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# REGULATORY AND CONSUMER PROTECTION

## METROLOGY DIVISION

# SERVICES GUIDE

2012

## GENERAL

The continual growth of modern technology is matched by increased demands for higher measurement accuracy over wider ranges, and a greater diversity in measuring standards. Manufacturing and performance tolerances are becoming increasingly stringent and, due to competition, production cost is coming under more and more pressure, it is essential to achieve the required quality as well as keeping the production cost at a minimum. Reliable measurement of all essential manufacturing parameters is therefore indispensable. In addition, the need to protect consumers and provide assurance of correct measurement results used in official and commercial transactions is even more demanded than ever before. In supporting these trends, the NSI Metrology Division of the Department of Regulatory and Consumer Protection is offering services as mandated by the Government of the Republic of Namibia.

In terms of the Trade Metrology Act (Act No. 77 of 1973), as amended, the NSI Metrology Division is responsible for Scientific, Industrial and Legal Metrology. It discharges these responsibilities following the transfer of the metrology function from the Ministry of Trade and Industry effected on the 1st of April 2011.

## SUMMARY OF METROLOGY SERVICES

1. Maintenance of National Measurement standards for Namibia (through calibration and inter-comparison against international standards in order to ensure the accuracy, traceability and international recognition of these standards)
2. Calibration of test and measurement equipment for industry (through the implementation of the national measurement system to ensure that measurement results in Namibia are accurate and traceable to the National Measurement Standards and, through these, to international measurement standards.)
3. Type approval of measuring instruments (by examination of measuring instruments intended to be used for trade, and their type approval documentation and establishing the suitability, accuracy, consistency and repeatability of measurements made by the type of instruments)
4. Verification and inspection of instruments (by initially and periodically carrying out a prescribed series of tests and certifying measuring instruments in trade use to ensure their accuracy of measurement and other regulatory requirements)
5. Registration of technicians who repair measuring instruments (by offering them training, theoretical and practical examinations and continuous supervision to ensure their competence to carry out their

responsibilities as prescribed under the Trade Metrology Act)

6. Inspection of consumer goods pre-packed for sale (by monitoring and testing for compliance of pre-packed goods to labelling and tolerance limits requirements as regulated by the Trade Metrology Act).

## LABORATORY QUALITY

The NSI Metrology division is implementing a quality management system according to the requirements of ISO/IEC 17025 and has applied to SADCAS for accreditation of the Mass Metrology Laboratory.

## THE METROLOGY MULTI-SKILLED TEAM

VICTOR R MUNDEMBE – Manager
VALERY AFRIKANER – Administration Assistant
GEORGE M MABAKENG – Inspector
ELVIN L SWARTBOOI – Inspector
MATCHAI M BLASIUS – Verification Officer
ELISABETH M NAIMBWELE – Verification Officer
HOSEA SHIKOMBA – Industrial Metrologist
SAREL S SANKWASA – Industrial Metrologist
SIMASIKU MATALI – Industrial Metrologist
LUKAS HAIDULA – Technical Assistant

## MEASUREMENT CAPABILITIES

Listed below is a list of the metrology fields in which NSI has capabilities, the equipment & standards available and the instruments that can be calibrated, verified and inspected. The list is not exhaustive hence the NSI Metrology division may be contacted should additional detail be required on competencies, measurement uncertainties, measurement ranges, measurement traceability, maximum allowed tolerance limits, etc, before a quotation is provided.

| Metrology Field | Standards & equipment Available | Measurement Capabilities | Instruments calibrated: Scientific/ Industrial Metrology | Instruments Verified/ inspected: Legal Metrology |
|---|---|---|---|---|
| A. Mass | i) Sets of mass pieces Class F1<br>ii) Analytical balances<br>iii) Top pan balances | a) Mass pieces: 1 mg to 20 kg (±0.0001 g)<br>b) Balances, scales, comparators: 0 to 300 kg (±0.01 g).<br>• supported by NLA inter-comparison data<br>• pending accreditation by SADCAS | 1) Mass pieces / weights<br>2) Analytical balances<br>3) Moisture balances<br>4) Digital balances/ scales<br>5) Mechanical balances/ scales | I. Weighbridges<br>II. High capacity scales<br>III. Industrial and retail scales, including platform scales<br>IV. Beam scales<br>V. Counter scales<br>VI. Weights (Mass pieces) |
| B. Volume (Gravimetric & Volumetric Methods) | iv) Sets of mass pieces Class F1<br>v) Analytical balances<br>vi) Top pan balances<br>vii) Stainless steel measures<br>viii) Brass measures | c) 1ml to 20 Liters (±0.01ml) Gravimetric<br>d) Up to 1000 L volume measures (Volumetric) | 6) Volume Recorders<br>7) Graduated measuring cylinders<br>8) Graduated beakers<br>9) Burettes<br>10) Volumetric analysis equipment<br>11) Volumetric dispensers<br>12) Pipettes/ micropipettes<br>13) Stainless steel flasks<br>14) Volume measure<br>15) Road and rail tanks<br>16) Liquid meters | VII. Liquid fuel dispensers<br>VIII. Bulk fuel meters<br>IX. Liquid measuring devices<br>X. Liquid meters<br>XI. Tot measures<br>XII. Volume measures<br>XIII. Road Vehicle tank measures<br>XIV. Rail vehicle tank measures |
| C. Dimensional / length | ix) Sets of grade 01 slip gauges<br>x) Digital Dial Test Indicator<br>xi) Digital micrometer<br>xii) Steel rules<br>xiii) Tape measure | e) Up to 30 m accurate length measurements | 17) Micrometers<br>18) Vernier Calipers<br>19) Rulers<br>20) Tape measures<br>21) Dial Test Indictors<br>22) Dial Gauges<br>23) Slip Gauges<br>24) Feeler gauges | XV. Length measuring instruments used for trade |

