Certificate of Calibration

Certificate #: 1014296 Rev 1
Issue Date: 02/24/2023

ISO/IEC 17025:2017 Accredited Calibration
Accreditation #: 112595

Customer

Cal Date	02/24/2023
Cal Due Date	08/2023
PO No.	

Equipment Information	
Equipment ID	P031
Serial Number	242763590
Manufacturer	VWR
Model	HIGH-PERFORMANCE
Description	PIPETTE

As Found Result	**PASS**
As Left Result	**PASS**
Method Used	CM-1023 Rev 2
Temp./RH	22 °C / 61 %
Cal. Location	ON SITE
Metrologist	ALEJANDRO JARPE

Standards Used

I.D.	Description	Model Number	Serial Number	Cal. Due Date
UMT-4013	ANALYTICAL BALANCE	AD4212B-101	T0101248	6/3/2023
UMT-5013	THERMOMETER	4371	200671635	2/13/2024

The results published in this report relate only to the item(s) calibrated. The standards used are capable of producing results that are traceable through NIST or a National Measurement Institute to the International System of Units (SI). These calibrations meet the requirements of the UMT Calibration Laboratory Quality Manual. The calibration is compliant with ISO/IEC 17025:2017 and ANSI/NCSL Z540-3. The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level. When statements of compliance are made, the uncertainty of measurement is taken into account. This report may not be reproduced, except in full, unless permission is obtained in writing from the organization issuing this report.

Releasing Authority

Guillermo Blanco

Test Points

Cert # 1014296

As Found/As Left Data

Measurement Environment					
Humidity:	61 % R.H		Conversion Factor:	1.0031 µL/mg	
Water Temperature:	21.0 °C		Evaporation Trap:	Used	
Barometric Pressure:	1017 hPa		Expanded Uncertainty:	0.47 µL	

Specifications		**Measuring Point (1)**	**Measuring Point (2)**	**Measuring Point (3)**
Pipette Volume		100 µL	500 µL	1000 µL
Accuracy	Absolute Error	8 µL	8 µL	8 µL
	Relative Error	8 %	1.6 %	0.8 %
Repeatability	S.D.	3 µL	3 µL	3 µL
	C.V.	3 %	0.6 %	0.3 %

Measured Values	**Measuring Point (1)**		**Measuring Point (2)**		**Measuring Point (3)**	
	µL	mg	µL	mg	µL	mg
1	99.42	99.11	495.49	493.96	994.70	991.63
2	100.87	100.56	496.22	494.69	997.92	994.84
3	99.35	99.04	495.48	493.95	997.73	994.65
4	99.96	99.65	495.42	493.89	997.05	993.97
5	99.61	99.30	496.91	495.37	998.61	995.52

Measurement Results		**Measuring Point (1)**		**Measuring Point (2)**		**Measuring Point (3)**	
Accuracy	Mean	99.841	µL	495.905	µL	997.204	µL
	Absolute Error	0.159	µL	4.095	µL	2.796	µL
	Relative Error	0.159	%	0.819	%	0.280	%
	Judgement	**PASS**		**PASS**		**PASS**	
Repeatability	S.D.	0.621	µL	0.648	µL	1.498	µL
	C.V.	0.622	%	0.131	%	0.150	%
	Judgement	**PASS**		**PASS**		**PASS**	

--End of report--