



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

INSTROTEK, INC⁵
1 Triangle Drive
Research Triangle Park, NC 27709
Alexis Jones Phone: 919 875 8371

CALIBRATION

Valid To: *SEE FOOTNOTE 5*

Certificate Number: 6369.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests listed below^{1, 4}:

I. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Master Density Blocks	(1120 to 2723) kg/m ³	0.1 % of reading	Calipers, load cells, scales, & class 1 weights; ASTM D7759	RDU
Master Moisture Blocks	(16 to 800) kg/m ³	0.2 % of reading	Calipers, load cells, scales, & class 1 weights; ASTM D7759	RDU
In-House Master Gauges (Density System)	Density: (1120 to 2723) kg/m ³	0.2 % of reading	Calibrated on master density & master moisture blocks; ASTM D7759	RDU
In-House Master Gauges (Moisture System)	Moisture: (16 to 800) kg/m ³	1 % of reading	Calibrated on master density & master moisture blocks; ASTM D7759	RDU

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Secondary Density Reference Blocks, Including ValiDator I & II Systems ³	(1120 to 2723) kg/m ³ (16 to 800) kg/m ³	0.3 % of reading 1 % of reading	InstroTek 3500, Troxler 3430; ASTM D7759	RDU, LAS, GRR, SFO, DEN, PHL
Gyratory Internal Angle ³	(0.4 to 2.5)°	0.015°	Pine RAM device; AASHTO T312	RDU
Gyratory Compaction	(25 to 300) mm	0.0015 mm	1-2-3 blocks	RDU
Calipers ³	(1 to 300) mm	5.8 μm	Gage blocks, ASTM B89.1.14	RDU
Micrometers ³	(1 to 50) mm	0.7 μm	Gage blocks, ASTM D6027	RDU
Dial Indicators ³	(1 to 100) mm	0.29 μm	Gage blocks, ASTM D6027	RDU
Displacement Transducers ³	(1 to 50) mm	0.28 μm	Gage blocks, ASTM D6027	RDU
Steel Rulers ³	(1 to 600) mm	0.6 mm	Gage blocks, calipers, & sight glass; ASTM F2203	RDU
Gyratory & Proctor Molds ³	(8 to 5000) cm ³	60 μm ³	Mitutoyo three-point bore gauge, & Mitutoyo absolute caliper; AASHTO T312 & ASTM D1557	RDU
Gage Blocks ³	(1 to 100) mm	1.4 μm	Mitutoyo digimatic indicator & grade 0 gage blocks; ASME B89.1.2M	RDU

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Sieves ³	(0.074 to 4.75) mm	0.2 mm	Fowler optical comparator; ASTM E11	RDU
	(9.5 to 50) mm	0.6 mm	Mitutoyo caliper; ASTM E11	

II. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Force – Compression Tension ³	(50 to 2000) lbf	0.02 % of reading	ASTM E4 2-kip load cell	RDU
	(2001 to 5000) lbf	0.02 % of reading	5-kip load cell	
	(5001 to 10 000) lbf	0.02 % of reading	10-kip load cell	
	(10 001 to 50 000) lbf	0.04 % of reading	50-kip load cell	
	(50 000 to 600 000) lbf	0.03 % of reading	600-kip load cell	
Proving Ring ³	(50 to 2000) lbf	0.03 % of reading + 0.16 lbf	ASTM E4 2-kip load cell	RDU
	(2001 to 10 000) lbf	0.03 % of reading + 0.16 lbf	10-kip load cell	

