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DEPARTMENT OF TRADE AND INDUSTRY

NO. 331 **18 MARCH 2016**

NOTICE IN TERMS OF SECTION 38(4) OF THE LEGAL METROLOGY ACT, 2014

(ACT NO. 9 OF 2014)

1. By virtue of the powers vested in me in terms of section 38 of the Legal Metrology Act, 2014 (Act No. 9 of 2014), I, Dr Rob Davies, Minister of Trade and Industry, hereby –

   (a) declare my intention to make the regulations published hereunder; and

   (b) invite interested persons to comment thereon within a period of 60 days from the date of publication of this Notice.

DR ROB DAVIES, MP

MINISTER OF TRADE AND INDUSTRY

DATE: 18/2/16

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PART I: TERMINOLOGY

(1) In these Regulations:

"**accredited laboratory**"
means a laboratory accredited by the South African National Accreditation System (SANAS) or by a member of the recognition arrangements of the International Laboratory Accreditation Co-operation (ILAC) as contemplated in the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006).

"**accelerating mass meter**"
means a mass meter of which the beam or steelyard has an unstable action both when the mass meter is unloaded and loaded and the balance of which is indicated as described for such a measuring instrument in regulation 25(1)(a)(ii) of Part VII.

"**area-measuring instrument**"
means a measuring instrument which is designed and constructed to measure and automatically indicate the surface area of leather or materials as described in the type approval documentation when passed through it.

"**automatic rail-weighbridge**"
means an automatic weighing instrument having load receptors, inclusive of rails for conveying railway wagons, that determines the mass of wagons or trains or both wagons and trains, by weighing them in motion.

"automatic weighing instrument"
means a mass meter provided with self-acting mechanism that weighs without the intervention of an operator and that follows a predetermined program of automatic processes characteristic of the instrument.

"**authorised officer**"
means any duly appointed market surveillance inspector furnished with a written inspection authority issued by the National Regulator in terms of section 6 of the Legal Metrology Act 2014, (Act 09 of 2014).

"**bearings**"
in relation to the lever and stay pivots of a mass meter fitted with knife-edges, means and includes all surfaces and points intended to be in contact with the knife-edges.

"burette"
means a delivering measure of volume for pharmaceutical dispensing and comparable measurement, made of glass in the form of a pipette, but having a glass tap in the tip for controlling delivering or for controlling filling and delivering, provided that the datum level defining the capacity of a burette which is filled from the bottom may be the rim of a narrowed top section.

"**capacity**"
as marked or indicated on a measuring instrument in accordance with regulation 21 of Part VII, means -

(a) in reference to a mass meter, the maximum mass which it is designed and constructed to measure in a single operation, including the mass balanced by any graduated and denominated tare adding device with which the measuring instrument may be provided, but excluding the range of the scale on a difference chart;
(b) in reference to a length, area or volume measuring instrument, other than a liquid meter, water meter, gas meter or other continuous length, area or volume measuring instrument or a simple

material measure of length or volume, the maximum length, area or volume for which it is designed and which it is constructed to measure in a single operation;

(c) in reference to any measuring instrument which is designed to measure continuously, the maximum measurement which it can indicate, provided that any graduated measuring instrument to which paragraphs (a), (b) and (c) of this definition relates may indicate values equivalent to a maximum of nine graduations above or one graduation below the nominal capacity of the measuring instrument.

"**compartment**"
in reference to a vehicle tank, means any one of the portions into which the tank may have been subdivided.

"compliance scheme"
a compliance scheme means a scheme introduced by the Minister to ensure the effectual carrying out of the objects of the Act.

"**consumer**"
means any person who purchases a product or service for his or her own use through retail sales agencies or other means but does not include a person purchasing a product for further processing or other industrial or institutional use.

"**continuous totalizing automatic weighing instrument"(Belt weighers)**
means an automatic weighing instrument for continuously weighing a bulk product on a conveyor belt, without systematic subdivision of the mass and without interrupting the movement of the conveyor belt.

"conventional length measuring instruments" - "measure of length"
means a measure bearing scale marks or graduation lines or having suitable end surfaces which indicate distances in units of length.

"conventional length measuring instruments" - "nominal length"
in reference to a measure of length means the maximum length which the measure is designed to measure.

"conventional length measuring instruments" - "principal scale marks"
means the two marks or end surfaces the distance apart of which represents the nominal length of a measure of length.

"conventional length measuring instruments" - "graduated measure"
means a measure of length on which graduations between the principal scale marks represent distances less than the nominal length of the measure.

"conventional length measuring instruments" - "reference temperature"
means the temperature marked on a measure of length as that at which the measure is calibrated or 20 ºC if not marked on the measure.

"conventional length measuring instruments" - "specified tension"
means the tension marked on a measure of length as that at which the measure is calibrated or the tension specified in regulation 43 (9) (d) of Part VII, if not marked on the measure.

"conventional measure of volume" - "measure of volume"
referred to as a "measure" in regulations 46 to 51 of Part VII means a measure of conventional design used for measuring liquid substances and having a datum level or levels which define the quantity or quantities which can be measured by means thereof

"conventional measure of volume" - "**containing measure**"
means a measure of volume intended to contain the defined quantity when filled to any datum level.

"conventional measure of volume" - "**delivering measure"**
means a measure of volume intended to deliver a defined quantity after having been filled to any datum level.

"conventional measure of volume" - "**capacity**"
in reference to a measure of volume means the maximum defined quantity for which it is designed.

"conventional measure of volume" - "**conical measure**"
means a measure of volume of which the diameter at the brim is not more than two thirds of the diameter at the bottom.

"**conventional quantity value**"; **conventional value of a quantity; conventional value" or "quantity value attributed by agreement to a quantity for a given purpose"**
means a value approximating to the true value of that quantity and being such that, for the purpose for which that value is required or used, the difference between these two values may be neglected;

"cream test scale" - "cream test beam scale"
means any mass meter having an equal armed beam with knife-edge pivots and with cream test bottle holders suspended below the beam.

"cream test scale" - "cream test torsion balance"
means any mass meter having an equal armed beam with torsion band pivots and with cream test bottle holders above the beam.

"cream test scale" - "cream test scale- self-indicating"
means any mass meter having a self-indicating load measuring device and provided with a bottle holder for cream.

"dead-mass scale"
means an equal-armed mass meter of a capacity exceeding 50 kg the pans or platforms of which are above the beam and which is not provided with any attached ancillary equipment.

"**delivery note"**
means any separate piece of paper of such colour and size as readily to permit of a clear and legible statement being made thereon and actually bearing such a statement of all information required by the Act and these regulations to be furnished in respect of any goods actually being delivered to a purchaser.

"**denomination**"
in reference to a measuring instrument, means the name and value of the measuring unit used, for expressing the magnitude of the quantity;

"**difference-chart**"
in reference to a mass meter, means a chart on which, by means of an index, an excess or deficiency deviation from a required or pre-determined mass is indicated, but does not include an un-denominated indicating plate and index on a balance or a beam scale;

"**discrimination**"
in reference to a measuring instrument, means the ability of the measuring instrument to react to small changes of the quantity measured;

"error of indication"
means the indication minus a reference quantity value

Note: This reference value is sometimes referred to as a (conventional) true quantity value.

"**gas meter**"
means a measuring instrument which is designed and constructed for use in a gas supply system to measure and automatically indicate the volume of combustible gas passed through it in a continuous stream and used by a consumer for domestic purposes.

"**gauge**"
means a gauge to indicate the nominal value or result of measurement provided in reference to a vehicle tank or tank.

"**index**"
in reference to a measuring instrument, means that part of the indicating device, the position of which with reference to the scale marks, enables the result of a measurement to be defined.

"**Indication**"
quantity value provided by a measuring instrument or a measuring system.

Note 1: An indication may be presented in visual or acoustic form or may be transferred to another device. An indication is often given by the position of a pointer on the display for analogue outputs, a displayed or printed number for digital outputs, a code pattern for code outputs, or an assigned quantity value for material measures.

"**initial verification**"
means the verification of a measuring instrument which has not been verified previously

"**length measuring instrument**"
means a measuring instrument which is designed and constructed to measure and automatically indicate the length of fabrics or other materials as described in the type approval documentation when passed through it.

"**load measuring device**"
in reference to a mass-meter, means that part of the measurement instrument by means of which the mass of the load is measured.

"**load receptor**"
in reference to a mass meter means that part of the measuring instrument on or in which the load is supported or from which the load is suspended.

"**load transmitting device**"
in reference to a mass-meter, means that part of the measuring instrument by means of which the force produced by the load acting on the load receptor is transmitted to the load measuring device.

"**liquid-measuring device**"
referred to in this regulation as a "device", means an apparatus for delivering predetermined volumes of liquid into drums, barrels, bottles or other receptacles, but excluding a liquid fuel dispenser incorporating a meter and any liquid meter system for predetermined quantities.

"**liquid meter**"
referred to as a "meter", means a measuring instrument, which is designed and constructed to measure and automatically to indicate the volume of liquids passed through it in a continuous stream, but excludes a water meter.

"**liquid petroleum gas meter system**",
referred to as a "system", means an installation comprising a liquid meter and ancillary equipment, designed and constructed specifically for measuring liquid petroleum gas in bulk.

"liquid meter system for predetermined quantities"
referred to as a "system", means an installation comprising a liquid meter and ancillary equipment, designed and constructed specifically for measuring and delivering predetermined quantities of liquid into drums, barrels, bottles or other receptacles.

"**lubricating oil dispenser**"
referred to in this regulation as a "dispenser", means a liquid measuring system comprising a liquid meter and ancillary equipment designed and constructed specifically for measuring and dispensing lubricating oil for servicing motor vehicles.

"liquid fuel dispenser"
means a measuring assembly that comprises a pump, a meter and ancillary equipment for the measurement and delivery of liquids into the tanks of vehicles, boats or small aircraft or into other receptacles, as approved during type approval.

"**mandatory periodic verification**"
means the subsequent verification of a measuring instrument, carried out periodically at specified intervals according to the procedure laid down by the regulations.

"**mass meter**"
means any mass measuring instrument except a mass piece.

"**mass piece for coarse measurement**"
means a mass piece for use with any mass meter in respect of which the error allowance is prescribed in any of tables III, IV, V or VI of the Tables of Allowances in the Annexure.

"**mass piece for fine measurement**"
means a mass piece including any metric carat mass piece for use with any mass meter in respect of which the error allowance is prescribed in table I or table II of the Tables of Allowances in the Annexure.

"**material measure**"
means a physical object of known value and denomination used to determine the value of a quantity by direct comparison.

"**material liquid measure**"
means a material measure of volume intended specifically for measuring liquids.

"**maximum permissible measurement error**"; "**maximum permissible error**" or **limit of error**
means the extreme value of measurement error, with respect to a known reference quantity value, permitted by specifications or regulations for a given measurement, measuring instrument, or measuring system.
"maximum permissible error" is abbreviated to "MPE", or "mpe".

"measurement repeatability" or repeatability
means measurement precision under a set of repeatability conditions of measurement.

"**measuring instrument**"
means a device used for making measurements, alone or in conjunction with one or more supplementary devices.

"measuring flask"
means a glass measure of volume for pharmaceutical dispensing and comparable measurement and comprising a bulb, with cylindrical neck of relatively small diameter which bears a datum level line representing the denomination of the measure, provided that the neck may be graduated in deficiency or in excess of the datum.

"**measuring system**"
means a set of one or more measuring instruments and often other devices, including any reagent and supply, assembled and adapted to give information used to generate measured quantity values within specified intervals for quantities of specified kinds.

"**meat"**
means meat of any description whether fresh, pickled, marinated, dried, salted, chilled, frozen, cooked or processed, and must include all dressed or undressed carcasses.

"**milk**" without limiting its ordinary meaning, must include fresh, pasteurised, sterilised, homogenised or skimmed milk including long life milk but exclude milk extracted from plants.

"milk meter system"
referred to as a "system", means an installation comprising a liquid meter and ancillary equipment, designed and constructed specifically for measuring milk in bulk and used for the reception of milk by collecting tankers or in dairies or depots or for the delivery of milk.

"**modified**"
in reference to a measuring instrument, or to a model of measuring instrument in respect of which a certificate has been issued, endorsed or added to in terms of section 22 of the Act, including any attachment, device or ancillary equipment used therewith, means changed in any way in respect of the size or capacity or of any portion of the material of which or the manner in which or the design or principle according to which the measuring instrument has been made.

"**new**"
in reference to a measuring instrument, means any such measuring instrument which has never been used since having been made.

"non-automatic weighing instrument"
means an instrument that requires the intervention of an operator during the weighing process.

"non-self-indicating instrument"
means an instrument in which the position of equilibrium is obtained entirely by the operator.

"pipette"
means a delivering measure of volume for pharmaceutical dispensing and comparable measurement, made of glass in the form of a cylindrical tube bearing one or more datum level lines or graduations, having a constricted tip at the bottom of such diameter as to retain liquid in the pipette when the top thereof is closed. Provided that -

(a) a pipette may be provided with an enlarged section upon which no graduation lines must appear; and
(b) a pipette may be provided with a narrowed top section upon which no graduation lines must appear.

"post office letter beam scale"
means a beam scale or beam balance as defined in SANS 302 that is intended only for the weighing of letters for the determination of postal charges.

"**principal indicator**"
in reference to a measuring instrument, means any indicator which provides the initial or the principal visual indication or printing of values of quantities measured by the measuring instrument.

"r**epaired**"
in reference to a measuring instrument, means any such measuring instrument which has been repaired, either after obliteration of the verification mark thereon by a market surveillance inspector or

verification officer or a repairer as required, or after obliteration of a defaced verification mark thereon by a repairer as required in terms of the Act or any regulation thereunder and "repair" includes any repair, restoration or replacement of any part of or any adjustment of a measuring instrument other than resetting to zero indication or, in the case of a mass meter, balancing at zero load or levelling.

"**reading by simple juxtaposition**"
means the reading of the result of a measurement where successive figures have been so juxtaposed as to give the result of the measurement without the need for calculation.

"**rejection of a measuring instrument**"
means a decision of legal relevance that a measuring instrument does not comply with statutory requirements for verification and prohibiting its use for applications requiring mandatory verification.

