



Calibration Done By : ACE Pipettes LLC, Cypress, TX

Customer Information

Customer Name MD Anderson Cancer Center
 Address 6565 MD Anderson Blvd
 City-Zip Houston, 77030
 Department

Laboratory Test Conditions - AS Found Data / As Left Data

Start Temp (deg. C) 21.5 21.5
 Env. Pr(Kpa) 100.5 100.5
 Env. Humidity(%) 52.1 52.1
 Z Factor 1.0032 1.0032

Eqp Details-Pipette Multi Ch. Rainin Rainin PIPET-LITE 8 Ch- 200uL (20 -200 uL)

Calibration Site Onsite
 S/L No: D0503518A

Cal Interval Half Yearly
 Test Date 11-Sep-2024
 Due Date 31-Mar-2025

Laboratory Test Equipment and Standards

EID	Description	S/L No:	Last Cal Date	Next Cal Due Date
AM000001	RH Meter/Thermometer	240129724	12-Feb-2024	12-Feb-2026
AM000002	Mettler Balance XP205DR	B043079758	22-Feb-2024	28-Feb-2025
AM000003	Weight Standard	08496	08-Sep-2024	30-Sep-2025

AS Found Data Status: Pass

Specification : 20uL

	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8
	20.57	20.47	20.47	20.26	20.47	20.47	20.26	20.47
	20.57	20.47	20.57	20.47	20.47	20.47	20.47	20.47
	20.36	20.36	20.47	20.47	20.57	20.47	20.47	20.57
	20.47	20.57	20.36	20.47	20.47	20.57	20.36	20.36
Z Factor	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032
Mean Corrected - uL	20.49	20.47	20.47	20.42	20.49	20.49	20.39	20.47
Target	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Accuracy (% Diff)	2.45	2.33	2.33	2.08	2.45	2.45	1.95	2.33
Inaccuracy Tolerance-Manfr. Spec (%)	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5
Accuracy Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
SD Corrected	0.10	0.08	0.08	0.10	0.05	0.05	0.10	0.08
Precision (%CV)	0.47	0.40	0.40	0.49	0.24	0.24	0.47	0.40
Imprecision Tolerance-Manfr. Spec (%)	<=1	<=1	<=1	<=1	<=1	<=1	<=1	<=1
Imprecision Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Uncertainty (+/-) uL	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)
Test Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Specification : 200uL

Ch. 1 Ch. 2 Ch. 3 Ch. 4 Ch. 5 Ch. 6 Ch. 7 Ch. 8

	200.84	200.74	200.54	200.54	200.64	200.74	200.54	200.94
	200.94	200.74	200.94	200.84	200.84	200.84	200.54	200.34
	200.94	200.34	200.64	200.64	200.84	200.84	200.34	200.94
	200.84	200.64	200.44	200.74	200.74	200.54	200.34	200.54
Z Factor	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032
Mean Corrected - uL	200.89	200.62	200.64	200.69	200.77	200.74	200.44	200.69
Target	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
Accuracy (% Diff)	0.45	0.31	0.32	0.35	0.38	0.37	0.22	0.35
Inaccuracy Tolerance-Manfr. Spec (%)	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8
Accuracy Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
SD Corrected	0.06	0.19	0.22	0.13	0.10	0.14	0.12	0.30
Precision (%CV)	0.03	0.09	0.11	0.06	0.05	0.07	0.06	0.15
Imprecision Tolerance-Manfr. Spec (%)	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15
Imprecision Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Uncertainty (+/-) uL	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)
Test Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

As Left Data Status: **Pass**

Specification : 20uL

	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8
	20.06	20.06	20.26	20.16	20.26	20.26	20.26	20.06
	19.96	20.16	20.26	20.16	20.16	19.96	20.16	20.47
	20.16	20.36	20.36	20.26	20.16	20.36	20.16	20.26
	20.26	20.16	20.16	20.36	20.26	20.16	20.16	20.16
Z Factor	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032
Mean Corrected - uL	20.11	20.18	20.26	20.23	20.21	20.18	20.18	20.24
Target	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Accuracy (% Diff)	0.57	0.95	1.32	1.20	1.07	0.95	0.95	1.20
Inaccuracy Tolerance-Manfr. Spec (%)	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5	<=2.5
Accuracy Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
SD Corrected	0.13	0.13	0.08	0.10	0.06	0.17	0.05	0.17
Precision (%CV)	0.64	0.63	0.40	0.47	0.29	0.85	0.25	0.85
Imprecision Tolerance-Manfr. Spec (%)	<=1	<=1	<=1	<=1	<=1	<=1	<=1	<=1
Imprecision Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Uncertainty (+/-) uL	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)	0.41(K = 2)
Test Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Specification : 200uL

Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8
200.04	199.84	200.34	200.44	200.14	200.34	199.94	200.74

	200.24	199.94	200.14	200.34	200.14	200.14	200.14	200.44
	200.04	199.94	200.34	200.14	200.44	200.24	200.14	200.14
	199.84	200.04	200.04	200.14	200.24	200.04	200.04	200.44
Z Factor	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032	1.0032
Mean Corrected - uL	200.04	199.94	200.22	200.26	200.24	200.19	200.06	200.44
Target	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0
Accuracy (% Diff)	0.02	0.03	0.11	0.13	0.12	0.09	0.03	0.22
Inaccuracy Tolerance-Manfr. Spec (%)	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8	<=0.8
Accuracy Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
SD Corrected	0.16	0.08	0.15	0.15	0.14	0.13	0.10	0.25
Precision (%CV)	0.08	0.04	0.08	0.08	0.07	0.06	0.05	0.12
Imprecision Tolerance-Manfr. Spec (%)	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15	<=0.15
Imprecision Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Uncertainty (+/-) uL	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)	1.41(K = 2)
Test Summary	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Calibration Notes:

Calibration Notes: This pipette was calibrated gravimetrically using our company internal Standard Operating Procedure (SOP-QA-00016). This report certifies that this pipette met the specification on the date shown here for the calibration date. The gravimetric data was measured in mg. or g. and converted to uL or mL using the correction factor from ISO 8655 Standard and accounted for density of distilled water. The uncertainty of measurement was calculated in accordance with requirements of ISO/IEC17025:2017. The measurement uncertainty is reported at a confidence level of at least 95.45% (k=2). MEASUREMENT UNCERTAINTY VALUE IS PROVIDED FOR CUSTOMER EVALUATION. The standards used for calibration are regularly calibrated and are traceable through the National Institute of Standards and Technology (NIST) to the (SI) unit. Results relate only to the item calibrated as received. This report shall not be reproduced except in full without written permission from our company.

Certificate ID No.	CAL-M000661	Certificate Issue Date	11-Sep-2024
EID	AID000038	Calibration Done By	Kaushika Banerjee



Kaushika Banerjee

Authorized by
Date: 11-Sep-2024