



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ADVANCED CALIBRATION TECHNOLOGIES  
DBA AD-TEK, INC.

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CALIBRATION

Valid To: September 30, 2024

Certificate Number: 1342.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations and dimensional testing<sup>1,6</sup>:

I. Dimensional

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Extensometers and Deflectometers <sup>3</sup> (Displacement up to 24 Inches of Travel)	Up to 2 in	310 μin	Gage blocks and linear calibrator to ASTM E83
Calipers <sup>3</sup>	Up to 6 in Up to 12 in Up to 48 in	300 μin 330 μin 380 μin	Gage blocks
Micrometers <sup>3</sup>	Up to 1 in Up to 2 in Up to 4 in Up to 6 in Up to 12 in	59 μin 96 μin 190 μin 270 μin 580 μin	Gage blocks
Dial Indicators <sup>3</sup>	Up to 6 in	640 μin	Dial indicator calibrator or gage blocks

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Steel Rulers <sup>3</sup>	Up to 6 in Up to 24 in	0.0029 in 0.0058 in	Gage blocks
Feeler Gages <sup>3</sup>	(0.0015 to 0.050) in	100 μin	Starrett amplifier with probe
Straight Edges <sup>3</sup>	Up to 24 in	100 μin	Surface plate and feeler gages
Sieves <sup>3</sup> – Fine and Coarse	Up to 12 in	620 μin	Calipers and micrometers
3.2.1 Blocks <sup>3</sup>	Up to 12 in	620 μin	Calipers
Grooving Tools <sup>3</sup>	Up to 12 in	620 μin	Calipers
Tampers <sup>3</sup>	Up to 12 in	620 μin	Calipers
LA Abrasion Machines <sup>3</sup>	Up to 12 in	620 μin	Calipers and steel rule
Sample Splitters <sup>3</sup>	Up to 12 in	620 μin	Digital calipers and steel rule to ASTM and AASHTO specifications

## II. Dimensional Testing/Calibration<sup>1, 5</sup>

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
1D Linear Measurement <sup>3</sup> – Molds, Expansion Racks, etc.	Up to 12 in	0.0031 in	Digital calipers and/or 3-point bore gage with setting ring to ASTM and AASHTO specifications

### III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Temperature <sup>3</sup> – Electrical Simulation (J, K, T)	(-150 to 1000) °C	0.61 °C	Fluke 5500A, Omega calibrator

### IV. Fluid Quantities

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Flow Meters <sup>3</sup> (Air/Nitrogen)	(0 to 6) L/min	0.085 L/min	Digital flow meter and density/mass calculations
POVA (Piston Operated Volumetric Apparatus) <sup>3</sup> – Pipettes	(0.2 to 50) µL (50 to 1000) µL (1000 to 5000) µL (5000 to 10 000) µL (10 000 to 20 000) µL	0.15 µL 3.9 µL 8.1 µL 21 µL 26 µL	Gravimetric method using analytical balances

### V. Mechanical

Parameter/Equipment	Range	CMC <sup>2, 4, 7</sup> (±)	Comments
Force <sup>3</sup> – Measure			
Compression	Up to 100 lbf (100 to 1000) lbf (1000 to 10 000) lbf (10 000 to 50 000) lbf (50 000 to 600 000) lbf (600 000 to 1 000 000) lbf	0.016 lbf 0.057 % 0.17 % 0.024 % 0.12 % 0.52 %	Load cells and dead weights to ASTM E4
Tension	Up to 100 lbf (100 to 1000) lbf (1000 to 10 000) lbf (10 000 to 50 000) lbf (50 000 to 600 000) lbf	0.016 lbf 0.25 % 0.19 % 0.022 % 0.17 %	