"rejection mark"
means a mark applied to a measuring instrument in a conspicuous manner to indicate that the measuring instrument does not comply with the statutory requirements for mandatory verification and that obliterates the previously applied verification mark.

"**repeatability condition of measurement**" **or repeatability condition**
means a condition of measurement, out of a set of conditions that includes the same measurement procedure, same operators, same measuring system, same operating conditions and same location, and replicate measurements on the same or similar objects over a short period of time.

"**result of a measurement**"
means the value of the measured quantity obtained by a measurement.

"**retail**"
with reference to any selling transaction means any sale to a consumer and includes a transaction whereby a consumer purchases directly from a wholesaler, manufacturer or some other sales outlet.

"road vehicle scale"
means a vehicle scale intended for the measurement of the mass of road vehicles.

"**rounding**"
in reference to digital indication, means the rounding, by the indicating device of a measuring instrument, of the result of a measurement, up or down, to the nearest discrete figure.

"**rounding error**"
in reference to a digital indicator means the difference between the digital indication and the result which the measuring instrument would indicate if the indicator were an analogue indicator.

"**SANS 289**"
means the South African National Standard entitled "Labelling requirements for pre-packaged products (pre-packages) and general requirements for the sale of goods subject to legal metrology control", as amended.

"SANS 302"
means the South African National Standard entitled "Non-automatic, un-denominated beam scales and balances subject to legal metrology control", as amended.

"SANS 303"
means the South African National Standard entitled "Non-automatic, non-self-indicating or semi-self-indicating, un-graduated counter scales subject to legal metrology control", as amended.

"**SANS 319**"

means the South African National Standard entitled "Measuring systems - Cryogenic liquids and other selected liquid gases in vertical tanks - Pressure differential method", as amended.

"**SANS 344**"
means the South African National Standard entitled "Dynamic measuring devices and systems for cryogenic liquids", as amended

"**SANS 458**" means the South African National Standard entitled "Tolerances permitted for the accuracy of measurements in terms of legal metrology legislation including pre-packaged products", as amended.

"**SANS 689**"
means the South African National Standard entitled "Automatic rail-weighbridges", as amended.

"**SANS 863**"
means the South African National Standard entitled "Continuous totalizing automatic weighing instruments- Belt Weighers", as amended.

"SANS 1649"
means the South African National Standard entitled "Non-automatic self-indicating, semi-self-indicating and non-self-indicating weighing instruments with denominated verification scale intervals", as amended.

"**SANS 1793**"
means the South African National Standard entitled "Evidential Breath Analysers", as amended.

"**SANS 1840**"
means the South African National Standard entitled "Manufacture of measuring container bottles", as amended.

"**SANS 1841**"
means the South African National Standard entitled "Control of the quantity of contents in pre-packed packages within the prescriptions of legal metrology legislation", as amended.

"self-indicating instrument"
means an instrument in which the position of equilibrium is obtained without the intervention of an operator.

"**self-indicating measure of length**"
means a measure of length on which the length measured is directly indicated by means of a chart and index or by means of a digital or semi-digital display when the measure is applied to the article or distance to be measured.

"semi-self-indicating instrument"
means an instrument with a self-indication weighing range, in which the operator intervenes to alter the limits of this range.

"**sensitivity**"
in reference to a vibrating mass means the ratio of displacement of the indicating element to the increase in the mass of the load which produces such displacement.

"steelyard"
means, in addition to the mass meter so designated, the load measuring device in the form of a steelyard on any mass meter so equipped.

"**subsequent verification**"

In relation to any measuring instruments, means verification following the initial verification and includes:

(a) verification done after repair that affects the current verification status, and

(b) verification at the request of the user.

"t**able of allowances**"
where used in this Part of the regulations, means one of the Tables of Allowances in the Annexure and includes the Preceding Explanatory Notes.

"the Act"
means the Legal Metrology Act, 2014 (Act No. 09 of 2014).

"**true value of a quantity**"
means the value which characterizes the quantity perfectly defined.

"**turn**"
in reference to a vibrating mass meter, means the displacement of the beam or steelyard to the full extent of its travel either way from the horizontal position of balance and the mass required to effect such turn does not include the mass required to correct any error.

"ullage"
distance between the free surface of the product and the container top reference point, measured along the vertical measurement axis.

"**value**"
in reference to a given quantity, means the magnitude of the quantity expressed as the product of a number and the appropriate unit of measurement.

"**vehicle tank**" **or** "**tank"**
means a measure of volume in the form of a container, which may or may not be subdivided into two or more compartments, the tank or each compartment having a capacity of not less than 200 l, mounted on a motor truck or trailer or on a railway truck and used for the sale or delivering of liquids by measure of volume, but excludes a vehicle tank provided with a removable measuring gauge or gauges and a vehicle tank provided with a liquid meter.

"**verification mark**"
means a mark applied to a measuring instrument in a conspicuous manner certifying that the verification of the measuring instrument was carried out and compliance with statutory requirements was confirmed.

"**vibrating mass meter**"
means a mass meter in which the beam or steelyard oscillates when disturbed from rest in its position of balance.

"water meter" - "combination meters"
means a system that consists of one large meter, one small meter and a device which, without using any source of energy other than that of the fluid being measured, automatically so directs the water through either meter that neither of the meters operates outside of its designed operating range.

"water meter" - "electronic Indicator"
means an indicator with electronic indication fitted to a meter or measuring system, which measures the volume of water passing through it.

"water meter" - "mechanical water meters"
means self-contained integrating measuring instruments that continuously determine the volume of water flowing through them, that employ either a direct mechanical process involving the use of the

volumetric chambers with mobile walls (volumetric water meters) or the action of the velocity of the water on the rotation rate of a moving part (velocity meters) and that have mechanical or electronic Integral indicating device (indicator). Mechanical water meters include a meter of which the measuring element and the indicator form a measuring assembly which is intended to be verified before being installed in the meter body in which it will be used, provided that such body must comply with all applicable requirements and must have been type approved.

"water meter" - "pre-payment measuring system"
means a measuring system consisting of a meter and ancillary devices which include but are not limited to a valve to open and close the water supply and a device to allocate the proportionate volume of water for an amount of monetary credit. The components maybe mechanical or electronic or a combination of the two and credit may be entered by the insertion of money or some other means.

"**yield unduly**"
in reference to any part of a mass meter, means to yield to such an extent as to cause a permanent deformation of the part or to cause incorrect measurement by the mass meter, whether such permanent deformation or incorrect measurement is immediately apparent or is apparent only after repeated application of the load that causes the part to yield, and "undue yielding" has a corresponding meaning.

PART II: GENERAL AND MISCELLANEOUS

1. PRESCRIBED PURPOSE

The purposes relating to the use or possession for use of any measuring instrument or the measurement of product or service under any applicable provision of the Act must be: -

(a) the manner and result of measurements in the field of trade, as defined in section 1 of the Act, unless exempted under Part VII,

(b) the manner and result of measurements in the field of health,

(c) the manner and result of measurements in the field of the environment, and

(d) the manner and result of measurements in the field of safety.

2. REGISTRATION OF IMPORTERS, MANUFACTURERS, PERSONS WHO OFFER FOR SALE ANY PRESCRIBED MEASURING INSTRUMENT, PRODUCT OR SERVICE

(1) Scope

These regulations specify requirements for the registration of importers, manufacturers, persons who offer for sale any prescribed measuring instrument, product or service subject to any relevant legal metrology technical regulation to establish the coverage of legal metrology in South Africa.

(2) Requirements

(a) Any person who manufactures, imports, offers for sale or supplies any prescribed measuring instrument, product, or provides a service, falling within the ambit of the Act, must register with the National Regulator within six months from the effective date of these regulations coming into force.

Thereafter all manufacturers, importers of any commodity or product, or providers of a service, falling within the ambit of the Act, must register with the National Regulator within 30 days of commencing the business of manufacturing, importing of any commodity or product, or providing of a service or within 30 days of these regulations coming into effect for manufacturers or importers who are already carrying on the business of manufacturing or importing.

(b) Application for registration must be done as prescribed by the National Regulator.

(c) The National Regulator may issue a certificate as evidence of registration to a person registering. Irrespective of any amendments to the registration certificate, the registration certificate is valid for a five year period from the date of first registration, after which a new application must be completed if the business of manufacturing, importing of any commodity or product, or providing of a service is still active.

(d) When any change in the information provided to the National Regulator occurred since registration, the registered person must notify the National Regulator within 30 days of such changes. Such changed information must be notified to the National Regulator in a format as prescribed by the National Regulator.

(e) An amended registration certificate indicating the changes shall be issued by the National Regulator.

(f) The registration of persons responsible for repair and verifications of measuring instruments will be done in line with the requirements of Part VII of these regulations.

(3) Offence in connection with the registration of importers, manufacturers or persons who offered for sale any prescribed measuring instrument, product or service.

Any person who manufactures, imports, offers for sale or supplies any prescribed measuring instrument, product, or provides a service falling within the ambit of the Act that fails to register as prescribed in section 11 of the Act, shall be guilty of an offence in terms of the Act.

PART III: THE DEVELOPMENT AND AMENDMENT OF TECHNICAL REGULATIONS

1 Scope

These regulations specify requirements for the development, amendment and adoption of technical regulations as required by sections 15 and 16 of the Act.

2 Development and amendment of technical regulations

To enable the Minister to, on the recommendation of the National Regulator, declare a SANS to be a legal metrology technical regulation, the development or amendment of such legal metrology technical regulation must be subjected to the development and approval process for technical regulations which is part of the management documentation of the National Regulator.

The purpose of the documentation is to describe the process for development, amendment and withdrawal of technical regulations and they are aligned to the WTO/TBT agreement (World Trade Organisation Technical Barrier to Trade Agreement) requirements. The documentation takes into account issues such as registration, feasibility and impact assessments, stakeholder consultation, submission to the Minister and approval.

The process is outlined below.

(1) A proposal to declare or amend a technical regulation as contemplated in section 15 of the Act, must be submitted in writing to the CEO of the NRCS and be motivated by the proposer.

(2) Where a feasible proposal contemplated in sub-regulation (1) is received, the National Regulator must:

(a) request South African Bureau of Standards (SABS) to draft a South African National Standard (SANS) document that is applicable for regulating the proposed commodity, product or service; and

(b) agree on a time limit with South African Bureau of Standards (SABS), by which time such South African National Standard (SANS) must be duly published by the South African Bureau of Standards (SABS)

(3) Where no such South African National Standard (SANS) as contemplated in sub-regulation (2)(b) is published by the South African Bureau of Standards (SABS), the National Regulator must proceed with the consultation process as provided for in section 16(3) (a) of the Act.

3. Consultation process in terms of section 16(3) (a) of the Act

(1) (a) An initial consultation with a technical working group from stakeholders, to discuss the proposed intervention, and to identify any risks with such intervention.

(b) A second consultation with a technical working group from stakeholders, to discuss the proposed requirements of the compulsory specification, and to identify the impacts of the introduction on stakeholders.

(c) Final consultation meeting with stakeholders to discuss the proposed compulsory specification for recommendation by the National Regulator to the Minister

PART IV: MEASUREMENT STANDARDS

1 Scope

These regulations specify requirements for the measurement standards used by market surveillance inspectors, verification officers and persons responsible for repairs.

2 Measurement Standards

The prescribed requirements for the measurement standards referred to in section 19 of the Act used by the personnel employed by the National Regulator or any appointed service provider, designated verification and repair bodies are indicated in the relevant technical regulation or a relevant SANS document.

3 Verification standards

(1) Verification standards of mass

All verification standards used by the personnel employed by the National Regulator or any appointed service provider, designated verification and repair bodies for the inspection, verification or repair of:

(a) Mass meters and commercial standard mass pieces, that are required to be verified in terms of the Legal Metrology Act, 2014, and

(b) Mass meters used to determine the mass of reference material used to verify mass meters;

must comply with SANS 1697 – "Verification standards for the verification of mass measuring instruments, including commercial standard mass pieces", as amended.

(2) Verification standards of volume

All verification standards used by the personnel employed by the National Regulator or any appointed service provider, designated verification and repair bodies of volume, for the inspection, verification or repair of:

(a) Volume measuring instruments and commercial standards of volume, that are required to be verified in terms of the Legal Metrology Act, 2014; and

(b) Measuring instruments used to determine the quantity of reference material;

must comply with SANS 1698 – "Verification standards for the verification of volume-measuring instruments, including commercial standards of volume", as amended.

(3) Verification Standards of Length

All verification standards used by the personnel employed by the National Regulator or any appointed service provider, designated verification and repair bodies, for the verification of:

(a) Length measuring instruments; and

(b) Conventional length measuring instruments

must comply with the errors permitted in table 1.

1	2
TABLE 1	
MEASURES OF LENGTH	
Denomination	**Error permitted in excess or in deficiency**
30 m and above	3,5 mm
3 m and above, but under 30 m	2,5 mm
1 m and above, but under 3 m	0,5 mm
50 mm and above, but under 1 m	0,25 mm
under 50 mm	0,05 mm

PART V: MARKET SURVEILANCE INSPECTORS

1 Scope

This Part specifies the requirements for the qualifications and appointment of market surveillance inspectors under the applicable provisions of the Act.

2 Qualifications of market surveillance inspectors

No person must in terms of section 6(1) of the Act be appointed as a market surveillance inspector unless:

(a) he/she holds a tertiary qualification as prescribed by the National Regulator, and

(b) he/she has shown by undergoing an assessment of his/her knowledge of the appropriate provisions of the Act and relevant Technical Regulations and has, in accordance with a curriculum laid down from time to time by the National Regulator, passed an assessment in –

(i) theoretical subjects so prescribed by the National Regulator; and

(ii) practical work so prescribed by the National Regulator.

3 Appointment of market surveillance inspectors

(1) No person must be appointed as a market surveillance inspector unless he/she:

(a) is employed by the National Regulator or any organ of state and

(b) holds a certificate issued by the National Regulator identifying the market surveillance inspector and indicating that the market surveillance inspector is qualified.

PART VI: SALE OF GOODS

1 Scope

These regulations specify requirements for the measurement, labelling, and prescribed quantities in pre-packages and general rules for the delivery and sale of goods.

2 Goods destined for export

The provisions of these regulations apply to pre-packed goods destined for sale outside the Republic unless they conform to any written requirements specified by the foreign purchaser.