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments	Location
Pressure ³	(1 to 689) kPa	0.06 % of reading + 0.1 kPa	ASME B40.100 Fluke 700RG06 reference gauge	RDU
	(690 to 3447) kPa	0.06 % of reading + 0.5 kPa	Fluke 700RG07 reference gauge	
Vacuum ³	(101.3 to 0.13) kPa	0.14 kPa	Fluke 700GA4 vacuum gauge; ASME B40.100	RDU
Gyratory Compaction ³	(1500 to 18 000) N	0.5 % of reading	5000 lbf providing ring or 3000 lbf load cell; AASHTO T312	RDU
Scales & Balances ³	1 mg to 1000 g	(1.2 + 2.0 x 10 ⁻⁶ Wt) mg	NIST Handbook 44 Class 1 weights	RDU
	(1001 to 25 000) g	(9.4 + 2.5 x 10 ⁻⁶ Wt) mg		
	(25 001 to 100 000) g	(0.25 + 1. x 10 ⁻⁴ Wt) mg	NIST Class F weights	

III. Nuclear Radiation

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Nuclear Moisture/Density Gauges (Density System, Blocks, & ValiDator System)	Density: (1120 to 2723) kg/m ³	0.6 % of reading	Secondary density & moisture reference blocks; ASTM D7759	RDU, LAS, GRR, SFO, DEN, PHL
	Moisture: (16 to 800) kg/m ³	2.0 % of reading		
Nuclear Density Gauges (Blocks & ValiDator System)	(1120 to 2723) kg/m ³	0.6 % of reading	Master density blocks or secondary density reference blocks; ASTM D7759	RDU, LAS, GRR, SFO, DEN, PHL

IV. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Ovens & Environmental Chambers ³	(-80 to 100) °C	0.12 °C	Control Company 6412; ASTM E2181	RDU
	(100.1 to 600) °C	1.3 °C		
Liquid-In-Glass Thermometers ³	(-20 to 200) °C	0.09 °C	Control Company 6412 with 9099 Fluke dry block; ASTM E1	RDU
	(200.1 to 400) °C	0.14 °C		
Digital Thermometers ³	(-20 to 100) °C	0.07 °C	Control Company 6412 with 9099 Fluke Dry block; ASTM E1137 and E2181	RDU
	(100.01 to 400) °C	0.02 °C + 0.05 % of reading		
IR Thermometers ³	(25 to 400) °C	0.7 °C	Ametek Jofra ETC-400R IR calibrator; ASTM E2847	RDU

V. Time & Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments	Location
Stopwatch ³	(12 to 24) hrs	0.6 s	1025 traceable stopwatch; NIST 960-12	RDU
Timers ³	(12 to 24) hrs	0.6 s	1025 traceable stopwatch; NIST 960-12	RDU
RPM ³	(10 to 24 000) rpm	2 rpm + 0.05 % of reading	Extech Tachometer; NIST 960-12	RDU

¹ This laboratory offers commercial dimensional testing/calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of SFOfidence, usually using a coverage factor of $k=2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the Calibration and Measurement Capability Uncertainty (CMC) found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the uncertainty introduced by the item being calibrated, (e.g. resolution) must also be SFOfidered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

⁴ This scope meets A2LA's *P112 Flexible Scope Policy*.

⁵ The locations of the laboratories that can perform the calibration are given by a three-letter code with valid to dates given in the table below:

⁶ In the statement of CMC, Wt is the representation of weight pounds or grams appropriate to the uncertainty statement

Location	Code	Valid to Dates
1 Triangle Drive, Research Triangle Park, NC 27709	RDU	7/31/2021
6625 South Valley View Blvd, Suite 400, Las Vegas, NV 89118	LAS	7/31/2022
4495 44 th Street SE, Suite A, Grand Rapids, MI 49512	GRR	7/31/2021

5052 Commercial Circle, Concord, CA 94520	SFO	7/31/2022
850 E 73 rd Avenue, Unit 12, Denver, CO 80229	DEN	7/31/2022
3580 Progress Drive, Unit O, Bensalem, PA 19020	PHL	7/31/2021



Accredited Laboratory

A2LA has accredited

INSTROTEK, INC.

Research Triangle Park, NC

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets R205 – Specific Requirements: Calibration Laboratory Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 10th day of May 2021

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 6369.01
Valid to July 31, 2021
Revised May 11, 2021

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.