

Calibration Certificate

PC10709

* As required by AS ISO/IEC 17025-2005, all measurements in this report are traceable to the International System of Units (Système international d'unités)

Calibration Data - 10 μ L											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
10.04	10.03	9.99	10.10	10.06	10.07	10.09	10.07	10.02	10.02	9.96	9.97
9.99	10.03	9.94	10.08	10.09	10.12	10.04	10.04	10.06	10.00	10.01	10.01
9.99	10.00	9.96	10.05	10.09	9.95	10.05	10.06	9.96	9.97	9.94	9.91
9.91	9.90	9.90	9.89	9.93	9.90	9.93	9.91	9.92	9.94	9.90	9.93
9.93	9.92	9.91	9.88	9.93	10.06	9.93	9.90	9.89	9.94	9.92	9.91
9.91	9.93	9.94	9.89	9.90	9.88	9.90	9.90	9.91	9.91	9.89	9.93
9.89	9.94	9.93	9.88	9.90	9.92	9.88	9.88	9.92	9.88	9.88	9.89
9.99	10.00	9.96	10.05	10.09	10.07	10.05	10.06	9.96	9.97	9.94	9.91
9.99	10.03	9.94	10.08	10.09	10.09	10.04	10.04	10.06	10.00	10.01	10.01
9.93	9.92	9.91	9.88	9.93	9.89	9.93	9.90	9.89	9.94	9.92	9.91

Mean Volume (μ L)	9.97		Mean Volume (μ L)
Inaccuracy (%)	-0.33	0.68	Imprecision CV (%)
Specification (\pm %)	3.00	2.00	Specification (\leq %)
Status	PASS	PASS	Status
Uncertainty (\pm μ L)	0.16		Uncertainty (\pm μ L)



Pipette Data		Laboratory Conditions	
Pipette Manufacturer :	Eppendorf	Water Temperature (°C)	21.1
Pipette Type :	Research 3114	Air Pressure (hPa)	998
Volume Range :	10-100 μ L	Relative Humidity (%)	43
Serial Number :	3644189	Density Correction (μ L/mg)	1.0031
Customer ID:	BAL499	Calibrated with :	Sartorius ME235P auto door
Calibrated on :	5-July-2018	Calibrated by :	Mike Balac BSc (Hons) Chem

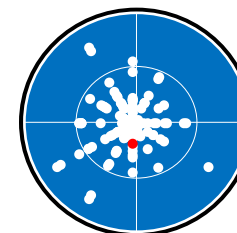
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Calibration Data - 50 μ L											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
50.12	49.84	49.92	49.76	50.01	49.86	49.89	49.89	50.15	49.75	49.83	49.93
50.02	49.85	49.59	49.95	49.85	50.02	49.90	49.89	50.08	50.03	50.03	50.08
49.94	49.77	49.61	49.75	49.83	49.83	49.93	50.05	50.11	49.76	50.01	49.86
49.87	49.93	49.78	49.76	50.03	50.03	50.05	50.01	50.09	49.95	49.85	50.02
49.84	49.92	49.76	50.01	49.86	49.89	49.89	50.15	50.12	49.84	49.92	49.76
49.85	49.59	49.95	49.85	50.02	49.90	49.89	50.08	50.02	49.85	49.59	49.95
49.77	49.61	49.71	49.75	49.84	49.92	49.76	50.01	49.86	49.89	49.89	50.15
49.93	49.78	49.92	49.76	49.85	49.59	49.95	49.85	50.02	49.90	49.89	50.08
49.89	50.08	50.03	50.03	49.77	49.61	49.71	49.75	49.83	49.93	50.05	50.11
50.05	50.11	49.76	50.01	49.93	49.78	49.92	49.76	50.03	50.05	50.01	50.09

Mean Volume (μ L)	49.90		Mean Volume (μ L)
Inaccuracy (%)	-0.19	0.27	Imprecision CV (%)
Specification (\pm %)	1.00	0.80	Specification (\leq %)
Status	PASS	PASS	Status
Uncertainty (\pm μ L)	0.30		Uncertainty (\pm μ L)



Pipette Data		Laboratory Conditions	
Pipette Manufacturer :	Eppendorf	Water Temperature (°C)	21.1
Pipette Type :	Research 3114	Air Pressure (hPa)	998
Volume Range :	10-100 μ L	Relative Humidity (%)	43
Serial Number :	3644189	Density Correction (μ L/mg)	1.0031
Customer ID:	BAL499	Calibrated with :	Sartorius ME235P auto door
Calibrated on :	5-July-2018	Calibrated by :	Mike Balac BSc (Hons) Chem

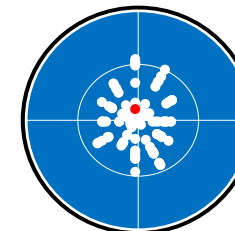
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Calibration Data - 100 μ L											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
99.87	99.98	100.04	100.01	100.05	99.71	99.71	99.70	99.97	100.04	99.99	99.84
99.78	100.02	100.08	99.88	99.89	99.91	99.91	100.12	99.89	99.79	99.99	99.64
99.76	100.07	99.96	100.13	99.98	99.90	99.90	99.85	99.88	99.85	99.78	99.74
100.07	99.95	99.77	99.98	99.93	99.86	99.86	99.91	99.95	99.83	99.77	99.78
100.44	100.39	100.32	100.23	100.19	100.28	100.28	100.19	100.24	100.25	100.20	100.28
99.78	100.02	100.08	99.88	99.89	99.91	99.91	100.12	99.89	99.79	99.99	99.64
100.42	100.45	100.29	100.27	100.29	100.38	100.38	100.21	100.33	100.22	100.29	100.33
100.47	100.35	100.31	100.27	100.23	100.27	100.27	100.18	100.32	100.23	100.23	100.32
100.44	100.39	100.32	100.23	100.19	100.28	100.28	100.19	100.24	100.25	100.20	100.28
100.45	100.34	100.27	100.24	100.20	100.26	100.26	100.20	100.29	100.25	100.21	100.25

