SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ADVANCED INSTRUMENTS
ARTEL LABORATORY
25 Bradley Drive
Westbrook, ME 04092
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CALIBRATION

Valid To: October 31, 2025 Certificate Number: 2093.03

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1, 5]

I. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Volume/Artel Pipette Calibration System (PCS®) Instrument –	Near 130 µL Near 250 µL	0.036 µL (0.028 %) 0.036 µL (0.015 %)	Linearity and accuracy tests using gravimetric
PCS IR Temperature Sensor	(15 to 30) °C	0.078 °C	Fluke reference thermometer
Syringe Calibration/ Gravimetric	10 µL (50 µL Barrel) 50 µL (50 µL Barrel) 200 µL (500 µL Barrel)	0.049 µL 0.086 µL 1.0 µL	ASTM E1154-or ISO 8655-6
Volume Determination/ Gravimetric[4]	(0.1 to 1) µL (>1 to 100) µL (>100 to 700) µL (>700 to 1999) µL (>1999 to 5000) µL	0.0046 µL 0.0047 µL 0.0082 µL 0.048 µL 0.062 µL	ASTM E1154 or ISO 8655-6

Parameter/Equipment	Range	CMC[2] (±)	Comments
Pipette Calibration Gravimetric and Photometric (PCS®) Instrument	0.10 µL 0.20 µL 0.50 µL 1.0 µL 2.0 µL 5.0 µL 10.0 µL 20.0 µL 25.0 µL 50.0 µL 100.0 µL 200.0 µL 250.0 µL 300.0 µL 500.0 µL 1000.0 µL 1250.0 µL 2000.0 µL 2500.0 µL 5000.0 µL	0.025 µL 0.027 µL 0.031 µL 0.030 µL 0.046 µL 0.067 µL 0.094 µL 0.14 µL 0.16 µL 0.25 µL 0.46 µL 0.71 µL 0.86 µL 1.0 µL 1.6 µL 3.2 µL 4.0 µL 6.9 µL 9.0 µL 22 µL	Gravimetric calibration per ASTM E1154 or ISO 8655-6 Photometric calibration ISO 8655-7 ISO 8655-8
Volume Determination/ Photometric (PCS®) Instrument[4]	0.1 µL 0.2 µL 0.5 µL 1.0 µL 2.0 µL 5.0 µL 10.0 µL 20.0 µL 25.0 µL 50.0 µL 100.0 µL 200.0 µL 250.0 µL 300.0 µL 500.0 µL 1000.0 µL 1250.0 µL 2000.0 µL 2500.0 µL 5000.0 µL	0.0005 µL 0.0009 µL 0.0021 µL 0.0038 µL 0.0088 µL 0.019 µL 0.041 µL 0.074 µL 0.091 µL 0.24 µL 0.46 µL 0.67 µL 0.82 µL 0.96 µL 1.6 µL 3.2 µL 4.0 µL 6.9 µL 9.0 µL 22 µL	ISO 8655-7 ISO 8655-8

Parameter/Equipment	Range	CMC[2] (±)	Comments
Liquid Handling Systems[3, 7] –			
96 Well Plates – (1 to 96) Channel Devices	(0.1 to 0.2) µL (0.2 to 350) µL	3 % of volume 2 % of volume	Ratiometric photometry per ISO 23783
384 Well Plates – (1 to 384) Channel Devices	(0.03 to 0.05) µL (0.05 to 55) µL	3.5 % of volume 2.5 % of volume	ISO 23783-2 annex B. Implemented using the Artel MVS

III. Optical Radiation

Parameter/Equipment	Range	CMC[2] (±)	Comments
Absorbance Ratio/ PCS® Calibrator Kit	(0 to 1.5) A (0.98 to 1.02) A/A (%) Cal B Cal C Cal D	 0.37 % 0.21 % 0.17 %	Reference spectrophotometer
Absorbance/ MVS® and QC Kit Calibrator Plate	<u>520.2 nm</u> Near 1.1 A (ND) Near 0.025 A (Cal 1) Near 2.0 A (Cal 2) Near 0.4 A (Cal 3) Near 1.2 A (Cal 4) Near 2.4 A (Cal 5) <u>730.5 nm</u> Near 0.85 A (ND) Near 0.04 A (Cal 1) Near 0.3 A (Cal 2) Near 0.3 A (Cal 3) Near 0.3 A (Cal 4) Near 0.3 A (Cal 5)	 0.0026 A 0.0013 A 0.0054 A 0.0020 A 0.0035 A 0.0060 A 0.0020 A 0.0013 A 0.0021 A 0.0021 A 0.0021 A 0.0021 A	Reference spectrophotometer

Parameter/Equipment	Range	CMC[2] (±)	Comments
Absorbance/ MVS® Calibrator Plate (ND Corrected)	520.2 nm Near 0.023 A/A (Cal 1) Near 1.8 A/A (Cal 2) Near 0.4 A/A (Cal 3) Near 1.1 A/A (Cal 4) Near 2.2 A/A (Cal 5) 730.5 nm Near 0.05 A/A (Cal 1) Near 0.4 A/A (Cal 2) Near 0.4 A/A (Cal 3) Near 0.4 A/A (Cal 4) Near 0.4 A/A (Cal 5)	 0.0012 A/A 0.0065 A/A 0.0031 A/A 0.0041 A/A 0.0075 A/A 0.0015 A/A 0.0027 A/A 0.0027 A/A 0.0027 A/A 0.0027 A/A	Reference spectrophotometer

CHEMICAL TESTING

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on solutions:

Test(s)	**Technology**	**Test Method(s)**
Volume Tare Addition Tare Subtraction	Gravimetry	 310A4512 310A3279
Spectrophotometry Absorbance	Spectrophotometer	 310A3232 310A3501

[1] This laboratory offers commercial calibration service and calibration service for Artel PCS Instruments and Artel PCS Calibration Kits and syringes.

[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 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.

[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 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.

[4] CMC values for Gravimetric and Photometric Volume Determination do not account for uncertainty due to Unit Under Test imprecision (UUT) or Intra-Laboratory variability (repeatability and reproducibility between operators), ILAC P-14:09/2020. per clause 4.3 Note 3

[5] This scope meets A2LA's *P112 – Flexible Scope Policy*.

[6] Environmental specifications, specified in documentary standards, may not be achievable during field calibration at customer facilities.

Accredited Laboratory

A2LA has accredited

ARTEL LABORATORY

Westbrook, ME

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 the requirements of ANSI/NCSL Z540-1-1994 and 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 28th day of December 2023.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2093.03
Valid to October 31, 2025

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