3 Seller or importer to take precaution regarding the quantity of goods purchased for resale

Any person who:

(a) has purchased any pre-packed goods for resale; or

(b) imports any such goods for resale,

(i) which bears a statement of quantity; or

(ii) is deemed to be of a certain quantity in terms of any provision of these regulations,

must take such precaution as will ensure that the actual quantity of the goods is the quantity represented, subject to any applicable tolerance permitted in terms of these regulations or any other regulation in terms of the Act, irrespective of the origin of such goods.

4 Delivery note, invoice or other writing to accompany goods delivered

Except where otherwise provided in this regulation any goods transmitted, conveyed or delivered to any purchaser in pursuance of a sale by measure or by number must be accompanied by a correctly dated delivery note, invoice or other writing.

5 General requirements for issuing a delivery note, invoice or other writing

(1) The delivery note, invoice or other writing must state the following:

(a) the names and full addresses of the seller and the purchaser; and

(b) a clear and legible statement of the quantity of such goods unless,

(i) the quantity of such goods is indicated on the goods in the manner prescribed in SANS 289, as amended from time to time; or

(ii) such delivery note is accompanied by a cash register slip which contains a list of separate prices respectively corresponding to each selling price marked on each separate item or quantity of goods.

(2) A delivery note, invoice or other writing accompanying pre-packed quantities that are permitted in terms of Annexure E of SANS 289 to be unmarked as to quantity, must contain:

(a) a statement of the number of pre-packed units of each prescribed quantity to be delivered; and

(b) the mass of the respective prescribed quantities being delivered.

(3) A delivery note, invoice or other writing need not accompany the goods where:

(a) the goods are unprocessed or unmanufactured agricultural produce, cream or milk which have been produced in the Republic and where such goods are transmitted, conveyed or delivered in pursuance of a sale in bulk by or on behalf of the producer thereof;

(b) the goods, after having been taken from bulk, are measured or counted, as the case may be, in the presence of the purchaser or his agent at the time of sale and such goods are delivered to the purchaser or his agent on the same occasion and on the premises of the seller;

(c) a purchaser or his agent in person orders the goods at the premises of the seller, stating the quantity of the goods to be supplied, and such goods, after having been taken from bulk and made up in pre-packed form at the time of sale without having been measured or counted in the presence of the purchaser or his agent, as the case may be, are delivered to the purchaser or his agent on the same occasion and on those premises;

(d) the quantity of the goods supplied as contemplated in paragraph (c) must be in accordance with that ordered or when of some other quantity, such other quantity is made known to the purchaser or his agent by the seller when being delivered; or

(e) the purchaser or his agent specifies the quantity of the goods to be supplied in a transaction by retail, either explicitly or by implication, at the premises of the purchaser such goods are delivered to the purchaser or his agent on the same occasion on those premises and:

(i) the quantity of the goods supplied is the quantity specified explicitly or by implication by the purchaser or his agent; or

(ii) where the goods are of a different quantity, such other quantity is made known to the purchaser or his agent by the seller when being delivered.

6 Goods to be measured after despatched

(1) Where the quantity of goods, which have been despatched to a purchaser in pursuance of a sale in bulk, is to be measured en route to or at the place of delivery:

(a) the delivery note, invoice or other writing accompanying such goods must be endorsed to that effect; and

(b) the statement of quantity must be inserted or attached immediately after the quantity of the goods has been determined.

(2) In cases where the statement of quantity is in the form of a printed ticket obtained from a person in charge of the instrument used for determining the quantity of the goods, such ticket must be attached to the delivery note, invoice or other writing:

(a) immediately after the quantity of the goods has been determined; and

(b) before the delivery note, invoice or other writing is handed over to the purchaser or his agent.

7 Liquid products in vehicle tanks and bulk containers

(1) A delivery note, invoice or other writing issued in connection with liquid goods that vaporize at ambient atmospheric pressure and which are kept at a temperature below 0 degrees C to maintain their liquid state and are pre-packed in a bulk delivery vehicle or bulk container intended for sale as a non-consumer package and sold by volume, must clearly show the temperature of the liquid product at the temperature at which it is maintained in order to maintain its liquid state.

(2) A delivery note, invoice or other writing issued in connection with liquid goods, other than those in subsection (1), which are pre-packed in a bulk delivery vehicle or bulk container intended for sale as a non- consumer package and sold by volume, must clearly show the temperature of the liquid product at the time of packing, its coefficient of expansion and the quantity thereof at 20 degrees C.

(3) Any measuring instrument used to determine the quantity of the liquid and convert its volume to 20 degrees C must be verified in terms of any regulation pertaining to such instrument.

(4) For the purposes of this regulation any thermometer used for the determination of temperature must be calibrated by an accredited laboratory and its accuracy must be traceable to the national standard.

8 Duties of person conveying goods

Any person in possession of a delivery note, invoice or other writing relating to any goods being transmitted, conveyed or delivered by him in pursuance of a sale must:

(a) produce such delivery note, invoice or other writing to any authorised officer when so requested by him;

(b) hand over such delivery note, invoice or other writing to the purchaser or his agent before any part of the goods is off-loaded;

(c) in any case where the quantity of the goods has been determined at the place of delivery, hand over such delivery note, invoice or other writing to the purchaser or his agent before leaving such place.

9 Dealers to retain delivery notes

A delivery note, invoice or other writing issued in respect of any goods delivered in pursuance of a sale to a dealer and handed over to the dealer or his agent as prescribed in regulation 5, must be retained by him for the duration of the possession of the goods after receipt, during which period it must be kept at hand and be produced to an authorised officer on demand.

REQUIREMENTS FOR MARKING OF PRE-PACKAGES AND PRESCRIBED QUANTITIES

10 Markings on pre-packed products and prescribed quantities

Pre-packages made up prior to being offered for sale must comply with all applicable requirements of SANS 289, as amended.

11 Goods or articles ordered by the purchaser in person

(1) Where purchaser or his agent in person orders goods or articles stating the quantity of the goods or articles to be supplied and such goods or articles, after having been taken from bulk and made up in pre-packed form at the time of sale without having been measured or counted in the presence of the purchaser or his agent, are delivered to the purchaser or his agent on the same occasion and on those premises, the goods or articles are not required to be marked with a statement of quantity, provided that:

(a) the quantity of the goods or articles supplied is in accordance with that ordered; or

(b) when of some other quantity, such other quantity is declared to the purchaser or his agent by the seller when being handed over.

(2) The requirement contemplated in sub-regulation (1) does not apply to beverages and other goods with special requirements contained in Annexure E of SANS 289 for measurement at the time of sale, that are supplied from bulk for consumption at the premises of the seller.

12 Non-consumer packages

(1) Any goods or articles:

(a) which are sold by quantity expressed in terms of a measuring unit; or

(b) by number; and

(c) which are required by a purchaser other than a person buying from the retail trade, for his own use and not for resale, may be made up by the manufacturer or packer in non-consumer packages which do not bear a statement of quantity, provided that where such goods or articles are transmitted, conveyed or delivered in bulk to the purchaser and are enclosed in an outer container, such container must bear a statement of the quantity in accordance with SANS 289 unless, when delivered, it is accompanied by a delivery note, invoice or other writing in accordance with the provisions of regulations 6 to 10 of Part VI.

(2) Non-consumer packages contemplated in subsection (1) must comply with all requirements pertaining to non-consumer packages contained in SANS 289.

(3) Any person who offers for sale in the retail, a non-consumer package that does not comply with all requirements for consumer packages contained in SANS 289 will be guilty of an offence in terms of the Act.

13 Standard temperature for the sale of pre-packed liquid products

(1) The statement of quantity on pre-packaged liquid products packed by volume, other than on the retail premises, from which they are sold, must reflect the volume at a temperature of 20 degrees C unless otherwise prescribed in these regulations or SANS 289, as amended.

(2) The represented volume of a quantity of a liquid product packed by volume on the retail premises, from which it is sold, must be the volume at the ambient temperature at which it is measured unless such volume has been converted to the volume at 20 degree C.

14 Marking of equivalent statement of quantity on pre-packed products

A pre-packed product may be marked with an equivalent quantity statement in an unauthorised measuring unit in addition to the required quantity statement provided that the equivalent quantity statement may not be more prominent or appear more times than the required quantity statement.

15 Qualification of statement of quantity on pre-packed products

(1) A statement of quantity must be unambiguous and without a qualification that renders it misleading or without meaning.

(2) The following qualifications are allowed:

(a) the "drained mass" must be indicated in addition to the total net mass on the products required by SANS 289 to bear a drained mass;

(b) the quantity of a liquid product may be qualified by a statement of content at 20 degrees C;

(c) the mass of an animal carcass may be indicated as "cold mass";

(d) the words "contents", "net mass" or "net" may be used with a statement of quantity; and

(e) the "stretched" length may be indicated in addition to the "un-stretched" length in the case of elastic materials provided that both such lengths are shown simultaneously. In the case of cotton crepe bandage and conforming bandage the stretched length only may be shown.

16 Pre-packed products sold other than by measuring unit

Pre-packed goods or articles which may be sold other than by reference to a measuring unit must bear no direct or indirect reference alluding to quantity in terms of any measuring unit or number, including numbers which might be construed as such a reference either:

(a) on the goods, package or container;

(b) on the label attached thereto or inserted in a transparent container;

(c) on any invoice, delivery note or other writing.

SPECIAL REQUIREMENTS FOR THE SALE OF GOODS SOLD OTHER THAN IN PRE-PACKED FORM

17 Price descriptions

(1) When any articles or goods are offered for sale by means of a price description displayed on or near retail premises for the purpose of drawing the attention of prospective purchasers:

(a) the quantity of such articles or goods when actually sold to a purchaser must, subject to any tolerance that may be prescribed for the measurement of such goods or articles, not be less than that quantity which the purchaser should receive for the amount paid by him or demanded from him and should be calculated at the price per measuring unit or by number shown on the price description which has been so displayed; unless

(b) the seller has made known to the prospective purchaser before concluding the sale that the price description which has been so displayed will not apply to the prospective transaction.

(2) Any price description displayed or advertised in connection with any article or goods sold by volume, mass, length or area and making reference to quantity must be expressed in terms of a permissible measuring unit only and unless such price description refers to an available pre-packed quantity of such article or goods, it must be in the form of a unit price expressed in rands or cents per:

(a) millilitre;

(b) litre;

(c) kilolitre;

(d) cubic metre;

(e) milligram;

(f) gram;

(g) kilogram;

(h) ton;

(i) millimetre;

(j) metre;

(k) square metre; or

(l) hectare,

as the case may be.

(3) In the case of articles or goods sold by mass or volume such unit price may also be expressed in rand or cents per 100 g or 100 ml respectively.

(4) Unwrapped cuts or pieces of meat and meat carcasses must, when displayed for sale on the premises of a retail butcher and having the price thereof marked or displayed thereon, have the net mass as clearly marked or displayed thereon as the price in characters and figures not less than half the height of the characters and figures used for the price.

18 Standard temperature for liquid products measured at the time of sale

The represented volume of a quantity of a liquid product sold by volume and measured at the time of sale, must be the volume at the ambient temperature at which it is measured, unless such volume is converted to the volume at 20 degrees C for the purposes of the transaction: provided that a quantity of liquid product which has been artificially heated and which has a temperature above 20 degrees C when being measured, must be the volume of the said product at a temperature of 20 degrees C.

19 Purchase of milk by mass

A factory, dairy or milk depot may purchase a quantity of milk from a producer thereof by mass: provided that where the equivalent of the volume of a quantity of milk is to be determined from the mass of that quantity, the density of milk must be taken as 1,03 kg/L

20 Measuring units in which the quantity of certain goods must be expressed

(1) For the purpose of complying with the relevant provisions of section 34 of the Act in respect of:

(a) goods or articles sold by quantity expressed in terms of a measuring unit; or

(b) any service rendered, the quantity of which is expressed in any measuring unit,

only an appropriate measuring unit, specified in regulations, issued under the Measuring Units and National Measuring Standards Act, 2008 (Act 08 of 2008), must be used, unless:

(i) exemption in writing for deviating from this has been granted by the National Regulator; or

(ii) it is used in connection with a purpose or an article exempted in the regulations as amended.

(2) The use of any measuring unit or its symbol in connection with any contract, bargain, sale, purchase or transaction must be:

(a) in accordance with the rules specified in regulations, issued under the Measuring Units and National Measuring Standards Act, 2008 (Act 08 of 2008) referred to in sub-regulation (1); and

(b) expressed in the manner prescribed in SANS 289, unless permission in writing for deviating from this has been granted by the National Regulator.

ACCURACY OF MEASUREMENT WHEN DETERMINING THE QUANTITY OF GOODS

21 Suitable instruments to be used and made available

(1) Any person who:

(a) measures the quantity of goods or articles in the presence of a purchaser: or

(b) in the retail trade, pre-packs goods or articles for sale, must use a measuring instrument suitable for the purpose and must make such instrument available to:

(i) an authorised officer who wishes to check the quantity of pre-packed goods or articles; or

(ii) a purchaser who wishes to measure the quantity of the goods or articles purchased by him.

(2) This requirement will not apply when a vessel is used for the measurement of liquids in accordance with regulation 23(1).

(3) Any person, other than a person referred to in sub-regulation (1) or a person packing goods in terms of a registration certificate issued under the quantity mark scheme referred to in "Compliance Schemes" in Part VI, who pre-packs goods for sale must:

(a) keep a suitable measuring instrument for the purpose of checking the quantity of such goods; and

(b) make such measuring instrument available to an authorised officer who wishes to check the quantity of such goods.

(4) An instrument referred to in sub-regulations (1) and (3) will be deemed to be suitable if it fulfils the requirements of SANS 458.

(5) In addition to the requirements of Item 4(4)(c) of SANS 458 and where a deficiency error is not permitted for pre-packages of the goods being measured, for example certain goods sold by number, an instrument used in terms of:

(a) Sub-regulation (1) of these regulations must have a permitted maximum permissible error not exceeding 2 percent at the point of measurement of such goods; and

(b) Sub-regulation (3) of these regulations must have a permitted maximum permissible error not exceeding 2 percent at the point of measurement of such goods and must be adjusted at the time of verification to have no negative error.

