

# Certificate of Calibration

Certificate #: 1014841 Rev 1

Issue Date: 03/10/2023

## Customer

**Cal Date** 03/10/2023  
**Cal Due Date** 09/2023  
**PO No.**



## Equipment Information

Equipment ID L-4870  
 Serial Number OH81477  
 Manufacturer THERMO SCIENTIFIC  
 Model 46200400  
 Description ELECTRONIC PIPETTE

**As Found Result** PASS  
**As Left Result** PASS

Method Used CM-1023 Rev 2  
 Temp./RH 23 °C / 57 %  
 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	3/2/2024

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

### As Found/As Left Data

Measurement Environment							
Humidity:	57 % R.H		Conversion Factor:	1.0033 µL/mg			
Water Temperature:	22.0 °C		Evaporation Trap:	Used			
Barometric Pressure:	1017 hPa						
Specifications		Measuring Point (1)		Measuring Point (2)		Measuring Point (3)	
Pipette Volume		10 µL		50 µL		100 µL	
Accuracy	Absolute Error	0.8 µL		0.8 µL		0.8 µL	
	Relative Error	8 %		1.6 %		0.8 %	
Repeatability	S.D.	0.3 µL		0.3 µL		0.3 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	10.04	10.01	50.01	49.85	100.26	99.93
	2	10.12	10.09	49.95	49.79	99.80	99.47
	3	10.17	10.14	49.99	49.83	100.31	99.98
	4	10.03	10.00	50.02	49.86	100.23	99.90
	5	10.01	9.98	50.08	49.92	99.99	99.66
Measurement Results		Measuring Point (1)		Measuring Point (2)		Measuring Point (3)	
Accuracy	Mean	10.077	µL	50.015	µL	100.117	µL
	Absolute Error	0.077	µL	0.015	µL	0.117	µL
	Relative Error	0.771	%	0.029	%	0.117	%
	Judgement	<b>PASS</b>		<b>PASS</b>		<b>PASS</b>	
Repeatability	S.D.	0.068	µL	0.047	µL	0.216	µL
	C.V.	0.675	%	0.095	%	0.216	%
	Judgement	<b>PASS</b>		<b>PASS</b>		<b>PASS</b>	