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Calibration Laboratory CL-257

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date July 15, 2024

Expiration Date February 1, 2025

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ALQIMMA INSPECTION ESTABLISHMENT

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Accredited to ISO/IEC 17025:2017 *Effective Date July 15, 2024*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Vernier Calipers (Plan/ Dial/ Digital)	Up to 300 mm	9.0 µm	Using Gauge Blocks as per Calibration Procedure Number- LABP-002, based on DIN 862 and DIN 863
Micrometers (Plan/ Dial/ Digital)	Up to 100 mm 100 mm to 300 mm	4.5 µm 6.1 µm	Using Gauge Blocks as per Calibration Procedure Number- LABP-010, based on DIN 862 and DIN 863
Thickness Gauge	Up to 100 mm	8.3 µm	Using Gauge Blocks as per Calibration Procedure Number- LABP-031, based on NPL Guide No.40
Ultrasonic Thickness Gauge	Up to 100 mm	8.8 µm	Using Gauge/Step Block as per Calibration Procedure Number- LABP-033 ASTM D6132
Feeler Gauge	Up to 2 mm	9.3 µm	Using Digital Micrometer as per Calibration Procedure Number- LABP-011, BS 957
Mold Blocks	Up to 300 mm	19 µm	Using Digital Caliper as per Calibration Procedure Number- LABP-016, based on NPL Guide No.40
Test Sieves	Up to 125 mm	51 µm	Using Digital Caliper as per Calibration Procedure Number-LABP-039, based on ASTM E11

** If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Liquid Limit Device	10 mm	0.09 mm	Using Digital Caliper as per Calibration Procedure Number- LABP-041 ASTM D4318
Slump Cone	300 mm	0.09 mm	Using Digital Caliper as per Calibration Procedure Number- LABP-042, ASTM C143
Los Angeles Machine[6]	33 rpm 5500 g 50 mm	1.2 rpm 0.4 g 0.01 mm	Using Digital Caliper, Tachometer and Weighing Scale as per Calibration Procedure Number-LABP-040 ASTM C131
Mechanical			
Weighing Balances[6]	1 mg to 100 g 100 g to 1 kg 1 kg to 10 kg 10 kg to 24 kg 24 kg to 40 kg 40 kg to 500 kg 500 kg to 1000 kg	0.22 mg 7.2 mg 65 mg 77 mg 0.63 g 310 g 320 g	Using F1 Weights as per Calibration Procedure Number-LABP-036, based on SASO 524
Safety Relief Valve	0 bar to 60 bar 60 bar to 100 bar 100 bar to 1000 bar	0.02 bar 0.12 bar 0.22 bar	Using Reference Pressure Gages as per Calibration Procedure Number-LABP-026, based on API 526 and API 527
Dial Pressure Gauges/ Pressure Chart Recorder/ Pressure Transmitters/ Digital Pressure Gauge	0 bar to 10 bar 10 bar to 30 bar 30 bar to 60 bar 60 bar to 1000 bar	6.5 mbar 8.7 mbar 1.4 mbar 0.22 bar	Using Reference Pressure Gauges as per Calibration Procedure Number-LABP-022, based on BS/EN 837-1
Vacuum Gauges	0 mm Hg to 750 mm Hg	4.9 mmHg	Using Reference Pressure Gauges using comparison method as per Calibration Procedure Number-LABP-034, based on BS EN 837-1
Batching Plant[6]	Up to 1000 kg	320 g	Using M1 Weights as per Calibration Procedure Number-LABP-050 ASTM-D4753
Force Compression[6]	Up to 3000 kN	0.18 %	Using Load Cell as per Calibration Procedure Number-LABP-044 BS EN ISO 7500-1
Pipettes, Burettes	0 µL to 100 µL 100 µL to 1 mL	1.1 µL 1.6 µL	Using Load Cell as per Calibration Procedure

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Pipettes, Burettes (continued)	1 mL to 10 mL 10 mL to 50 mL	5.6 µL 0.29 mL	Number-LABP-045 & 046 NIST IR 7383
Volumetric Beaker/Cylinder/Flask/ Pycnometer (Volume Only)	1 mL to 20 mL 20 mL to 50 mL 50 mL to 100 mL 100 mL to 2000 mL	0.29 mL 0.29 mL 0.29 mL 0.29 mL	Using Load Cell as per Calibration Procedure Number-LABP-047 NIST IR 7383
Sound Level Meter	94 dB 114 dB	0.68 dB 0.68 dB	Using Sound Level Calibrator as per Calibration Procedure Number-LABP-048 NIST.S.1.4
Thermal			
RTD/ Thermocouple /Temperature Transmitters[6] / (Dial/Digital) Thermometer	-23 °C to 120 °C 120 °C to 650 °C	0.19 °C 0.20 °C	Using RTD's, Dry Block, RTD Thermometer, Multi-Function Calibrator, as per Calibration Procedure Number-LABP-006, LABP-008 and LABP-025, based on EURAMET CG-11 and EURAMET CG-08
Incubators [6]/ Water Baths[6]/ Autoclaves [6]/ Ovens[6] / Furnace[6]	Ambient to 1500 °C	0.24 °C	Using RTD's, RTD Thermometer, Multi-Function Calibrator as per Calibration Procedure Number-LABP-038/ LABP-035/ LABP-001/ LABP-019/ LABP-013. (Single Sensor Method), based on EURAMET CG-11, EURAMET CG-08 and ASTM E145
Freezers/ Refrigerators[6]	-80 °C to 0 °C	0.24 °C	RTDs, RTD Thermometer, Multi-Function Calibrator as per Calibration Procedure Number-LABP-037, based on EURAMET CG-11 and EURAMET CG-08
Electrical – DC/LF			
DC Voltage – Generate[3]	0 mV to 300 mV 0.3 V to 3 V 3 V to 30 V 30 V to 300 V 300 V to 1000 V	3.3 µV 32 µV 0.34 mV 4.0 mV 13 mV	Using Multi Product Calibrator as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15
DC Voltage – Measure[4]	0 mV to 100 mV 100 mv to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	2.6 µV 0.03 mV 0.31 mV 3.1 mV 0.02 V	Using Precision Multimeter as per Calibration Procedure number-LABP-018, NICT Journal-vol63no1-02-03

