0.011 mg		
	200 mg	0.019 mg		
	500 mg	0.013 mg		

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	F1 Class or Coarser	1g 2g 5g 10g 20g 50g 100g 200g 500 g 1 kg 2 kg 5 kg	0.014 mg 0.020 mg 0.019 mg 0.022 mg 0.039 mg 0.036 mg 0.070 mg 0.150 mg 0.001 g 0.001 g 0.001 g 0.002 g	
	M1 Class or Coarser	10 kg 20 kg 50 kg 100 kg	0.10 g 0.10 g 0.14 g 0.54 g	Using F1 and F2 Class Weights and Precision Balance by Substitution Method based on ABA Cycle as per OIML R 111 (2004)
<b>VI.</b>	<b>WEIGHING SCALE AND BALANCE</b>			
1.	Weighing Balance <sup>#</sup> d = 0.01 mg d = 1.0 kg d=100 mg	0 to 200 g 0 to 5.0 kg > 5 kg to 20 kg > 20 kg to 50 kg > 50 kg to 150 kg	0.07 mg 2.5 mg 85.0 mg 115.0 mg 500 mg	Using E2, F1 and F2 Class Weights based on OIML-R-76
<b>VII.</b>	<b>VOLUME</b>			
1.	Pipette <sup>s</sup>	Upto 5 ml > 5 ml to 10 ml >10 ml to 50 ml >50 ml to 100 ml	0.002 ml 0.004 ml 0.010 ml 0.023 ml	Using Precision Balance, Distilled Water and Reference Weights (E2 Class based on IS 4787 & ISO 8655-6)

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2.	Burette <sup>s</sup>	Upto 5 ml > 5 ml to 10 ml >10 ml to 50 ml >50 ml to 100 ml	0.002 ml 0.004 ml 0.010 ml 0.022 ml	Using Precision Balance, Distilled Water and Reference Weights (E2 Class based on IS 4787 & ISO 8655-6)
3.	Measuring Cylinder, Volumetric Flasks <sup>s</sup>	Upto 5 ml > 5 ml to 10 ml >10 ml to 50 ml >50 ml to 100 ml >100 ml to 250 ml >250 ml to 500 ml > 500 ml to 1000 ml	0.002 ml 0.005 ml 0.010 ml 0.022 ml 0.023 ml 0.025 ml 0.031 ml	Using Precision Balance, Distilled Water and Reference Weights (E2 Class based on IS 4787 & ISO 8655-6)
4.	Volume <sup>s</sup> (Blaine Cell)	1.6 cm <sup>3</sup> to 2.0 cm <sup>3</sup>	0.0020 cm <sup>3</sup>	Using Blaine Apparatus with Precision Balance

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<b><u>THERMAL CALIBRATION</u></b>				
<b>1.</b>	<b>TEMPERATURE</b>			
1.	Liquid In Glass Thermometer, RTD / Thermocouple With Temperature Indicators / Controller/ Data Logger <sup>\$</sup>	(-) 10 °C to 100 °C 100 °C to 300 °C	0.08 °C 0.08 °C	Using PRT Probe with Temperature Indicator & Liquid Bath by Comparison Method
2.	RTD/Thermocouple With Temperature Indicator/ Controller / Data Logger <sup>\$</sup>	300 °C to 600 °C	0.2 °C	Using PRT Probe with Temperature Indicator & Dry Block Calibrator by Comparison Method
3.	Thermocouple With Temperature Indicator/ Controller / Data Logger <sup>\$</sup>	600 °C to 1200 °C	1.5 °C	Using S Type Thermocouple with Temperature Indicator, High Temperature Furnace by Comparison Method
4.	Temperature Indicator With Sensor Of Liquid Bath, Dry Block, Incubator Incubator (for Non Medical Applications), Oven *	(-) 10 °C to 200 °C	1.2 °C	Using PRT Temperature with Indicator
5.	Temperature Indicator With Sensor Of Muffle Furnace*	200 °C to 1200 °C	1.9 °C	Using S Type Thermocouple with Temperature Indicator

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II.	<b>SPECIFIC HEAT AND HUMIDITY</b>			
1.	Humidity Indicator With Inbuilt Or External Sensor, Thermohygrometer <sup>§</sup>	30 % RH to 95 % At $\approx$ 25 °C	0.8 % RH At $\approx$ 25 °C	Using RH and Temperature Indicator, RH Generator /Chamber by Comparison Method
2.	Temperature Humidity Indicator With Sensor Of Environmental Chamber <sup>*</sup>	30 % RH to 95 % RH At $\approx$ 25 °C  15 °C to 50 °C	1.2 % RH at $\approx$ 25 °C  0.30 °C	Using RH Meter with Probe by Single Position Calibration  Using RTD with Temperature Indicator

\* Measurement Capability is expressed as an uncertainty ( $\pm$ ) at a confidence probability of 95%

§ Only in Permanent Laboratory

\* Only for Site Calibration

# The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

° Laboratory can also calibrate instruments/devices of coarser resolution / least count within the accredited range using same reference standard/ master equipment under the scope of accreditation.

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