Parameter/Equipment	Range	CMC <sup>2,4,7</sup> (±)	Comments
Gyratory Compactors Force Height Angle Speed of Rotation	Up to 10 000 lbf (0 to 10) in (0 to 130)° (0 to 1) min	0.17 % 520 μin 0.0024° 0.077 s	Load cell/proving ring, height blocks, timer and RAM. All makes and models.
Pressure <sup>3</sup> – Measure	(10 to 500) psi  (500 to 10 000) psi	(0.0092 + 0.050 %) psi  0.0042 %	Dead weights tester and transducers
Vacuum <sup>3</sup> –  Manometers, Absolute Pressure Gauges	Up to 1000 mmHg  Up to 800 mmHg	0.014 %  0.010 %	Manometers and transducers  Standard PSIA gage
Torque – Measuring Equipment	Up to 1000 lbf·ft	1.3 lbf·ft + 0.40 %	Torque calibrator
Speed –  RPM <sup>3</sup>	Up to 24 000 RPM	(1.5 + 0.020 %) RPM	Tachometer
Mass	Up to 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg  1 lb 2 lb 5 lb 10 lb 20 lb 50 lb	0.000 41 g 0.000 41 g 0.000 41 g 0.000 41 g 0.000 41 g 0.000 41 g 0.000 41 g 0.000 41 g 0.000 41 g 0.022 g 0.022 g 0.022 g 0.022 g  0.00022 lb 0.00041 lb 0.0010 lb 0.0022 lb 0.0041 lb 0.010 lb	ASTM D4753 and AASHTO M231 with Class 1 weights

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Indirect Verification of Rockwell Hardness Testers <sup>3</sup>	HRBW: Low (20 to 44) HRB	0.53 HRB	Indirect verification per ASTM E18
	Medium (45 to 70) HRB	0.63 HRB	
	High (71 to 100) HRB	0.46 HRB	
	HRC: Low (20 to 34) HRC	0.39 HRC	
	Medium (35 to 44) HRC	0.40 HRC	
	High (45 to 69) HRC	0.36 HRC	
Scales and Balances <sup>3</sup> –			ASTM D4753, AASHTO M231, and NIST Handbook 44 with:
Class I Balances	Up to 100 g Up to 200 g	0.000 082 g 0.000 095 g	Class 1 weights
Class II Balances	Up to 1 kg Up to 2 kg Up to 5 kg Up to 10 kg Up to 20 kg Up to 50 kg	0.0094 g 0.0094 g 0.0078 g 0.0080 g 0.0088 g 0.021 g	Class 1 weights
Class III Light Capacity Scales	1 lb Up to 2 lb Up to 5 lb Up to 10 lb Up to 20 lb Up to 50 lb Up to 100 lb Up to 200 lb Up to 500 lb	0.000 096 lb 0.000 093 lb 0.000 11 lb 0.000 15 lb 0.000 36 lb 0.000 66 lb 0.015 lb 0.039 lb 0.078 lb	Class F weights
Class III Medium Capacity Scales	Up to 1000 lb Up to 2000 lb Up to 2500 lb	0.15 lb 0.39 lb 0.39 lb	



VI. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Temperature <sup>3</sup> – Furnaces and Ovens	(0 to 300) °C (300 to 600) °C	0.12 °C 0.40 %	Tegam with probe to ASTM and AASHTO specifications including ASTM E145
Digital Thermometers	(-38 to 300) °C	0.058 °C	PRT with indicator to ASTM and AASHTO specifications
Liquid in Glass Thermometers	(-38 to 300) °C	0.15 °C	

VII. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Counters, Timers and Clocks <sup>3</sup>	(1 to 3600) s	0.077 s	Universal timer with GPS

<sup>1</sup> This laboratory offers commercial dimensional testing/calibration service and field calibration service.

<sup>2</sup> 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 confidence, 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.

<sup>3</sup> 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 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 actual uncertainty introduced by the item being calibrated, (e.g., resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

<sup>4</sup> In the statement of CMC, percentages are percentage of reading, unless otherwise noted.

<sup>5</sup> This laboratory meets R205 – *Specific Requirements: Calibration Laboratory Accreditation Program* for the types of dimensional tests listed above and is considered equivalent to that of a calibration.



<sup>6</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.

<sup>7</sup> The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

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