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
DC Current – Generate[3]	0 µA to 300 µA 0 mA to 3 mA 0 mA to 30 mA 0 mA to 300 mA 0 A to 1 A 0 A to 2 A 0 A to 3 A 0 A to 10 A 0 A to 20 A 0 A to 1000 A	0.01 µA 0.12 µA 0.77 µA 9.0 µA 53 µA 0.11 mA 0.30 mA 0.77 mA 2.4 mA 0.58 A	Using Multi Product Calibrator / Coil (50 Turns) as per Calibration Procedure Number-LABP-018, based on EURAMET cg-15
DC Current – Measure[4]	0 µA to 100 µA 100 µA to 500 µA 500 uA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 6 A 6 A to 12 A 12 A to 20 A 20 A to1000 A	0.01 µA 0.08 µA 0.09 µA 0.78 µA 8.3 µA 0.051 mA 0.88 mA 2.5 mA 62 mA 0.82 A	Using Precision Multimeter as per Calibration Procedure Number-LABP-018, NICT Journal-vol63no1-02-03
DC Resistance – Generate[3]	0 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	1.7 mΩ 16 mΩ 0.14 Ω 1.7 Ω 24 Ω 0.56 kΩ 43 kΩ 0.67 MΩ	Using Multi Product Calibrator as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15
DC Resistance – Measure[4]	0 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	1.8 mΩ 8.1 mΩ 1.7 Ω 2.7 Ω 0.16 kΩ 0.33 kΩ 15 kΩ 0.63 MΩ	Using Precision Multimeter as per Calibration Procedure Number-LABP-018, NICT Journal-vol63no1-02-03
AC Voltage – Generate[3]	0 mV to 100 mV (10 Hz to 500 kHz) 0 V to 1 V (10 Hz to 500 kHz) 0 V to 10 V (10 Hz to 100 kHz)	0.06 mV 0.41 mV 4.1 mV	Using Multi Product Calibrator as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Voltage – Generate[3] (continued)	0 V to 100 V (45 Hz to 100 kHz) 0 V to 1000 V (45 Hz to 10 kHz)	20 mV 0.11 V	Using Multi Product Calibrator as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15
AC Voltage – Measure[4]	0 mV to 100 mV (3 Hz to 300 kHz) 100 mV to 1 V (10 Hz to 300 kHz) 1 V to 10 V (10 Hz to 300 kHz) 10 V to 100 V (10 Hz to 300 kHz) 100 V to 750 V (10 Hz to 300 kHz)	0.21 mV 0.32 mV 3.1 mV 0.03 mV 0.30 V	Using Precision Multimeter as per Calibration Procedure Number-LABP-018, NICT Journal-vol63no1-02-03
AC Current – Generate[3]	30 µA to 100 µA (10 Hz to 30 kHz) 100 µA to 1 mA (10 Hz to 30 kHz) 1 mA to 100 mA (10 Hz to 30 kHz) 100 mA to 1 A (10 Hz to 10 kHz) 1 A to 2 A (10 Hz to 10 kHz) 2 A to 10 A (45 Hz to 5 kHz) 10 A to 20 A (45 Hz to 5 kHz) 20 A to 1000 A (@ 60 Hz)	0.09 µA 0.75 µA 0.06 mA 1.1 mA 8.4 mA 11 mA 0.04 A 0.79 A	Using Multi Product Calibrator / (50 T coil) as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15
AC Current – Measure[4] at 3 Hz to 10 kHz	3 µA to 100 µA 1 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 500 mA	0.11 µA 0.67 µA 11 µA 0.08 mA 0.31 mA	Using Precision Multimeter as per calibration Procedure Number-LABP-018, NICT Journal-vol63no1-02-03

