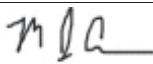





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A **TRANSCAT** Company

Level 4 Calibration Service Documentation

Client Information	
Company	
Address	
Phone	
Client Instrument	
Manufacturer	BRANDTECH
Model	Transf. S 10-100 ul /8
Serial #	04K51626
ID/User	
Laboratory Test Conditions	
Temperature (19-24 °C)	21
Relative Humidity (45-75%)	54
Bar. Pressure (kPa)	100.5
Water Den. (gm/ml)	0.9969
Density Correction (z-factor)	1.0031
Water Conductivity (µ S)	2.45
Evaporation Rate (mg)	0.002
Laboratory Test Equipment	
Test Balance Serial #	1-1119423483
Test Balance Model	#1-MX5
Test Balance Readability (mg)	0.001
Test Balance NIST Cert. Date	24/Oct/2014
Test Balance NIST Cert Due Date	31/Oct/2015
Replacement Parts	
<input type="checkbox"/> O-Ring	<input type="checkbox"/> Battery
<input type="checkbox"/> Seal	<input type="checkbox"/> Shaft/Nozzle Filter(s)
<input type="checkbox"/> Friction Ring	<input type="checkbox"/> Tip Ejector
<input type="checkbox"/> Shaft/Nozzle	<input type="checkbox"/> Multi-Channel Tipcone
<input type="checkbox"/> Plunger button	<input type="checkbox"/> Housing Screw
<input type="checkbox"/> Plunger Button Cap	<input type="checkbox"/> Other (see Comments)
<input type="checkbox"/> Calibration mechanism was adjusted	
Quality Control Authorization	
QC Reviewer	MA
QC Date	04/Feb/2015
Signature	
	Mike Anema, TTE Laboratory Manager

The calibration results published in this certificate were obtained gravimetrically using Grade 3 purified water, equipment manufacturer or validated substitute tips, and ISO8655 compliant test equipment that are traceable to NIST and through NIST to the International System of Units (SI). TTE certifies that the above measuring device meets or exceeds all measurement tolerances, unless otherwise noted. TTE prohibits the reproduction of this document, except in its entirety.

Certificate ID
 * 0 2 0 4 2 0 1 5 - 0 4 K 5 1 6 2 6 *
Comments
PM Service performed. Channel #2 used for testing.

Service Information	
Service Date	04/Feb/2015
Certificate ID #	02042015-04K51626
Test Technician	RF
Next Due Date	31/Aug/2015

As Found Data			
Test Volumes (µL)	10	50	100
1	10.13	49.92	100.29
2	10.32	50.04	100.14
3	10.24	49.92	100.26
4	10.10	49.96	100.05
Mean (mg)	10.20	49.96	100.19
Density Corr.	1.0031	1.0031	1.0031
Mean (ul)	10.23	50.11	100.50
Accuracy (% Dev)	2.30	0.22	0.50
Inaccuracy Tolerance	4.0%	1.4%	0.8%
Precision (CV%)	0.99	0.11	0.11
Imprecision Tolerance	2.0%	0.6%	0.3%
Test Uncertainty (± uL / ±%)	0.018 / 0.18%	0.035 / 0.07%	0.127 / 0.13%

Test Result

PASS PASS PASS

As Left Data			
Test Volumes (µL)	10	50	100
1	10.07	50.28	100.22
2	10.21	49.63	99.97
3	10.16	49.91	100.08
4	10.12	49.88	100.02
5	10.25	49.94	100.08
6	10.21	50.11	100.04
7	10.24	49.80	100.15
8	10.21	49.91	100.27
9	10.30	49.81	100.19
10	10.25	49.67	99.95
Mean (mg)	10.20	49.89	100.10
Density Corr.	1.0031	1.0031	1.0031
Mean (ul)	10.23	50.04	100.41
Accuracy (% Dev)	2.30	0.08	0.41
Inaccuracy Tolerance	4.0%	1.4%	0.8%
Precision (CV%)	0.67	0.39	0.11
Imprecision Tolerance	2.0%	0.6%	0.3%
Test Uncertainty (± uL / ±%)	0.018 / 0.18%	0.035 / 0.07%	0.127 / 0.13%

Test Result

PASS PASS PASS

PASS grade denotes that tolerances have been met according to OEM specifications, exclusive of measurement uncertainty. The risk for reporting a false PASS result is calculated to be < 2%. The reported expanded uncertainty value uses a coverage factor k=2 to a coverage probability of approximately 95%.

Procedure Referenced: TTEPCS0113.1

V2.23



Level 4 Calibration

MC Plus data is collected from a 5-place multichannel test balance and is not considered to reflect a statistically valid representation of each individual channel.

Service Information	
Service Date	04/Feb/2015
Certificate ID #	02042015-04K51626
Test Technician	RF
Next Due Date	31/Aug/2015

As-Found Calibration Equipment Data:	
Test Balance Serial #	8-1128380329
Test Balance Model	MCP2
Test Balance Readability (mg)	0.01
Test Balance NIST Cert. Date	27/Oct/2014

As-Left Calibration Equipment Data:	
Test Balance Serial #	8-1128380329
Test Balance Model	MCP2
Test Balance Readability (mg)	0.01
Test Balance NIST Cert. Date	27/Oct/2014

As-Found MC-Plus Readings

Vol:	10 ul			50 ul			100 ul		
Tot:	9.6-10.4 ul			49.3-50.7 ul			99.2-100.8 ul		
UOM:	mg	ul	P-F	mg	ul	P-F	mg	ul	P-F
1	10.05	10.08	P	50.08	50.24	P	100.48	100.79	P
2	9.96	9.99	P	50.13	50.29	P	100.46	100.77	P
3	9.93	9.96	P	50.04	50.20	P	100.15	100.46	P
4	9.93	9.96	P	49.93	50.08	P	99.71	100.02	P
5	9.90	9.93	P	49.98	50.13	P	99.84	100.15	P
6	9.95	9.98	P	50.15	50.31	P	100.00	100.31	P
7	9.91	9.94	P	50.07	50.23	P	100.11	100.42	P
8	9.84	9.87	P	50.04	50.20	P	100.01	100.32	P

As-Left MC-Plus Readings

Vol:	10 ul			50 ul			100 ul		
Tot:	9.6-10.4 ul			49.3-50.7 ul			99.2-100.8 ul		
UOM:	mg	ul	P-F	mg	ul	P-F	mg	ul	P-F
1	9.95	9.98	P	50.02	50.18	P	100.38	100.69	P
2	9.94	9.97	P	50.12	50.28	P	100.35	100.66	P
3	9.97	10.00	P	50.00	50.16	P	100.03	100.34	P
4	9.86	9.89	P	49.82	49.97	P	99.71	100.02	P
5	9.89	9.92	P	49.96	50.11	P	99.90	100.21	P
6	9.87	9.90	P	49.95	50.10	P	100.17	100.48	P
7	9.80	9.83	P	50.05	50.21	P	100.12	100.43	P
8	9.81	9.84	P	50.07	50.23	P	100.39	100.70	P