22 Tolerances permitted on the determination of the quantity of goods

Tolerances and permissible differences between the represented or marked quantity of goods and the actual quantity of such goods permitted under section 33 of the Act are those prescribed in SANS 458, as amended, unless the requirements of regulation 24(1) and (2) of this part apply.

23 Accuracy of vessels or containers used for the sale of liquids

(1) A vessel or container used for the purpose of determining the quantity of a pre-packed liquid sold therein must be of a nominal volume not exceeding five litres, provided that:

(a) such a vessel or container may only be used for the measuring off of any liquid in the retail trade at the time of sale of such liquid if it has a narrow neck and is presented to the retail dealer by the purchaser;

(b) if the denomination of volume thereof is indelibly marked thereon, and

(c) such a vessel or container must be filled to the brim.

(2) The volume of any container manufactured, supplied or used for the purpose of determining the quantity of beer, spirit coolers, alcoholic fruit beverages, alcoholic fruit beers or ales that are supplied from bulk for consumption on the premises, must be:

(a) defined by an indelible line or indentation at least 25 mm in length, distant not less than 10 mm and not more than 35 mm from the brim; and

(b) when such container is filled when the meniscus of the product is up to the bottom of such line or indentation, it must hold at least the volume which must be indicated thereon in a position close to such line or indentation in clear and legible figures and letters not less than 5 mm in height.

(3) In the case of pre-packed liquid goods in glass bottles where the actual quantity is less than the represented quantity by not more than the permissible deficiency tolerance specified in SANS 458, it must be a defence in the case of any prosecution for an offence, if it is proved that the packer, after checking the volume of a representative sample of a batch of such bottles, then relied upon the volume of such bottles for determining the quantity of liquid packed therein and that he filled such bottles to the maximum possible level or to the level specified to him by the manufacturer or supplier thereof or to the level implied in any agreement or specification in accordance with which the bottles in question were manufactured and supplied to the packer.

24 Authorisation to deviate from requirements

(1) The National Regulator may:

(a) give written permission to deviate from the requirements of:

(i) these regulations;

(ii) SANS 289; or

(iii) SANS 458,

as the National Regulator may deem fit and under any conditions that the National Regulator may deem necessary, unless the requirements of paragraph (b) apply;

(b) not give permission for the sale of any pre-packed products that are deficient of the quantity marked on the packages unless:

(i) the National Regulator receives a guarantee to the effect that the sale is to an end user and not for resale: and

(ii) the purchaser and seller agree to such sale.

COMPLIANCE SCHEMES

1 Scope

These regulations specify requirements for the compliance schemes and distinctive marks that are used by the National Regulator to regulate more effectively in terms of section 37 of the Act.

2 Quantity mark scheme

(a) The quantity mark must be the "e" mark as defined in SANS 1841.

(b) No person may apply a quantity mark to pre-packaged goods unless registered as a quantity mark company under SANS 1841.

(c) A quantity mark may only be applied or used in a manner authorized in regulation 1 of Part VI.

(d) A person will be deemed to have applied a quantity mark to pre-packaged goods if he or she has:

(i) applied that quantity mark to any container or covering of the goods concerned or to any label attached to said goods or to any container or covering thereof;

(ii) placed or enclosed the goods concerned in any container or covering to which the quantity mark has been applied or to which is attached any label to which the quantity mark has been applied; or

(iii) in connection with the sale of the goods concerned, directly or indirectly referred to the quantity mark in a manner or under circumstances likely to convey the impression that the quantity of goods comply with the requirements of SANS 1841.

3 Measurement mark scheme

(a) The measurement mark must be the "ɘ" mark defined in SANS 1840.

(b) No person may apply a measurement mark to a measuring container bottle unless the company is registered as a manufacturer of measuring container bottles under SANS 1840.

(c) A measurement mark may only be applied or used in a manner authorized in Part VIII, regulation 1.

(d) A person will be deemed to have applied a measurement mark to measuring container bottles if he or she has:

(i) applied the measurement mark to any measuring container bottle falling within the scope of SANS 1840;

(ii) applied the measurement mark to any measuring container bottle that does not fall within the scope of SANS 1840; or

(iii) in connection with the sale of any container, directly or indirectly referred to the measurement mark in a manner or under circumstances likely to convey the impression that the container complies with the requirements of SANS 1840.

4 Application for a registration certificate

(1) An application for a registration certificate to apply the quantity mark or the measurement mark must be made to the National Regulator.

(2) The National Regulator may:

a) issue a registration certificate for any indefinite period or for a fixed period on such conditions as may deem necessary

b) withdraw or, subject to such condition as may deem necessary, suspend a registration certificate or terminate suspension of such registration certificate.

3) The holder of a registration certificate contemplated in subsection (b) i) which has been withdrawn in terms of section (b) ii), or which has expired due to effluxion of time or for any other reason must at the written request from the National Regulator immediately return that registration certificate to the National Regulator.

5 Offenses in respect of compliance schemes marks

Any person who applies the marks contemplated in sub-regulation (2) and (3) of Part VI, without being in possession of a registration certificate issued by the regulator in terms of sub-regulation (4) of Part VI, shall be guilty of an offence in terms of the Act.

MEASURING INSTRUMENTS, PRODUCTS OR SERVICES NOT CONFORMING TO LEGAL METROLOGY TECHNICAL REGULATIONS

1 Scope

This part of the regulations deals with the process to be followed when measuring instruments, products or services that are used for a prescribed purpose in terms of the Legal Metrology Act does not comply with the legal metrology technical regulations.

2 Directive

(1) Where a non-conformance relating to a measuring instrument, product or service is found, the National Regulator must direct in writing that such measuring instrument, product or service be brought into compliance with any relevant technical regulation as required by section 18(1) of the Act.

(2) Should the person to whom such directive is issued fail to bring the measuring instrument, product or service into conformance with the relevant legal metrology technical regulation, the National Regulator may direct in writing that such measuring instrument, product or service be confiscated, destroyed or returned to the country of origin in such manner as the National Regulator may deem fit.

(3) A directive issued by the National Regulator in terms of section 2(1) above, may:

(a) be withdrawn in writing by the National Regulator if no steps have been taken by the National Regulator within 120 days of the date of issue of the directive.

(b) be withdrawn, in writing within 30 days, from the date the evidence of conformity of the measuring instrument, product or service covered in a directive was submitted to and accepted by the National Regulator.

(c) remain valid even where the directive for any measuring instrument, product or service cannot be served on the manufacturer, importer, seller or supplier for any reason.

(4) Any person issued with a directive is responsible to ensure that each measuring instrument, product or service which does not conform to a legal metrology technical regulation is kept separate from the compliant products and is not removed, supplied or sold.

(5) A person issued with any directive is further responsible for any costs or losses incurred in keeping such measuring instrument, product or service in his or her possession or under his or her control at or on any premises specified in the directive by the National Regulator, including where the measuring instrument or products are kept at the premises of or under the control of the National Regulator or returned to country of origin or destroyed.

(6) A person is guilty of an offence if that person acts in contravention of a directive issued in terms of section 18 of the Act.

3 Confiscation

Where the National Regulator directs in writing in terms of section 2(2) above that a person who has failed to meet the requirements of a directive issued in line with Section 18 (1) of the Act and section 2(1) above, the National Regulator may confiscate the non-compliant measuring instrument or product, as follows:

(a) Confiscation may be in the form of physical removal of measuring instrument, or product to a location identified by the National Regulator. Any measuring instrument or product in respect of which a directive in terms of sub-regulation 2(1) above has been issued which has been confiscated becomes the property of the National Regulator.

(b) Non-compliant measuring instruments or products confiscated may be disposed of in accordance with the internal procedures of the National Regulator.

(c) The confiscation of measuring instruments, products or services in terms of the Act or Regulations does not affect the person's liability for any fees that may be or become payable by that person in respect of the measuring instrument, product or service or any other punishment in terms of the Act or any other legislation.

(d) Any cost incurred by the National Regulator for the confiscation, destruction, storage, transportation or otherwise dealing with the measuring instrument, product or service may be recovered from the person issued with a directive.

4 Destruction

Where the National Regulator directs in writing that a person who has failed to meet the requirements of a directive issued in line with Section 18 (1) of the Act the National Regulator may after confiscation destroy the non-compliant measuring instrument, product or service. Destruction shall be carried out as determined by the National Regulator.

5 Return to country of origin

(1) The National Regulator may direct in writing that a person who has failed to meet the requirements of a directive issued in terms of sub-regulation 2(1) and Section 18 of the Act return the measuring instrument, product or service to the country of origin. Return to country of origin must be in line with the following:

(i) All costs incurred in returning the measuring instrument or product to the country of origin must be for the account of the person using such measuring instrument or product or service.

(ii) Documented proof that the measuring instrument or product has been returned to the country of origin must be supplied to the National Regulator within 14 days from the date that the order has been issued by the National Regulator.

(2) A person is guilty of an offence if that person acts in contravention of a written notification by the National Regulator issued in terms of sub-regulation 5(1), above.

Part VII: MEASURING INSTRUMENTS AND CONTAINERS USED FOR PRESCRIBED PURPOSES

1 Scope

The provisions of this Part shall not apply to measuring instruments that are used for any purpose other than a prescribed purpose

2 Measuring units, prefixes, symbols and their usage

(1) Subject to the provisions relating to use of a measuring unit specified in any provision of any technical regulation, the recognised measuring units and prefixes for the purposes of the technical regulations are the measuring units and their multiples and submultiples and prefixes specified in the Measurement Units and Measurement Standards Act, 2006, and relevant regulations,

(2) No recognised measuring unit or multiple or sub-multiple thereof must for the purposes of the technical regulations be designated by any symbol other than a symbol specified in the regulations referred to in sub-regulation (1), subject to any provision in any technical regulation relating to their usage.

(3) The measuring unit "metric carat", symbol "CM", may be used in trade for expressing the mass of precious stones and pearls.

3 Permissible nominal values (denominations) of mass pieces and of material measures

The permissible nominal values (denominations) of mass pieces, of material measures of length and of material measures of volume are those specified in an applicable technical regulation of this Part or relevant SANS document.

4 Measuring instruments not to be subject to initial or subsequent verification and prohibition from use of certain measuring instruments

(1) A market surveillance inspector or verification officer must not initially or subsequently verify the following:

(a) Any measuring instrument which-

(i) is not sufficiently strong to withstand the wear and tear of ordinary use for the purpose for which it is used or intended to be used

(ii) does not meet the requirements prescribed for its class or type in the Act and in these regulations unless such measuring instrument is of the model approved in terms of section 22 of the Act.

(iii) is not complete;

(iv) is not in a clean state;

(b) any mass meter which-

(i) has a broken scoop, pan, plate or other part, which is vital to its operation;

(ii) has a scoop, pan or plate of such size or shape as may lead to incorrect measuring, either through its fouling the housing of the mass meter or because its size or shape may cause proper contact between knife-edges and bearings to be disturbed;

(iii) has a goods plate which is readily absorbent of moisture, whether because of the material of which it is made or on account of faulty glazing or of the extent to which it is cracked or chipped;

(iv) has proportional counterpoises the total value of which added to the full steelyard or dial reading does not correspond to the marked capacity of the mass-meter, unless authorization to verify is granted by the National Regulator;

(c) micrometer scales, unless of a model approved in terms of section 22 of the Act;

(d) box-end beam scales, except those used in post offices for measuring the mass of letters;

(e) counter steelyards, unless of a model approved in terms of section 22 of the Act;

(f) any measuring instrument prohibited under section 29 of the Act or under these regulations;

(g) any non-metric measuring instrument;

(h) any measuring instrument unless it is of a model approved in terms of section 22 of the Act, and it is clearly and indelibly marked with the number of the certificate of approval as described in Part VIII;

(i) any measuring instrument of a model or modified model which has been refused approval in terms of section 22 of the Act or in respect of which a certificate of approval has been withdrawn.

(2) The use for any prescribed purpose of the following measuring instruments is prohibited:

(a) any accelerating type of balance, beam scale or counter scale;

(b) any accelerating type of steelyard or counter platform scale;

(c) any mass meter of the type known as a "Union" scale;

(d) any swan-necked beam scale;

(e) any steelyard

(i) having a capacity of less than 50 kg;

(ii) which is reversible or has more than one load-hook;

(iii) not provided with a zero graduation

5 Use of units for the indication of results of measurements

(1) Unless otherwise approved by the National Regulator or as described in the provisos following table 2, any indication of the result of a measurement by any graduated measuring instrument, other than a material measure, which is to be approved in terms of section 22 of the Act, or any indication of the result of a measurement by any new graduated measuring instrument, other than a material measure, which does not require to be approved in terms of section 22 of the Act, must be indicated in terms of only one unit of the measuring units referred to in regulation 2 of this Part and any figured subdivisions of such units must be indicated as decimal submultiples thereof.

(2) Unless otherwise approved by the National Regulator, the applicable measuring unit referred to in sub-regulation (1) of this regulation must be that shown in Column 4, table 2 in respect of the category of measuring instrument, other than a material measure.

1	2	3	4
TABLE 2			
Category of measuring instrument	**Capacity, if measurement is of a fixed quantity equal to capacity**	**Capacity, if measurement is of various quantities up to capacity**	**Units**
a. Mass meters	(i) 1 kg or more (ii) 1 g or more but less than 1 kg (iii) less than 1 g	more than 1 kg more than 1 g but not more than 1 kg not more than 1 g	kg g mg
b. Length measuring instruments	(i) 1 m or more (ii) less than 1 m	more than 1 m not more than 1 m	m mm
c. Area measuring instruments	(i) 10 m^2 or more (ii) less than 10 m^2	more than 10 m^2 not more than 10 m^2	m^2 dm^2
d. Volume measuring instruments.	(i) 1 *L* or 1 dm^3 or more	more than 1 L or 1 dm^3	1 L or 1 dm^3
	(ii) less than 1 *L* or 1 dm^3	not more than 1 L or 1 dm^3	ml or cm^3

Provided that-

(a) in respect of a mass meter having a capacity of more than 1 000 kg, the unit may be the ton (t);

(b) in respect of a volume measuring instrument for liquids having a capacity of more than 1 000 l the unit may be the kilolitre (kl) or the cubic metre (m^3);

(c) where the capacity according to Column 3-

(i) in the case of a mass meter is 1 kg or 1 g, the unit for the terminal indication may be 1 kg or 1 g, respectively;

(ii) in the case of a length measuring instrument is 1 m, the unit for the terminal indication may be 1 m;

(iii) in the case of a volume measuring instrument is 1 L, the unit for the terminal indication may be 1 L;

(d) any capacity referred to in the table 2 is the total value indicated directly or indirectly on the indicating dial or graduated scale of the measuring instrument including the value of any means of increasing the measuring range including, in the case of a mass meter, any loose proportional

counter poise, but excluding the value compensated by any loose mass piece in the case of a semi-self-indicating scale or by any separate adding tare compensating device.

