City of Johannesburg

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Specification:

Procurement Specification: Single-Channel Micropipettes and Automatic Pipette Fillers
This specification defines the minimum technical, quality, calibration, and documentation requirements for the supply of single channel fixed and adjustable volume micropipettes and automatic pipette fillers for use in an accredited laboratory environment. All equipment supplied under this contract shall be new and supported by calibration certificates issued by a SANAS-accredited laboratory to ISO/IEC 17025.

1. Scope of Supply

- Fixed-volume single-channel micropipettes: 0.25 mL; 0.5 mL; 5 mL; 10 mL (4 units total).
- Adjustable-volume single-channel micropipettes (3 units total):
  - 0.10–1.00 mL
  - 1.00–5.00 mL
  - 1.00–10.00 mL
- Automatic pipette fillers: 4 units, suitable for glass/plastic serological pipettes from 1 mL to 100 mL (calibration certificate **NOT** required)

2. Applicable Standards

- ISO/IEC 17025 (latest edition): General requirements for the competence of testing and calibration laboratories (for calibration provider).

3. Technical Requirements — Micropipettes

- Type: Single-channel, air-displacement micropipettes.
- Ergonomics: Lightweight, low plunger force, adjustable thumbwheel, and clearly readable volume indicator; finger-hook or equivalent support.
- Autoclavability: Lower assembly (shaft/cone) and tip ejector autoclavable at 121 °C for 15 min or fully autoclavable without performance drift; supplier to state which components are autoclavable.
- Chemical resistance: Wetted parts resistant to common laboratory disinfectants and alcohols; PTFE seals or equivalent where applicable.
- Tip compatibility: Compatible with standard universal tips.
  - Each micropipette to be supplied with 100 compatible tips minimum.
- Spare parts: Include one seal/oring kit per micropipette and a service tool (wrench) where applicable.

4. Ranges and Calibration Points — Micropipettes

Fixed-volume models:

- 0.25 mL; 0.50 mL; 5.00 mL; 10.00 mL — each calibrated at the fixed nominal volume.

Adjustable-volume models:

- 0.10–1.00 mL, calibrated at 0.10 mL, 0.50 mL, and 1.00 mL.
- 1.00–5.00 mL, calibrated at 1.00 mL, 3.00 mL, and 5.00 mL.
- 1.00–10.00 mL, calibrated at 1.00 mL, 5.00 mL, and 10.00 mL.

5. Metrological Performance and Tolerances — Micropipettes

- Performance shall conform to ISO 8655 systematic error (accuracy) and random error (precision) limits for the stated nominal volumes. Supplier shall provide the ISO 8655 table values claimed for each model and volume setting.

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- Acceptance criteria on delivery (per unit and per test point):
  • Systematic error ≤ manufacturer's ISO 8655 claim and in all cases ≤ ±1.0% of set volume for ≥1 mL settings and ≤ ±1.5% for <1 mL settings.
  • Random error (coefficient of variation) ≤ manufacturer's ISO 8655 claim and in all cases ≤ 0.5% for ≥1 mL settings and ≤ 1.0% for <1 mL settings.
- Test medium & conditions: Distilled water at (20 ± 0.5) °C, atmospheric pressure recorded; gravimetric tests corrected for Z-factor per ISO 8655.

6. Calibration and Certificates — Micropipettes

- Initial calibration: Each micropipette shall be delivered calibrated with an individual certificate issued by a SANAS-accredited laboratory to ISO/IEC 17025. The certificate must list asset serial number, method, environmental conditions, measurement results per test point (mean, systematic error, standard deviation/CV), uncertainty, and statement of conformity to ISO 8655 with decision rule.
- Calibration interval: 24 months. Supplier includes a reminder schedule and sticker with next-due date.
- Traceability: Mass standards used for gravimetry to be traceable to national/international standards; traceability chain shown on the certificate.

7. Technical Requirements — Automatic Pipette Fillers

- Volume range: Suitable for serological pipettes from 0.1 mL to 100 mL.
- Flow control: Variable aspiration/dispense speed with fine control trigger.
- Filtration: Hydrophobic in-line filter(s) (e.g., 0.45 µm or manufacturer's equivalent) to protect motor and internal components; supply 20 filter sets total.
- Stand & power: Bench/stand holder included for each unit; rechargeable battery with charger (100–240 V, 50/60 Hz)
- Compatibility: Accepts standard glass and plastic serological pipettes (1 mL to 100 mL). Nosepiece autoclavable or with replaceable sterile filter barrier.
- Weight & ergonomics: Lightweight handheld design (≤ 250 g including battery). Low vibration, low noise.

8. Quality, Warranty and Support

- Warranty: Minimum 12 months for manufacturing defects. On-site pickup or advance replacement within 10 working days.
- User documentation: Provide user manuals, ISO 8655 performance data sheets, and calibration certificates (PDF and hard copy).
- **Provide manufacturer brochures of all products offered alongside quotation. Brochure must indicate brand name and model type as well as a picture of the product being offered.**