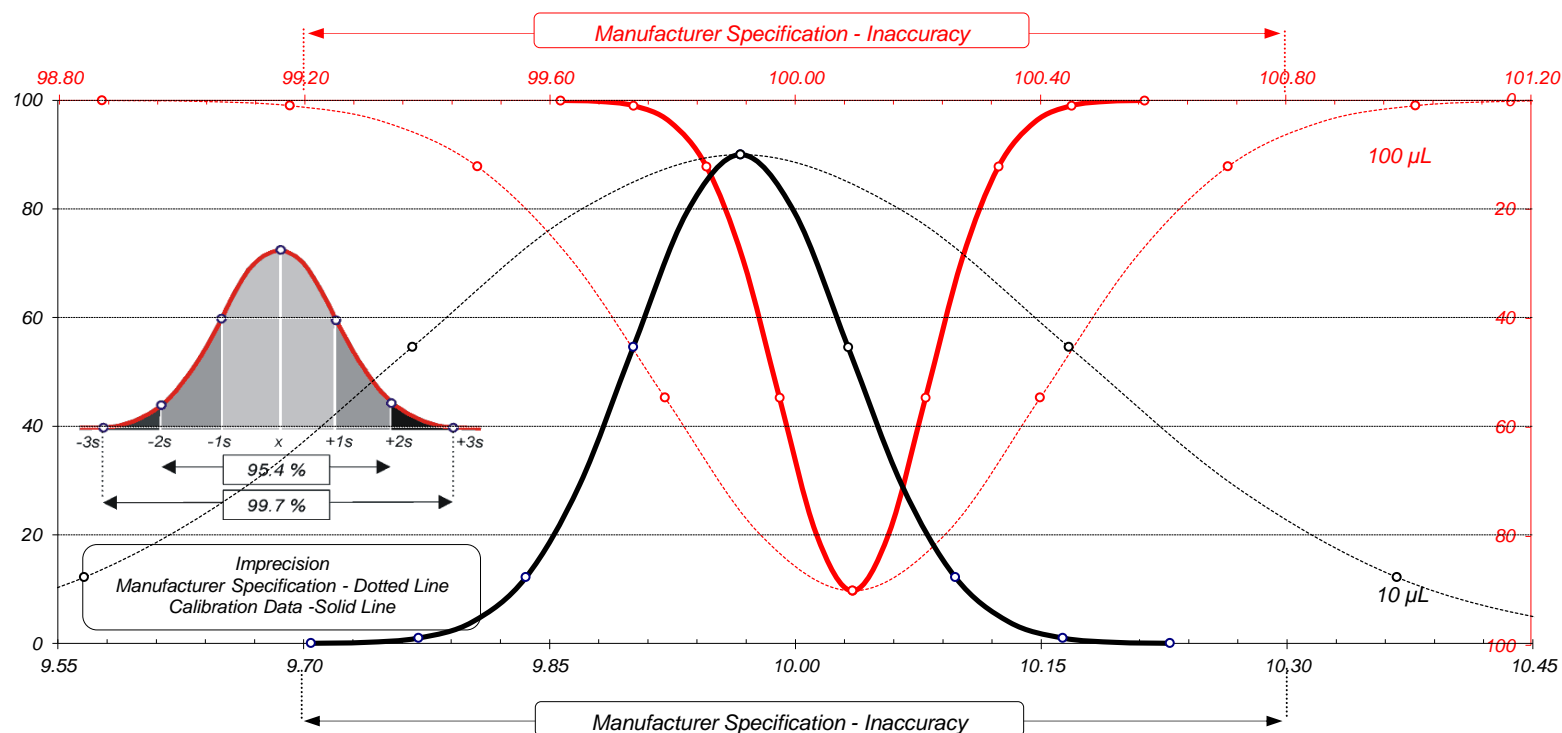
Mean Volume (μ L)	100.09		Mean Volume (μ L)
Inaccuracy (%)	0.09	0.22	Imprecision CV (%)
Specification (\pm %)	0.80	0.30	Specification (\leq %)
Status	PASS	PASS	Status
Uncertainty (\pm μ L)	0.47		Uncertainty (\pm μ L)



Pipette Data		Laboratory Conditions	
Pipette Manufacturer :	Eppendorf	Water Temperature (°C)	21.1
Pipette Type :	Research 3114	Air Pressure (hPa)	998
Volume Range :	10-100 μ L	Relative Humidity (%)	43
Serial Number :	3644189	Density Correction (μ L/mg)	1.0031
Customer ID:	BAL499	Calibrated with :	Sartorius ME235P auto door
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Customer Data		Uncertainty of Measurement	
In Use At:	Pipette Clinic Pty Ltd	Coverage factor at confidence level 95 %	k=2
	48-50 George Street	(Selected volume x)	Linearity (µL)
	Parramatta NSW 2150	Accuracy (µL)	y = 1.0014x - 0.0475
		Accuracy + Uncertainty (µL)	y1 = 1.0049x + 0.0742
Test Method:	AS 2162.2-1998, ISO-8655	Uncertainty (µL)	Ux = y1 - y