Form of values of graduations

(3) On any new graduated measuring instrument the value of the smallest graduation shall be in the form of 1×10^n, 2×10^n, or 5×10^n of a measuring unit authorised by the Act where the exponent "n" is a positive or negative whole number or zero.

Reading by simple juxtaposition

(4) Except as otherwise provided in a regulation of this Part, the graduations and the figures on any new graduated measuring instrument must be so arranged as to give the result of any measurement on the principle of reading by simple juxtaposition, including the value of any or proportional counterpoise which is indicated on the dial of any mass meter with which such mass piece or counterpoise is used.

(5) Loose mass pieces used with semi-self -indicating scales and loose proportional counterpoises used in conjunction with steelyards on mass meters are excluded from the provision of sub-regulation (4) of this regulation.

6 Advance of indication by digital indicators

Unless otherwise approved by the National Regulator, when the value of the quantity indicated by any continuously indicating digital or semi-digital indicator is increasing, the change to the next higher figure in any decade higher than the units decade must occur when the indication in the units decade is moving between its highest figured graduation and zero or is moving the last one tenth of its travel towards zero, whichever is the lesser, and the change in the higher decades must be completed when the indication in the units decade has reached zero and conversely when the value of the quantity indicated is decreasing, the change to the next lower figure must occur when the indication in the units decade is moving between zero and its highest figure graduation or for the first one tenth of its travel from zero and the change in the higher decades must be completed when the indication in the units decade has reached the highest figured graduation or has moved one tenth of its travel.

7 Extent of rounding error permitted

Except as otherwise provided in a regulation of this Part or in a certificate issued in terms of section 22 of the Act, the rounding error must not exceed 0,5 of the value of one increment of the indicating scale on any measuring instrument with digital indication: Provided that such error may exceed 0,5 of the value of one such increment by not more than 0,2 of such value if this is necessary to overcome any uncertainty in the indication.

8 Indication by several indicators

(1) Except as otherwise provided for in a technical regulation or in a certificate issued in terms of section 22 of the Act, where a measuring instrument has more than one indicator included in the verification of the measuring instrument, whether analogue or digital or whether the indication is visual or is a printed record -

(a) the value of the smallest graduations of all of the analogue indicators must be the same;

(b) the value of the smallest graduations of all of the digital indicators, including printers, must be the same;

(c)the value of the smallest graduation of a digital indicator, including a printer, operating in conjunction with an analogue indicator, may be smaller than but must not be more than the value of the smallest graduation of the analogue indicator;

(2) The result of a measurement indicated by the several indicators, with any digital indication corrected for rounding error, must not differ, one from another, by more than the permissible error or by more than the permissible error on that indicator which has the greater value of the smallest graduation where these values differ provided that there shall be no difference in the results indicated by the several digital indicators.

(3) Permissible errors in visual indication or in printing must be related to the respective value of the graduations of each of the visual indicators or printers provided that, where the value of the graduations of a printer is smaller than the value of the graduations of an associated analogue indicator, the allowances must relate only to the value of the graduations of the analogue indicator and the printer may record the result of a measurement equal to the analogue indication, rounded to the nearest printer increment.

9 Notice in connection with the periodic verification of measuring instruments as envisaged in section 24(2) of the Act.

(1) The National Regulator may by notice in the Government Gazette in respect of any measuring instrument which in terms of this Act is required to be verified, prescribe maximum intervals within which all such measuring instruments, or a certain class or kind of such measuring instrument, must be verified, or

(2) Call upon every person possessing any such measuring instrument to make available such measuring instrument to any designated verification laboratory, or if no designated verification laboratory exists for such measuring to any regional office of the National Regulator, for the purpose of being verified unless it is a measuring instrument bearing a verification mark and is covered by a verification certificate which is valid for the period contemplated in subsection (1) and for the year to which the notice in question applies; or

(3) The National Regulator may take such steps as may be deemed expedient to bring any notice published under subsection (1) to the attention of persons affected by it.

(4) Any measuring instrument must be made of such material as will effectively preclude inaccurate measurement owing to any corrosive or other property of the product being measured and must be sufficiently strong to withstand, without distortion, the maximum pressure at which it is designed to work for the duration of the verification periods as specified.

10 Measuring instruments acquired unverified to be verified before use for a prescribed purpose

Any measuring instrument which does not bear a verification mark for the verification interval stipulated in "REGULATION PERTAINING TO PERIODIC VERIFICATION" of Part VII when acquired for use for any prescribed purpose must, prior to being put into use for such purpose, be submitted to any designated body for initial or subsequent verification.

11 Mass measuring instruments deemed to be unverified after having been re-installed

Any vehicle scale whether or not self-contained or any non-self-contained platform scale which has been re-installed after it has been verified must be deemed to be unverified until such time as it has been verified in its new position.

12 Acceptability of a declared quantity

Subject to any applicable provision of any technical regulation, the quantity of any product or thing, determined as the result of a measurement by a measuring instrument permissible for use in terms of the Act and suitable for measuring the quantity of the article or thing in question, must, when declared for the purpose of the provisions of any law or bylaw, be deemed to be the acceptable quantity of such article or thing.

13 Method of determining the tare or gross mass of containers, railway trucks or road vehicles

(1) Except as otherwise provided in any regulation of this Part, when the tare or gross mass of any container, railway truck or road vehicle or combination of railway trucks or road vehicles is to be determined for any prescribed purpose, the measuring of such mass must be carried out upon a suitable mass meter having a goods platform or platforms of such size as to allow of the mass of such container, truck, road vehicle or combination being measured as one complete unit and during such measuring, the entire container, truck or road vehicle or combination must be stationary on the platform or platforms and if a combination of trucks or road vehicles must be uncoupled to form separate units in order that their tare or gross mass be measured as prescribed herein, each such separate unit must be entirely disconnected before the measuring takes place.

(2) Notwithstanding the provisions of subsection (1) of this regulation, the gross mass or tare of any railway truck or combination of railway trucks forming a train or of any road vehicle or combination of road vehicles may be determined for a prescribed purpose while any such truck or vehicle is -

(a) stationary and is coupled with other such trucks or road vehicles not on the platform or platforms of the mass meter and such mass may be determined in the case of a combination by adding together the individual truck or road vehicle loads; or

(b) in motion, whether or not coupled to other trucks or road vehicles not on the platform or platforms of the mass meter and such mass may be determined by adding together the individual axle mass loads of the truck or road vehicle or combination:

Provided that the determination of mass is made by means of a mass meter or combination of mass meters which complies with any provision of any regulation of this part applicable to any mass meter suitable to be used for the determination of mass as set out in paragraph (a) or (b) of this sub-regulation and-

(i) approved for such purpose of use in terms of section 22 of the Act; or

(ii) the National Regulator has evaluated the method of determining the mass of such trucks or road vehicles and has satisfied itself as to the accuracy thereof and that all parties to the transaction are in agreement thereto.

(3) Notwithstanding the provisions of sub-regulation (1) of this regulation, the gross mass or tare of any road vehicle or of a combination of such vehicles may be determined for the purpose of the relevant provisions of any road traffic ordinance by adding together the individual mass loads of such vehicle or vehicles, as obtained by the measuring thereof by means of mass measuring instruments referred to in regulation 14 of Part VII.

14 Measuring instruments used for determining axle mass loads of vehicles

Any mass measuring instrument used or intended to be used for the determination of an axle or wheel mass load of a road vehicle for the purpose of the relevant provisions of any road traffic ordinance must be a verified road vehicle scale or combination of road vehicle scales which complies with the regulations of this part applicable to wheel mass load scales.

15 Measuring instruments not intended for use for a prescribed purpose

Where any person keeps a measuring instrument on premises or at a place where he carries out an act which falls within the mandate of the Act, a permanent and conspicuous notice must be affixed on a suitable and conspicuous part of any unverified measuring instrument which is kept on such premises or at such place and which is not used or possessed for a prescribed purpose:

"NOT TO BE USED FOR ANY PRESCRIBED PURPOSE"

16 Duties of person submitting or using measuring instruments

A market surveillance inspector or verification officer may require the person submitting any measuring instrument for verification or using any measuring instrument for a prescribed purpose to -

(a) dismantle it sufficiently to enable a market surveillance inspector or verification officer to examine the working parts;

(b) provide sufficient labour for the proper and expeditious handling of the standards or any material which may be used in the testing of such measurement instrument;

(c) provide the verified measurement standards prescribed in the relevant technical regulation for a market surveillance inspector or verification officer to undertake the prescribed tests;

(d) provide facilities to the satisfaction of the National Regulator for the measuring or re-measuring of the quantity of any product used for the testing of a measuring instrument;

(e) open any locking device on such measuring instrument or on any measuring instrument or ancillary equipment used in conjunction therewith;

(f) furnish a market surveillance inspector or verification officer with a sufficient number of coins of appropriate denomination, or with a sufficient number of suitable metal discs, for the purpose of undertaking the prescribed tests of any coin-operated measuring instrument, which coins or discs must be returned to the submitter or be left in the measuring instrument on completion of the testing.

17 Verification on premises of a designated repair or verification body

Measuring instruments may by arrangement, be verified initially or subsequently on the premises of a manufacturer or repairer thereof or a dealer if there is no stipulation in a technical regulation prohibiting such initial or subsequent verification at a premises other than the one where it is used. The verification officer concerned may require such manufacturer, repairer or dealer to provide him with suitable transport to convey him and any measurement standards and equipment that he may require from any place that may be his headquarters to such premises and back.

18 Marking of number of approval certificate

Any new measuring instrument of a model in respect of which a certificate has been issued in terms of Section 22 of the Act must be clearly and indelibly marked with the number of such certificate, in the manner prescribed in "Distinctive Marks" of Part VII

19 Removable parts

No measuring instrument must have any readily removable part of which the removal of such part would affect the accuracy of the measuring instrument, unless the part is such that the measuring instrument cannot be used without it.

20 Interchangeable or reversible parts

No measuring instrument must have any readily interchangeable or reversible parts, unless the interchange or reversal does not affect the accuracy of the measuring instrument or unless such interchangeable or reversible parts are clearly and indelibly marked to indicate their positions on the measuring instrument.

21 Marking of capacity or denomination

Every measuring instrument must have its capacity or its denomination, as the case may be, indelibly and conspicuously marked on it in the manner prescribed by any technical regulation applicable to the measuring instrument or in the manner required by the National Regulator in respect of a model of measuring instrument approved in terms of section 22 of the Act, except in so far as exemption is provided for certain mass pieces in regulation 36 (4) (c) of Part VII.

22 Affixing of verification mark

Except as otherwise provided in any technical regulation of Part VII applying to a measuring instrument of a specific class or kind or as provided on approval of a model of in terms of section 22 of the Act, every measuring instrument must be provided with a means to receive the verification mark in an easily accessible and essential part of the measuring instrument.

23 Defacing of verification mark and authority for further use

(1) When a market surveillance inspector finds that any measuring instrument is false, defective or inaccurate or does not meet any requirement of the Act or of any technical regulation, the market surveillance inspector must reject the measuring instrument and must obliterate any existing verification mark thereon by means of a defacing stamp of six-pointed star design, provided that where there is no plug for a verification mark on the measuring instrument, the market surveillance inspector must place the defacing mark in the most visible position.

(2) As contemplated in section 38 (1) (t) of the Act, where a market surveillance inspector has rejected any measuring instrument as set out in sub-regulation (1) of this regulation, for a reason other than its being false, defective, or inaccurate, the market surveillance inspector may authorise the owner or user, in writing, to continue to use such measuring instrument for such reasonable period as the market surveillance inspector may in the circumstances deem necessary.

24 New and used measuring instruments

Except as otherwise provided in any technical regulation and except as provided for in the provisions of regulation 25 (2) (c), where any requirement of any regulation applies specifically to a new measuring instrument, such requirement must apply equally to such measuring instrument when it is no longer new.

25 Mass meters: Position of balance and means of balancing at zero load

(1) (a) The position of balance of a mass meter at zero load must be indicated-

(i) in the case of a vibrating mass meter, by the beam or steelyard returning to the horizontal position of equilibrium when disturbed therefrom;

(ii) in the case of an accelerating mass meter of the type known as a dead-mass scale, by the beam, on being released from the horizontal position with the mass piece plate on its stop, falling gently under its own acceleration until the goods plate comes to rest on its stop, and in the case of other accelerating mass meter, by the steelyard, on being released from the horizontal position on the lower stop, rising gently under its own acceleration to the upper stop;

(iii) in the case of a self-indicating or semi-self-indicating mass meter with analogue indication and in the case of a mass meter provided with a difference chart, by the index coming to rest at the zero graduation, or vice versa;

(iv) in the case of a self-indicating mass meter with digital indication, by the number "O" appearing on the main indicator and the balance indicator, where provided, being at zero balance position.

(b) In the case of any mass meter provided with a spirit level or other level indicator, the position of balance prescribed in this sub-regulation must be indicated when the spirit level bubble or other level indicator is within its indicators or in its true position.

(c) Paragraph (a) of this sub-regulation must not apply in the case of a mass meter approved in terms of section 22 of the Act if such measuring instrument is so constructed as not to be in balance or not to indicate zero when unloaded.

(2) (a) Except as otherwise provided in any regulation of this Part or in terms of the approval of a mass meter under section 22 of the Act -

(i) every mass meter must be provided with a means for balancing the measuring instrument at zero load, in accordance with any appropriate provision of sub-regulation (1) of this regulation;

(ii) a self-indicating mass meter with digital indication must be provided with a means for indicating the position of balance at zero load:

Provided that, where the balance indication is itself digital or not continuous, the mass meter must be correct within one quarter of the value of the smallest graduation of the main indicator when the position of balance is indicated.

