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# ISO-Accredited Calibration
## Service Documentation

| Service Information | |
|---|---|
| Service Date | 05/Feb/2024 |
| Certificate ID # | 02052024-23L02208 |
| Test Technician | CD |
| Next Due Date | 31/Aug/2024 |

| Client Information | |
|---|---|
| Company | Lampert University |
| Address | |
| | |
| Phone | |

| Client Instrument | |
|---|---|
| Manufacturer | Brandtech |
| Model | Transf. S 20-200 ul |
| Serial # | 23L02208 |
| ID/User | R. Lampert |

| Laboratory Test Conditions | |
|---|---|
| Temperature (19-24 °C) | 22 |
| Relative Humidity (45-75%) | 54 |
| Bar. Pressure (kPa) | 99.8 |
| Water Den. (gm/ml) | 0.9967 |
| Density Correction (z-factor) | 1.0033 |
| Water Conductivity ($\mu$ S) | 1.19 |
| Evaporation Rate (mg) | 0.002 |

| Laboratory Test Equipment | |
|---|---|
| Test Balance Serial # | 15-0043001322 |
| Test Balance Model | #15-MCA10.6S |
| Test Balance Readability (mg) | 0.001 |
| Test Balance NIST Cert. Date | 27/Jul/2023 |
| Test Balance NIST Cert Due Date | 31/Jul/2024 |

**Replacement Parts**

- ☐ O-Ring
- ☐ Seal
- ☐ Friction Ring
- ☐ Shaft/Nozzle
- ☐ Plunger button
- ☐ Plunger Button Cap
- ☐ Battery
- ☐ Shaft/Nozzle Filter(s)
- ☐ Tip Ejector
- ☐ Multi-Channel Tipcone
- ☐ Housing Screw
- ☐ Other (see Comments)
- ☐ Calibration mechanism was adjusted

**As Found Data**

**No 'As-Found' data taken.**
**Please see comments section.**

| As Left Data | | | |
|---|---|---|---|
| Test Volumes ($\mu$L) | 20 | 100 | 200 |
| 1 | 20.06 | 99.15 | 199.03 |
| 2 | 20.05 | 99.14 | 199.22 |
| 3 | 20.04 | 99.00 | 199.25 |
| 4 | 20.11 | 99.13 | 199.11 |
| 5 | 20.00 | 99.29 | 199.13 |
| 6 | 20.07 | 99.03 | 199.06 |
| 7 | 20.04 | 99.06 | 199.01 |
| 8 | 20.09 | 98.94 | 198.94 |
| 9 | 20.10 | 98.95 | 199.58 |
| 10 | 19.98 | 99.04 | 199.13 |
| Mean (mg) | 20.05 | 99.07 | 199.15 |
| Density Corr. | 1.0033 | 1.0033 | 1.0033 |
| Mean (ul) | 20.12 | 99.40 | 199.81 |
| Accuracy (% Dev) | 0.60 | -0.60 | -0.10 |
| Inaccuracy Tolerance | 3.0% | 0.8% | 0.6% |
| Precision (CV%) | 0.21 | 0.11 | 0.09 |
| Imprecision Tolerance | 0.6% | 0.3% | 0.2% |
| Test Uncertainty (± uL / ±%) | 0.03 / 0.15% | 0.07 / 0.07% | 0.11 / 0.06% |
| **Test Result** | **PASS** | **PASS** | **PASS** |

PASS grade denotes that tolerances have been met according to OEM specifications. When accounting for measurement uncertainty, results may be outside of reported tolerance limits. The reported expanded uncertainty value uses a coverage factor k=2 to a coverage probability of approximately 95%.

| Quality Control Authorization | |
|---|---|
| QC Reviewer | MA |
| QC Date | 05/Feb/2024 |
| Signature | Mike Anema, Director of Operations |

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). Pipettes.com certifies that the above measuring device meets or exceeds all measurement tolerances, unless otherwise noted. Pipettes.com prohibits the reproduction of this document, except in its entirety.

**Certificate ID**

02052024-23L02208

**Comments**

Calibrated new instrument.

Procedure Referenced: SOP02 REV13 V2.26