| Metrology Field | Standards & equipment Available | Measurement Capabilities | Instruments calibrated: Scientific/ Industrial Metrology | Instruments Verified/ inspected: Legal Metrology |
|---|---|---|---|---|
| | | | 25) Height gauges<br>26) Length bars | |
| D. Thermodynamic temperature | xiv) ISOTECH SPRTs (High and Low Temperatures)<br>xv) Thermocouple reference standards (Type R and S)<br>xvi) Fluke 8508A, 8.5 digit Reference Multimeter<br>xvii) Fluke 743B Documenting Process Calibrator<br>xviii) ISOTECH TTI1 digital thermometer<br>xix) Hart Scientific 7103 micro bath<br>xx) ISOTECH 915 parallel tube Water/oil bath<br>xxi) Working standard thermocouple probes (K, J) | f) Liquid-in-Glass thermometers (LiGs): -25 °C to 280 °C (±0.1 °C)<br>g) Digital thermometers with RTDs: -10 °C to 280 °C (±0.05 °C)<br>h) Digital thermometers with Thermocouple or thermistor probes: -10 °C to 280 °C (±0.1 °C)<br>i) Thermometers at the Ice point 0.01 °C (±0.01 °C)<br>j) Radiation thermometers: -25 °C to 280 °C<br>k) On site calibrations: -200 °C to 1100 °C (±1 °C), subject to availability of appropriate heat sources on site<br>l) Calibration by simulation: All ITS –90 Temperature ranges (± 0.05 °C) | 27) Digital thermometers<br>28) Wet and dry bulb thermometers<br>29) Liquid-in-glass thermometers<br>30) All platinum resistance sensors<br>31) All thermocouple types of sensors<br>32) Dial thermometers<br>33) Thermistors, IC temperature sensor<br>34) Radiation thermometers<br>35) Ovens, incubators, heat sources<br>36) Water baths, thermoreactors<br>37) Wet and dry bulb thermometers<br>38) Temperature block baths<br>39) Temperature furnaces<br>40) Cold rooms, boilers<br>41) Refrigerators, chillers<br>42) Temperature controllers, transmitters<br>43) Temperature calibrators/ simulators<br>44) Autoclaves (temperature only) | N/A |
| E. Electrical DC & Low Frequency | xxii) Fluke 743B Documenting Process Calibrator<br>xxiii) Fluke 8508A, 8.5 Reference multimeter | m) AC & DC Voltage Measurements: 200 mV to 1 kV<br>n) Input resistance = 0<br>o) Current measurement: 200 µA to 20 A<br>p) Resistance measurement: 2 Ω to 20 GΩ | 45) Standards resistors, decade boxes, bridges, ohm meters<br>46) Voltmeters, voltage calibrators<br>47) Multimeters<br>48) Ammeters, current calibrators<br>49) DC power meters<br>50) AC power meters<br>51) Tong testers<br>52) Clamp meters | N/A |

## INSPECTION OF CONSUMER GOODS PRE-PACKED FOR SALE

All goods offered for sale in Namibia are expected to comply with labeling requirements as prescribed by the regulations of the Trade Metrology Act. The regulations cover marking requirements with respect to:

- Identity of product
- Name and place of business of manufacturer, packer, distributor, importer or retailer
- Net quantity of product
- General requirements for the sale of goods e.g. exemptions from marking, marking of goods packed in retail and prescribed pack sizes etc.

In addition the goods shall comply with the requirements on tolerances permitted for the accuracy of measurements including

- Measurement of goods when prepackaged
- Measurement of goods when measured at the time of sale
- Measurement of goods when prepackaged in pursuance of a sale
- Requirements for the inspection of prepackages.

## COMMON OFFENCES CONSUMERS/USERS SHOULD BE WARY OF:

- Use in trade of unapproved/illegal measuring instruments
- Incorrect or rejected retail scales or other retail measuring instruments (e.g. petrol pumps, etc)
- Technicians not registered for services they provide on instruments
- Under filled pre-packages
- Under-weight pre-packages
- Pre-packed goods not labeled with quantity
- Deceptive packages
- Consumer goods in un-prescribed quantities