(b) (i) Except as otherwise provided in any regulation of this Part where the balance of a mass meter at zero load is manually adjustable by means of a continuously operating rotatable device, one full turn(360 degree rotation) of such device must not affect the position of balance by more than 0,1 per cent of the capacity of the mass meter, or in the case of a self-indicating mass meter by more than 0,1 per cent of the capacity of such mass meter or by more than the value of the smallest graduation of such mass meter, whichever is the lesser.

(ii) The means for balancing a zero load of any mass meter, other than a mass meter having only digital indication, must operate continuously when being adjusted.

(iii) The means for balancing at zero load of a mass meter having only digital indication may operate in discrete steps, the value of each step being not more than one quarter of the value of the smallest graduation of the mass meter.

(c) On a new or repaired mass meter the means for balancing must be equally adjustable either way when the mass meter is submitted for verification by a mechanic or it has been repaired or maintained by such a person.

(d) (i) Except as otherwise provided in any regulation of this Part a mass meter, which has digital indication may be provided with a device which, when set in operation by means of a push-button, automatically resets the indication to zero.

(ii) Where a device referred to in subparagraph d(i) of this paragraph does not also adjust the balance in accordance with any appropriate provision of sub-regulation (1) of this regulation, an additional device must be provided for balancing as required.

(e) (i) Except as otherwise provided in any regulation of this Part, a mass meter may be provided with a device which automatically maintains the mass meter in balance at zero load or which automatically compensates, in the indication of the result of a measurement, for an out of balance condition at zero load.

(ii) A device referred to in subparagraph (i) of this paragraph may be an apparatus for setting the indication to zero when the load is within a pre-determined range about zero or in an appropriate case and where approved in a certificate issued in terms of section 22 of the Act an apparatus known as an "automatic calibrator", for periodically simulating a pre-determined load, comparing this with the indication and, within a pre-determined range,

adjusting the indication to correspond with the simulated load, thus in effect compensating for an out of balance condition at zero load.

(iii) A device referred to in subparagraph (i) of this paragraph must be so arranged that the zero load balance is maintained or imbalance is compensated for so as to be within one quarter of the value of the smallest graduation of the main indicator and so that zero is indicated when there is no load on the mass meter.

(iv) Any means provided for switching a device referred to in subparagraph (i) of this paragraph out of operation must not be available to an operator.

(v) The operation of any device referred to in sub-paragraph (i) of this paragraph must be delayed for such a period and the pre-determined range of the device must be so limited, taking the delay period into consideration, that the device does not operate during the placing of any load on the load receptor of the mass meter by any means normally employed for placing such load.

26 Placing of indicators of mass meters

(a) Except where a mass meter operates automatically or where the operation of loading and unloading the load receptor is controlled from a position where the operator can observe the indication of at least one indicator, including at least one printer if any printer is provided, the indicator must be so placed that the person operating the indicator or observing the indication has a clear and unobstructed view of the load receptor, unless otherwise approved by the National Regulator.

(b) Any additional indicator not placed in accordance with subsection (a) of this regulation shall not be deemed to be verified in any verification of the mass meter.

27 Construction and strength of mass meters and measuring instruments

Strength

A mass meter must be of such strength and must be so designed and constructed that it will support, without yielding unduly, a load equal to the capacity of the mass meter and in addition will support, without yielding unduly, the placing of such load on the load receptor by any means normally employed for placing the load.

Construction of measuring instruments

A measuring instrument must be such that correct measurement is not affected by –

(a) fluctuation in supply voltage and frequency;

(b) externally or internally generated electromagnetic or electrostatic interference;

(c) atmospheric conditions such as humidity or pollution;

(d) vibration from any source;

(e) other environmental conditions; or

(f) constructional conditions e.g. civils

28 Positioning of mass meters

A movable mass meter must only be used in locations where environmental conditions cannot unduly affect their accuracy and be positioned and operated on a firm and rigid base, free from vibration.

29 Knife-edges and bearings

(1) Where the load transmitting device of a mass meter comprises a beam or lever system with knife-edges and bearings-

(a) the knife-edges and bearings must be so fitted as to allow the beam, steelyard or levers to move freely;

(b) the knife-edges must be firmly secured in position, must be in true parallelism and, where the design so requires, must be coplanar and must bear throughout the length of the parts designed to be in contact with the bearings;

(c) any knife-edges with round shanks must either have an interference or tapered fit in the holes in which they are fitted or set screws or bolts must so secure the knife-edges in position that they cannot twist;

(d) any lateral displacement between knife-edges and bearings must be limited by friction plates, studs or shoulders so arranged that the contact between the knife-edge and the friction element is at a point on an extension of the line of contact between the knife- edge and the bearing;

(e) the knife-edges, bearings and friction surfaces must be made of hardened steel or agate or other material approved by the National Regulator.

(2) No mass meter must have packing at the knife-edges which, in the opinion of the market surveillance inspector or verification officer, either consists of an excessive number of pieces or is in any other respect unsuitable for its purpose or have caulking at the knife-edges unless the caulking is required by the design of the mass meter for securing the knife-edges and is so applied as not to interfere with the proper seating of the knife-edges or affecting the accuracy of measurement.

(3) Any portable mass meter of which the load transmitting device comprises a lever or levers with knife-edges and bearings must be so constructed that the contact between knife-edges and bearings or between the load receptor and the load transmitting device cannot be disturbed during use or transportation, provided that a locking or relieving device may release the contact between knife-edges and bearings.

30 Steelyards and travelling or sliding poises on mass meters

Steelyards

(1) On any mass meter of which the load measuring device, or part thereof, including a tare beam, is a steelyard-

(a) the upper surface or edge of the steelyard must be in a perfectly straight plane over the graduated portion;

(b) adequate stops must be provided to prevent any of the poises from travelling behind the zero graduation or off the steelyard.

Graduations on steelyards

(2) (a) The graduations on a steelyard must consist of notches or indelible lines so defined that the position of the travelling or sliding poise or poises with respect thereto is easily discernible.

(b) Notches and graduation lines must be evenly cut or marked in one plane at right angles to the steelyard, must be uniformly spaced and parallel to each other and any error in the marking of the graduations must not exceed one-fifth of the distance between graduations or the allowance of error on the mass meter, whichever is the lesser.

(c) Where notches and graduation lines are used in combination, the lines must clearly correspond to their equivalent notches.

(d) On a new steelyard the distance between notches or graduation lines, measured from centre to centre, must be not less than 1,5 mm.

(e) The width of graduation lines on a new steelyard must not exceed one quarter of the distance between them, measured from centre to centre.

(f) Where any new steelyard has two or more poises, the graduations relating to all of the poises except the smallest must consist of notches, unless otherwise approved by the National Regulator.

(g) Where any mass meter has more than one steelyard the graduations on each steelyard, except the minor steelyard, must consist of notches.

Travelling or sliding poises

(3) (a) No loose material shall be permitted in or on any travelling or sliding poise.

(b) Where lead is used for adjusting purposes on any travelling or sliding poise, it must not come into contact with the steelyard.

(c) A sliding poise on a new or repaired un-notched steelyard or steelyard bar must be provided with a set-screw or with a spring loaded brake to retain it in any set position.

(d) A new or repaired travelling or sliding poise must be so constructed that no part thereof, including the set-screw where one is provided, can easily be detached.

(e) A travelling or sliding poise must be of such shape and design that its position with respect to each notch or graduation on the steelyard is definitely indicated and easily readable.

(f) A new travelling or sliding poise must be of such shape and be so fitted that no foreign bodies can lodge in any cavity or hollow.

(g) A travelling or sliding poise must be so made that its centre of gravity cannot change except in respect of the normal movement of the poise.

31 Certain requirements in testing of mass meters

(1) Testing of movable and suspended mass meters

A movable mass meter provided with a base must be tested in a level position and a mass meter, which is suspended in use, must be suspended during testing.

(2) Testing of fixed mass meters

A vehicle scale, whether or not self-contained, and a non-self-contained platform scale or other mass meter which requires to be fixed in position when used must be tested in situ.

(3) Testing of mass meters for error

(a) Except as otherwise provided in any technical regulation, before any mass meter is tested for errors, the mass meter must be properly balanced at zero load in accordance with the appropriate provisions of regulation 25 (1) of Part VII; and

(b) except as otherwise provided in a technical regulation and as far as is practicable a mass meter must be tested for errors at loads from zero up to its capacity.

(4) Composition of test loads

Except as otherwise provided in any technical regulation or where impracticable, any test load applied to a mass meter in the course of a test for errors must consist of verified mass pieces, provided that where a sufficient number of such mass pieces are not available, suitable constant load, applied in successive quantities not exceeding the total of the available mass pieces, may be used in conjunction therewith to make up the load progressively to or near the capacity of the mass meter.

(5) Testing of mass meters for repeatability

(a) When the same load is applied repeatedly to the load receptor of a mass meter, the mass meter must indicate the mass of the load correctly on each application of the load.

(b) When the load applied to the load receptor of a mass meter is progressively increased or decreased the load at each step must be indicated correctly.

(6) Testing of mass meters for constancy when a load is kept on the measuring instrument

Except as otherwise provided for in any technical regulation, when the same load is kept on the load receptor of a mass meter for any period of up to eight hours, the, mass meter must indicate the mass correctly at any time during this period.

(7) Testing of mass meters for constancy at zero balance

(a) Except as otherwise provided in any technical regulation, after the balance of any mass meter at zero load has been properly adjusted any error of zero balance indication resulting from loading and unloading the mass meter must not exceed one-half of the allowance of error prescribed for the mass meter in respect of a load not exceeding one-half of the capacity of the mass meter.

(b) In the case of a self-indicating mass meter such error must not exceed 0,25 of the value of the smallest graduation or exceed any greater allowance of error which may be permitted in terms of any technical regulation on balance at zero load.

(c) For the purpose of this test the load may remain on the mass meter for a period of not more than 30 minutes.

(8) Testing of vibrating mass meters for sensitivity

Except as otherwise provided in any technical regulation, a vibrating mass meter must as far as is practicable be tested for sensitivity at any load up to its capacity and at any such load the mass required to effect turn of the beam or steelyard from its position of balance must not exceed the turning allowance prescribed for its class and capacity, provided that an unstable or a neutral action of the steelyard of the vibrating counter-platform or platform scale or vehicle scale may be permitted at loads above one-quarter of the capacity:

Provided further that in this case the test at capacity must be applied in the manner described in sub-regulation (11) of this regulation but without the addition of one-half of the applicable turning allowance.

(9) Testing of accelerating mass meters for sensitivity

Except as otherwise provided in any technical regulation, an accelerating mass meter must as far as is practicable be tested for sensitivity when loaded to its capacity and the mass required to overcome acceleration only over the full range of travel at capacity must not exceed one and one-half times the tabulated turning allowance prescribed for a vibrating mass meter of the same class and capacity, while the mass required to overcome acceleration only over the full range of travel with the mass meter unloaded must not exceed the tabulated turning allowance.

(10) Testing of mass meters for strength of levers

The strength of levers or other working parts of a mass meter when loaded to its capacity must be rejected if it yields unduly.

(11) Testing of mass meters on movement of knife-edges and bearings

Except as otherwise provided in any technical regulation, in the case of any mass meter provided with knife-edges and bearings, when the mass meter is loaded to one-half of its capacity, the load being centrally placed on or in the load receptor and, where applicable, also so placed on the pan for mass pieces, any difference in the accuracy of the mass meter resulting from moving the knife-edges or bearings laterally within the limits of their movement must not exceed the value of the appropriate allowance of error at a load equal to one half of the capacity.

32 Conventional mass measuring instruments

(1) A conventional mass measuring instrument, manufactured prior to the publication of these technical regulations, of any of the following classes or kinds must conform to any applicable technical regulation that pertains to it, consistent with the design of the measuring instrument and relative to each class or kind.

Any such measuring instrument which so conforms may be verified without being required to be of a model approved in terms of section 22 of the Act, unless, in the opinion of a market

surveillance inspector or verification officer any such measuring instrument is of unusual or novel design or has any feature which may facilitate inaccurate measurement:

(a) (i) equal-armed balances or beam scales;

(ii) post office letter scales;

(b) equal-armed counter scales having capacities not exceeding 50 kg;

(c) equal-armed dead-mass scales having capacities exceeding 50 kg;

(d) single-unequal armed steelyards having capacities not less than 50 kg;

(e) wall scales having two unequal-armed levers connected in series;

(f) compound lever scales of the following types, having load measuring devices comprising steelyards with travelling or sliding poises and with or without loose proportional counterpoise mass pieces:

(i) counter-platform or bench scales having capacities of not more than 150 kg;

(ii) platform scales;

(iii) hopper or tank scales:

(iv) overhead track scales;

(v) vehicle scales;

(vi) crane scales;

(2) (a) The load transmitting device of any mass meter referred to in sub-regulation(1) of this regulation must consist of a lever or a system of levers together with any necessary connecting links or rods.

(b) The pivots which connect levers together, which connect levers to their fulcrums and which connect load receptors or load measuring devices to levers, must consist of knife-edges and bearings.

(c) Pivot knife-edges must be positioned on the levers only.

(d) Where knife-edges are secured in such a manner as to allow of ready alteration to the ratio of the lever arm such alteration must be possible by means of a mechanical appliance only.

(e) No tare device must be provided on any mass meter referred to in subsection (1) of this regulation unless specially approved by the National Regulator.

33 Beam scales, balances, post office letter beam scales and mechanical non-self-indicating counter scales

(1) Applicable requirements

(a) The applicable general requirements for measuring instruments prescribed in this Part of the regulations must apply to the measuring instruments falling within the scopes of SANS

302 and SANS 303, as amended, and to post office letter beam scales unless this regulation prescribes other requirements therefor.

(b) A non-automatic, un-denominated beam scale or balance must comply with the requirements of SANS 302.

(c) A non-automatic, non-self-indicating or semi-self-indicating, un-graduated counter scale must comply with the requirements of SANS 303, as amended.