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Current – Measure[4] at 3 Hz to 10 kHz (continued)	500 mA to 1 A 1 A to 6 A 6 A to 12 A 12 A to 20 A 20 A to 10000 A	0.63 mA 4.8 mA 0.02 A 0.062 A 0.82 A	Using Precision Multimeter as per calibration Procedure Number-LABP-018, NICT Journal-vol63no1-02-03
Electrical Simulation of Thermocouples – Generate[3] and Measure[4]			Using Multi Product Calibrator (with TC measuring option) as per calibration Procedure Number-LABP-018, based on EURAMET CG-11
Type B	0 ºC to 1750 ºC	Generate: 0.14 ºC Measure: 0.14 ºC	
Type C	0 ºC to 2050 ºC	Generate: 0.14 ºC Measure: 0.14 ºC	
Type E	-250 ºC to 1000 ºC	Generate: 0.14 ºC Measure: 0.14 ºC	
Type J	-210 ºC to 1200 ºC	Generate: 0.15 ºC Measure: 0.15 ºC	
Type K	-250 ºC to 1370 ºC	Generate: 0.14 ºC Measure: 0.14 ºC	
Type N	-250 ºC to 1250 ºC	Generate: 0.14 ºC Measure: 0.14 ºC	
Type S	0 ºC to 1600 ºC	Generate: 0.15 ºC Measure: 0.15 ºC	
Type T	-250 ºC to 400 ºC	Generate: 0.15 ºC Measure: 0.15 ºC	
Capacitance – Generate[3,5]	0 pF to 225.0 pF (0 Hz to 5 kHz)	0.6 pF	Using Multi Product Calibrator as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15
	225.0 pF to 300.0 pF (0 Hz to 1 kHz)	0.63 pF	
	300.0 pF to 1 nF (0 Hz to 1 kHz)	0.81 pF	
	1 nF to 10 nF (0 Hz to 1 kHz)	5.0 pF	
	10 nF to 30 nF (0 Hz to 1 kHz)	15 pF	

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Capacitance – Generate[3,5] continued	30 pF to 100 nF (0 Hz to 1 kHz) 100 nF to 300 nF (0 Hz to 1 kHz) 300 nF to 3 µF (0 Hz to 100 Hz) 3 µF to 10 µF (0 Hz to 100 Hz) 10 µF to 30 µF (0 Hz to 100 Hz) 30 µF to 100 µF (0 Hz to 50 Hz) 100 µF to 300 µF (0 Hz to 50 Hz) 300 µF to 3 mF (0 Hz to 6 Hz) 3 mF to 30 mF (0 Hz to 0.6 Hz) 30 mF to 100 mF (0 Hz to 0.2 Hz)	0.05 nF 0.12 nF 1.5 nF 6.0 nF 0.03 µF 0.15 µF 0.37 µF 3.6 µF 0.05 mF 0.12 mF	Using Multi Product Calibrator as per Calibration Procedure Number-LABP-018, based on EURAMET CG-15
Capacitance – Measure[4]	0.5 nF to 1 nF 1 nF to 10 nF 10 nF to 100 nF 100 nF to 1 µF 1 µF to 10 µF	0.97 pF 0.97 nF 4.3 pF 0.43 nF 0.66 nF	Using Precision Multimeter as per Calibration Procedure Number-LABP-018, NICT Journal-vol63no1-02-03
Time and Frequecy			
Centrifuge/Extraction Machine[6] (revolution per minute measurements)	Up to 4000 rpm 4000 rpm to 99,999 rpm	2.1 rpm 2.6 rpm	Using Reference Tachometer as per LABP-049 ASTM-D2172
Chemical/Gas			
pH Meters (Fixed Values)	4 pH 7 pH 10 pH	0.06 pH 0.06 pH 0.06 pH	Using Certified Reference Buffer Solutions as per Calibration Procedure Number-LABP-020, based on EQ-01-08 and ASTM D1293

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Conductivity Meter (Fixed Values)	100 µS/cm 1417 µS/cm 3900 µS/cm	1.4 % 1.4 % 1.4 %	Using Certified Reference Solutions as per Calibration Procedure Number-LABP-004, based on ASTM D1125
Multi Gas Detectors	CH_4: 50 %LEL, O_2: 20.9 %, H_2S: 25 ppm CO: 100 ppm NH_3: 99.99 % SO_2: 10 ppm NO_2: 3 ppm	2.1 % 2.1 % 2.1 % 2.1 % 2.1 % 5.0 % 5.0 %	Using Certified Standard Span Calibration Gases as per Calibration Procedure Number- LABP-017, based on BS EN 60079-29-2
TDS Meter	100 ppm 500 ppm	0.15 % 0.74 %	Using Certified Reference Solutions as per Calibration Procedure Number-LABP-028 ASTM-D5907

[1]The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

[2]When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

[3]Capability is suitable for the calibration of measuring devices in the stated ranges.

[4]Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

[5]Stated uncertainties are valid for the ranges of frequencies given, but the actual frequency applied by the calibrator may be dependent on the measurement device under calibration.

[6]Also available as site calibration. Note that actual measurement uncertainties achievable at a customer's site can normally be expected to be larger than the uncertainties listed on this Scope of Accreditation.

Notes:
ppm = parts per million
LEL=Lower Explosive Meter