(d) A post office letter beam scale must conform to the applicable requirements for a beam scale specified in sub-regulation 1 (b), provided that a post office letter beam scale;

(i) shall not be classified into an accuracy class,

(ii) must have a goods pan of suitable design to carry letters,

(iii) unless new, may have its knife edges inserted in box ends on the beam,

(iv) may be arranged so as not to be in equilibrium when unloaded, the pan for mass pieces being permanently pre-loaded to counter balance a set mass,

(v) may be arranged so that the travel is on the goods pan side only, and

(vi) must have a maximum permissible error and sensitivity allowance, relevant to its capacity, prescribed in table 3, irrespective of whether it is new or in actual use, provided that if it is not of a tabulated capacity the permissible error arid sensitivity allowance must be in proportion to the allowances tabulated.

1	2	3
Table 3		
Capacity of measuring Instrument	Maximum permissible error/sensitivity	
	Box-end type	Continuous knife-edged type
20 g	120 mg	60 mg
50 g	180 mg	90 mg
100 g	240 mg	120 mg
200 g	300 mg	150 mg

(e) A measuring instrument with an unusual or novel design or with any feature which is not in accordance with the requirements of this regulation, must be type approved in terms of Section 22 of the Act and comply with any requirements or conditions imposed at the time of such type approval.

(f) A measuring instrument to which this regulation applies, that was subjected to initial verification in terms of any regulation before it was replaced by this regulation need only comply in design and construction with the regulation or any type approval requirements applicable at the time of initial verification and need not necessarily comply with all the requirements in this regulation. They must however, be subjected to the accuracy tests, mpes and sensitivity allowance prescribed in this regulation.

(g) Cream test scales are exempted from the requirements of this regulation and must comply with the requirements of regulation 41 of Part VII.

(2) Verification

(a) Non-automatic, un- denominated beam scales and balances, irrespective of whether or not sub-regulation 2 (f) is applicable, must be verified in accordance with the requirements of annex AA of SANS 302, as amended, provided that:

(i) in the case of post office letter beam scales the maximum permissible error and sensitivity allowances in sub-regulation 1 (d) (vi) are applicable and verification test procedures must be suitably modified to allow for the requirements of sub- regulation 1 (d) (iv) and 1 (d) (v), or

(ii) any measuring instrument that has been type approved in terms of sub-regulation 1 (e) must also comply with any test and special maximum permissible error requirements prescribed at the time of type approval.

(b) Non-automatic, non-self-indicating or semi-self-indicating, un-graduated counter scales, irrespective of whether or not sub-regulation 1 (f) is applicable, must be verified in accordance with the requirements of Annex AA of SANS 303, as amended, provided that any measuring instrument that has been type approved in terms of sub-regulation 1 (e) must also comply with any test and special maximum permissible error requirements prescribed at the time of type approval.

(4) Responsibilities of users of measuring instruments

In addition to any requirement of the Act or any other applicable regulation the requirements of annex BB of SANS 302 and annex BB of SANS 303, as applicable, must be complied with by persons using, for a prescribed purpose, the measuring instruments to which this regulation applies.

34 Dead-mass scales

(1) Capacity marking

The capacity of a dead-mass scale must be engraved, cast or stamped on the beam or on one of the platforms or on a metal plate permanently secured to some prominent part of the measuring instrument, in a manner such as the following:

"Capacity ... kg".

(2) Principle of construction

(a) A dead-mass scale must be constructed on the "Roberval" principle. In this principle, two identical horizontal beams are attached, one directly above the other, to a vertical column, which is attached to a stable base. On each side, both horizontal beams are attached to a vertical beam. The six attachment points are pivots. Two horizontal plates, suitable for placing objects to be weighed, are fixed to the top of the two vertical beams. An arrow on the lower horizontal beam (and perpendicular to it) and a mark on the vertical column may be added to aid in leveling the scale.

Construction of beam

(b) The two sides of the beam of a dead-mass scale must be connected by not fewer than two crossbars.

Fitting of knife-edges

(c) The knife-edges of a dead-mass scale must either-

(i) have square or rectangular shanks with an interference fit in square or rectangular holes respectively across the beam; or

(ii) have square or rectangular shanks fitted in square or rectangular holes respectively and firmly secured by riveting the ends of the shanks, or by casting in or by means of set screws or bolts; or

(iii) be of "T" shape and set in suitably shaped recesses across the beam, with threaded stems passing through the beam and firmly secured by nuts:

Provided that, in each case, the knife-edges may be fitted in carriers firmly and permanently secured to the beam.

Stays and forks or hooks

(d) On a dead-mass scale-

(i) stays may be single or in two pieces;

(ii) all points of contact of stays, hooks and loops must be made of hardened steel;

(iii) the bearing surfaces of adjustable slides must be made of hardened steel and the stems holding the slides in position must be secured by lock-nuts.

Platforms

(e) On a dead-mass scale-

(i) platforms must be made of metal or hardwood and must not be readily detachable;

(ii) the goods platform must not exceed in length the length of the beam and in width double the width of the beam;

(iii) folding wings must not increase the dimensions of the goods platform by more than one-third in either direction.

Balance boxes

(f) on a dead-mass scale-

(i) a balance box for containing lead of a mass not exceeding 1 per cent of the capacity of the scale must be securely fixed beneath one platform;

(ii) any other balancing material must consist of a single piece of suitable metal, other than lead, and must be securely attached.

Range of travel

(g) The travel of the beam of a dead-mass scale must be not less than 15 mm each way from the horizontal position of balance in the case of a vibrating scale and not less than 20 mm one way from the position of balance in the case of an accelerating scale.

(3) Method of testing

Tests for errors at quarter-capacity

Tests for errors in accordance with the applicable provisions of regulation 31 of Part VII must be applied to a dead-mass scale as follows.

(a) When certified mass pieces, equal to one-quarter of the capacity of the measuring instrument, are placed successively in the middle of the front and of the back of each platform and centrally over the knife-edges on each side, the scale must indicate equilibrium within the limits of one-half of the prescribed turning allowance.

Tests for errors at capacity

(b) When certified mass pieces equal to the capacity of the measuring instrument are placed centrally on each platform, the scale must indicate equilibrium within the limits of the prescribed turning allowance.

Tests for sensitivity

(c) (i) The turning allowances for dead-mass scales are prescribed in table III in Tables of Allowance in the Annexure.

(ii) Tests for sensitivity in accordance with regulation 31 (8) or (9) must be applied to a dead-mass scale with the platforms unloaded and with each platform loaded with verified mass pieces, equal to the capacity of the measuring instrument, centrally placed on each platform, any error having been corrected.

(4) Position of verification mark

The verification mark must be placed on a lead plug inserted in an undercut hole in a conspicuous and easily accessible part of the beam of a dead-mass scale.

35 Mass pieces for coarse measurement

(1) Construction

Except as otherwise approved by the National Regulator, new mass pieces for coarse measurement having nominal values of 1 g up to 20 kg inclusive must conform to the following specifications:

(a) mass pieces of 1 g to 2 kg must be of generally cylindrical shape with a flat button handle;

(b) mass pieces of 5 kg to 20 kg must be of block shape and generally rectangular parallelepipedic having a centre section lower than the end sections and provided with a rigid bar handle between the end sections, cast integrally with the body of the mass piece and entirely within the parallelepiped;

(c) the collar and the edge of the handle of a cylindrical mass piece and the arises of all mass pieces must be rounded;

(d) the adjusting hole in a cylindrical mass piece must consist of an open cavity of circular cross-section in the centre of the bottom surface and extending into the body of the mass piece to a depth approximately equal to one third of the height of the mass piece;

(e) the adjusting hole in a block mass piece must consist of an open cavity of rectangular cross-section in the bottom surface and extending into one end section of the body of the mass piece to a depth approximately equal to one third of the height of that end section.

(f) the cross-section area of the adjusting cavity of a cylindrical or block mass piece must be greater at the base of the cavity than at its opening;

(g) the denomination of a cylindrical mass piece and the name or trade mark, if any, must be embossed on a sunken field or impressed on the upper surface of its top:

Provided that the denomination may be repeated on the body of a mass piece having a value of 500 g or more;

(h) the denomination of a block mass piece and the name or trade mark, if any, must be embossed or impressed on the upper surface of its central section;

(i) the prescribed denomination must be in the following form:

1 g; 2 g; 5 g; 10 g; 20 g; 50 g; 100 g; 200 g; 500 g, 1 kg; 2 kg; 5 kg; 10 kg; or 20 kg;

(j) the designed dimensions of cylindrical mass pieces must be as set out in table 3 of this regulation and the mass pieces must conform to these dimensions within ordinary manufacturing tolerances except where limits are specified;

(k) the designed dimension of block mass pieces must be as set out in table 4 of this regulation and the mass pieces must conform to these dimensions within ordinary manufacturing tolerances except where limits are specified;

(l) newly manufactured mass pieces must have sufficient lead in their adjusting cavities to ensure that the lead is securely fixed, at least one third of the depth of the adjusting cavities must be filled with lead.

(m) be made in one piece of a single metal or metal alloy with a density of not less than 7 g/cm^3 and not more than 9,5 g/cm^3, with a hardness not less than that of cast brass and with corrodibility and friability not more than that of grey cast iron.

(n) have an adjusting hole that contains lead;

(o) be free of flaws;

(p) be smooth on all its surfaces, to a degree of smoothness at least equal to that of grey cast iron carefully cast in a mould of fine sand, except for the denomination and any name or trade mark where this appears;

(q) not bear any inscription other than the denomination and, if desired, a name or trade mark, provided that the latter must be in letters smaller than the height of the figures and letters of the denomination.

(r) Any mass piece for coarse measurement of a nominal value of 100 g or less must be made of brass or any other metal or alloy specified in subsection (1) hereof, other than cast iron.

(s) Iron or steel mass pieces for coarse measurement must be blacked, black-leaded or protected by galvanising or other suitable process.

(2) Adjusting hole

(a) Every mass piece for coarse measurement of a nominal value of 20 g or more must be provided with only one hole located in the underside of the mass piece which must be of such design as to permit of ready adjustment of the mass piece without risk of fracture and such hole must be undercut and plugged with lead sufficiently thick to ensure that it will remain securely in position.

(b)In the case of a mass piece for coarse measurement other than a block mass piece, such adjusting hole must be centrally positioned.

(c) Lead must not project above the rim of the adjusting hole of any mass piece.

(3) Denominations

(a) The permissible denominations of mass pieces for coarse measurement must be1 g or more in accordance with table 5 of this regulation.

(b) A mass piece for coarse measurement must not be marked with a denomination in more than one measuring unit.

(4) Mass pieces which do not conform to specifications

The National Regulator may approve mass pieces for coarse measurement that do not conform to the specifications in sub-regulation (5) of this regulation.

(5) Verification

Each mass piece for coarse measurement must be tested for accuracy by comparison with an appropriate standard mass piece by means of a beam scale or a precision balance or another specially prepared mass meter which has been verified in accordance with the requirements set out in SANS 1697, or as amended.

(6) Error permitted

The allowances of error on mass pieces for coarse measurement are prescribed in Table V of Table of Allowances in the Annexure.

(7) Position of verification mark

(a) A mass piece for coarse measurement provided with an adjusting hole must have the verification mark placed on the lead in such hole.

(b) A mass piece for coarse measurement not provided with an adjusting hole must have the verification mark placed on the bottom surface of the mass piece provided that where the small

size of a mass piece makes it impracticable to place any or an additional verification mark in this position, a certificate must be issued in lieu thereof.

1	2	3	4	5	6	7	8	9	10	11
TABLE 4										
	Denomination									
	1 g	2 g	5 g	10 g	20 g	50 g	100 g	200 g	500 g	1 kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
Mean diameter of body	6	6	8	10	13	18	22	28	38	48
Diameter of handle	5,5	5,5	7	9	11,5	16	20	25	34	43
Diameter of collar at centre	3	3	4,5	6	7,5	10	13	16	22	27
Radius of groove forming collar	0,9	0,9	1,25	1,5	1,8	2,5	3,5	4	5,5	7
Radius of arises	0,5	0,5	0,5	0,5	0,5	1	1	1,5	1,5	2
Radius of edge of handle	0,5	0,5	0,7	0,8	1	1,5	2	2,25	3	4
Minimum diameter of adjusting cavity (open end).	-	-	-	-	5	6	6	9	12	15
Maximum diameter of adjusting cavity (open end)	-	-	-	-	6	7	7	10	13	17
Minimum height of denomination figures	1	1	1	1	1,5	2	2	3,2	3,2	5
Slope of shoulder beyond collar radius	-	-	-	-	10º	10º	10º	10º	10º	10º
Height	according to metal									

Provided that the body may have a designed 1º inclusive taper.

1	2	3	4
TABLE 5			
	Denomination		
	5 kg	10 kg	20 kg
	mm	mm	mm
Overall length at top	152	193	234
Length at bottom	150	190	230
Width at top	77	97	117
Width at bottom	75	95	115
Height of end sections	94	109	139
Length of end sections at top	36	46	61
Length of centre section	80	101	112
Height of centre section at sides	30	38	52
Height of centre section at middle	36	46	64
Diameter of handle	19	25	29

Distance of centre of handle from top of mass piece	18	25	30
Minimum length of adjusting cavity	28	28	28
Maximum length of adjusting cavity (open end)	30	30	30
Minimum width of adjusting cavity (open end)	16	20	20
Maximum width of adjusting cavity (open end)	18	22	22
Radius of arises	5	6	8
Minimum height of denomination figures	12	16	20

1	2
TABLE 6	
Mass pieces for coarse measurement.	
Denominations	
Any multiple of 1 000 kg or of 1 Mg or of 1 t	1 kg
1 000 kg or 1 Mg or 1 t	500 g
500 kg	200 g
200 kg	100 g
100 kg	50 g
50 kg	20 g
20 kg	10 g
10 kg	5 g
5 kg	2 g
2 kg	1 g

36 Mass pieces for fine measurement

(1) Construction

Except as otherwise provided in this regulation any mass piece for fine measurement must-

(a) be made of brass or of another corrosion resistant and non-magnetic metal or alloy specified in regulation 35 (2) (m) of Part VII, other than iron, or if of a value of 500 mg or less may be made of aluminium or aluminium alloy;

(b) conform to the requirements of regulation 35 (2) (f) of Part VII in all other applicable respects.

(2) Adjusting hole

A mass piece for fine measurement need not be provided with an adjusting hole, but any mass piece provided with an adjusting hole must conform to the requirements of regulation 36 (4) of this Part.

(3) Denominations

The denominations of mass pieces for fine measurement must be in accordance with table 6 or table 7 of this regulation.

(4) Construction

Except as otherwise approved by the National Regulator, new mass pieces for fine measurement-

(a) having nominal values of 1 g up to 20 kg must either conform to the specifications prescribed in regulation 36 (5) of Part VII or must be of generally cylindrical shape having a height not more than one and one half of the mean diameter or be flat and circular in shape, with button handles or other suitably shaped handles;

(b) having nominal values of 500 mg or less must be constructed-

(i) of wire shaped into one, two or five sections to indicate the numerical values, of 1 x 10^n, 2 x 10^n or 5 x 10^n respectively; or

(ii) of flat plate, and having one edge or corner turned up;

(c) must, except where the small size of a mass piece makes it impossible, have the inscription of their denominations lightly engraved, embossed or stamped on their upper surfaces in the following form:

1 mg; 2 mg; 5 mg; 10 mg; 20 mg; 50 mg; 100 mg; 200 mg, 500 mg; 1 g; 2 g; 5 g; 10 g; 20 g; 50 g; 100 g; 200 g; 500 g; 1 kg; 2 kg; 5 kg; 10 kg or 20 kg

(5) New mass pieces for fine measurement of denominations of 18 g or 9 g for use with cream test scales

New mass pieces for fine measurement of denominations of 18 g or 9 g for use with cream test scales must be of cylindrical shape and must have the same dimensions except for height as the 20 g and 10 g mass pieces.

(6) Verification

Each mass piece for fine measurement must be tested for accuracy by comparison with an appropriate standard mass piece by means of a precision balance which has been verified in accordance with the requirements set out in SANS 1697, as amended.

(7) Error permitted

The allowances of error on mass pieces for fine measurement are prescribed in table VI, Table of Allowances in the Annexure.

(8) Positions of verification mark

(a) A mass piece for fine measurement provided with an adjusting hole must have the verification mark placed on the lead in such hole.

(b) A mass piece for fine measurement not provided with an adjusting hole must have the verification mark placed on the top or bottom surface of the mass piece except where the small size of the mass piece makes this impracticable, in which case a certificate must be issued in lieu thereof.

1	2	3	4
TABLE 7			
Mass pieces for fine measurement other than metric carat mass pieces.			
20 kg	200 g	2 g	20 mg
10 kg	100 g	1 g	10 mg
5 kg	50 g	500 mg	5 mg
2 kg	20 g	200 mg	2 mg
1 kg	10 g	100 mg	1 mg

500 g	5 g	50 mg	

and for use with cream test scales only – 18 g and 9 g

Metric carat mass pieces

1	2	3	4
TABLE 8			
10 000 CM	200 CM	5 CM	0,1 CM
5 000 CM	100 CM	2 CM	0,05 CM
2 000 CM	50 CM	1 CM	0,02 CM
1 000 CM	20 CM	0,5 CM	0,01 CM
500 CM	10 CM	0,2 CM	0,005 CM

37 Conformity to appropriate technical regulations

(1) Except as otherwise provided in any technical regulation and SANS document relating to a measuring instrument of a specific class or kind, or in a certificate issued in terms of section 22 of the Act, any measuring instrument which is required to be of a model approved in terms of section 22 of the Act must conform to any applicable provision of a technical regulation and SANS document consistent with the design of the measuring instrument

Submission for approval of installations

(2) Any new installation or any new system of measurement of a design not previously approved, which incorporates any measuring instrument of a model approved in terms of section 22 of the Act together with ancillary equipment which is necessary to the operation of the measuring instrument or which extends the scope of its operation and which may affect its measuring accuracy must, before the measuring instrument and such ancillary equipment are put into use for a prescribed purpose, be referred to the National Regulator for evaluation, testing and approval in terms of section 22 of the Act, unless approval of the ancillary equipment comprising such installation or system was included in the approval of the measuring instrument.

38 Non-automatic self-indicating, semi-self-indicating and non-self-indicating weighing instruments with denominated verification scale intervals

(1) Applicable requirements

(a) All non-automatic self-indicating, semi-self-indicating and non-self-indicating weighing instruments with denominated verification scale intervals must comply with the requirements of SANS 1649, as amended.

(b) The provisions of Regulations 26, 27, 28, 29, 30, 31, and 42 of this part do not apply to non-automatic self-indicating, semi-self-indicating and non-self-indicating weighing instruments with denominated verification scale intervals.

39 Automatic rail-weighbridges

(1) Applicable requirements

All automatic rail-weighbridges must comply with the requirements of SANS 689.

40 Automatic weighing instruments

(1) General provisions

(a) Any adjusting or compensating device of an automatic scale must be effectively secured to the scale and must be protected against tampering.

(b) The self-acting mechanism on an automatic scale with intermittent feed and discharge must be so constructed that, when the scale is operating, feeding is prevented while the scale is discharging and vice versa.

Testing devices

(c) Where an automatic scale is provided with an incorporated test mass arrangement or certified mass pieces, such arrangement of mass or mass pieces, including any supporting rig that may be included in such mass arrangement, must be verified.

(2) Method of testing

(a) Except as otherwise provided in this regulation, in addition to testing by any method prescribed in this regulation for any specific type of automatic scale, the accuracy of the throughput of material must be tested by operating the scale under actual working conditions and using, where possible, the material the mass of which is normally measured by the scale.

(b) In the case of an automatic scale provided with an intermittent feed, the total mass of material determined in at least three measuring cycles of operation must be verified by means of a suitable certified mass meter, either before or after the material has passed through the automatic scale, and the error in respect of each cycle must not exceed double the allowance of error prescribed in paragraph (d) hereof, but the total error in respect of three or more cycles must not exceed such prescribed allowance of error.

(c) In the case of an automatic scale of the continuous type, the quantity of material to be used and the method of testing for accuracy of throughput is prescribed table 9.

Allowance of error on throughput

(d) Except as otherwise provided in any regulation of this Part, the difference between the mass of material determined by means of the independent mass meter and the mass indicated by the automatic scale must not exceed the limits of error specified in the table 9, for any mass of material measured:

1	2
Table 9	

Material		Range of error
(i)	Grain, grain products, sugar or similar free-flowing materials	0, 25 per cent in excess or in deficiency.
(ii)	Cement, coal, coke, ore or similar materials	0,5 per cent in excess or in deficiency.
(iii)	Granulated or powdered fertiliser	0, 5 per cent in excess or in deficiency.
(iv)	Raw fish	0, 5 per cent in excess or in deficiency.
(v)	Liquids	0, 25 per cent in excess or in deficiency.
(vi)	Tacky materials or viscous liquids	0, 5 per cent in excess or in deficiency.
(vii)	Bagasse	0, 5 per cent in excess or in deficiency.

Checking of self-acting mechanism

(e) The operation of the self-acting mechanism and of any controls on an automatic scale must be checked by the observation thereof during at least three cycles of operation of the scale when in actual normal use.

(3) Testing of checking devices

Any self-indicating or other type of load-measuring device provided on an automatic scale and which may be coupled at will to the load receptor and load transmitting device for checking the accuracy of the setting for the predetermined quantity of material, must be tested together with the automatic scale itself.

(4) Scales with a receptacle for mass pieces or counterpoises, for predetermined quantities

(a) Where an automatic scale, used for the measurement of the mass of predetermined quantities of materials, comprises an equal-armed beam or an unequal-armed lever from which a load receptor, and a receptacle for certified mass pieces or for proportional counterpoises, are respectively suspended-

(i) the equal-armed beam need not be marked for its class, but where more than one such scale of the same type is used on any one premises, each such beam or unequal-armed lever must be identified with its respective scale by the impression or stamping on the beam of the serial number of the measuring instrument or of another appropriate identification mark and any proportional counterpoises must be similarly identified;

(ii) a device in the form of a steelyard or of a self-indicating load measuring device may be provided for determining, in the measurement of a batch of material, the mass of any residue which is less than the predetermined quantity;

(iii) any counting or totalising device with which the scale may be provided must accurately indicate the number of completed cycles of operation of the scale or the total mass measured in a number of completed cycles of operation of the scale, as the case may be, in respect of a batch of material;

(iv) any printing device with which the scale may be provided must record the total mass measured in a number of completed cycles of operation of the scale together with the mass of any residue of material the mass of which is measured.

Method of testing

Balancing

(b) The scale must be balanced with any compensating device out of action or set for zero compensation and with the receptacle for mass pieces and the load receptor empty.

Tests for errors

(c) Each mass piece used with the scale must be certified and each proportional counterpoise must be tested when verifying the scale.

(d) (i) Load the load receptor with certified mass pieces, the scale so loaded and with equivalent certified mass pieces or appropriate counterpoises in or on the receptacle for mass pieces, must indicate equilibrium correctly at any load up to its capacity, any compensating device being out of action.

(e) With discharge prevented, when any quantity of certified mass pieces or appropriate counterpoises, up to capacity, is placed in or on the receptacle for mass pieces and any compensating device is correctly adjusted, the scale must indicate equilibrium correctly after a quantity of material has been fed into the load receptor until the self-acting mechanism stops the feed.

Tests for sensitivity

(f) When an automatic scale is loaded as described in paragraph (d) or (e) of this sub-regulation, the mass required to effect turn of the beam or lever, any error been eliminated, must not exceed the appropriate turning allowance prescribed in table II or table IV of the Annexure to this Part, respectively-

(i) in respect of an automatic scale having a capacity of not more than 50 kg; or

(ii) in respect of an automatic scale having a capacity of more than 50 kg.

(g) The tests of the scale specified in paragraphs (b) to (f) of this sub-regulation must be carried out in addition to the tests specified in sub-regulation (3) of this regulation.

(5) Scales with self-indicating load measuring devices, for predetermined quantities

(a) An automatic scale which incorporates a self-indicating load measuring device by means of which the predetermined mass may be set and is used for the measurement of the mass of predetermined quantities of materials, must be provided with a counting or totalising device and such device must indicate the number of completed cycles of operation of the scale or the total mass measured in a number of completed cycles of operation of the scale, as the case may be.

(b) Where an automatic scale referred to in paragraph (a) of this sub-regulation is provided with a printing device such device must record the total of the results of measurements in terms of a

unit of mass, provided that where such a measuring instrument is also provided with a totalising counter the scale may be used without the printer.

(c) Where an automatic scale referred to in paragraphs (a) and (b) of this sub-regulation is provided with a means for measuring the mass of any residue in a batch of material which is less than the predetermined quantity, the mass of such residue must be included in the total mass printed.

Method of testing

(d) An automatic scale referred to in sub-regulation (a) or (b) of sub- regulation (5) must be tested in accordance with the applicable provisions of Regulation 38 of this part in addition to the provisions of sub-regulation (3) of this regulation.

(6) Scales with self-indicating load measuring devices for approximately predetermined quantities

(a) An automatic scale, which incorporates a self-indicating load measuring device and is used for the measurement of the mass of approximating predetermined quantities of material, must be provided with a totalising device which indicates and adds the actual values of the approximately predetermined quantities, for which the measuring instrument is set.

(b) Where an automatic scale referred to in paragraph (a) of this sub-regulation is provided with a means for measuring the mass of any material or debris left in the load receptor after the discharge of a load, the total mass indicated in a number of completed cycles of operation of the scale must not include the mass of such material or debris.

(c) Where an automatic scale referred to in sub-regulation (a) of sub-regulation (6) is provided with a printing device, such device must record the total mass of the results of measurements in terms of a unit of mass.

(d) Where an automatic scale referred to in sub-regulation (a) of sub-regulation (6) is provided with a means for measuring the mass of any residue in a batch of material which is less than the predetermined quantity, the mass of such residue must be included in the total mass printed.

Method of testing

(e) An automatic scale referred to in sub-regulation (a) of sub-regulation (6) must be tested in accordance with the applicable provisions of Regulation 38 of this Part and the market surveillance inspector or verification officer may, in his discretion, also apply the tests prescribed in sub-regulation (3) of this regulation.

(7) Continuous totalizing automatic weighing instruments - Belt weighers

(1) Requirements for design and construction

All continuous totalizing automatic weighing instruments must comply with the requirements of SANS 863. Any similar requirement in this regulation is not applicable.

(8) Automatic continuously totalising scale constructed on the principle of a conveyor belt scale, but without the belt

An automatic continuously totalising scale constructed on the principle of a conveyor belt scale, but without the belt, for measuring the mass of material in bulk, which is previously divided into discrete quantities, must conform to the provisions of regulation 38 of Part VII in addition to the applicable provisions of subsection (8) of this regulation.

(9) Position of verification mark and protective marks

The verification mark must be placed upon a lead plug inserted in a conspicuous and easily accessible part of the beam or some other essential part of an automatic scale and upon the lead in the adjusting hole of any mass pieces used with the scale, or in the case of other counterpoises, the date stamp must be placed upon the lead in the adjusting hole, and in appropriate cases protective marks must be affixed to prevent unauthorised access to the working parts

41 Cream test scales

(1) Cream test beam scales and torsion balances index

Where a cream test beam scale or torsion balance is provided with an index pointer moving over a graduated scale -

(a) the clear interval between the graduations must be not less than 1 mm; and

(b) the width of the pointer at its extremity must not exceed the width of any graduation line.

(2) Range of travel

The pointer of a cream test beam scale or torsion balance provided with a graduated indicating or sector plate or a graduated difference chart must have travel beyond the extreme graduations for a distance of not less than the distance between the smallest graduations, whether the scale is unloaded or is loaded to capacity.

(3) Gravity ball

Where a gravity ball is provided on a cream test beam scale or torsion balance -

(a) it must be set as to ensure, as far as is practicable, that the scale turns equally readily whether it is unloaded or loaded to capacity; and

(b) its retaining screw in the case of an unenclosed gravity ball must be covered by a stud or plug suitable for receiving the verification mark.

(4) Method of testing

(a) Tests for errors at half capacity

When certified mass pieces equal to half the capacity of a cream test beam scale or torsion balance are placed on each pan or bottle holder in any position normally occupied by a cream test bottle, the scale must be in an equilibrium state (two forces that are equal and opposite) within the limits of one-half of the turning allowance.

(b) Tests for errors at capacity

When certified mass pieces equal to the capacity of a cream test beam scale or torsion balance are evenly distributed on each pan or bottle holder, the scale must indicate equilibrium within the limits of the turning allowance.

(c) Tests for sensitivity

A cream test beam scale or torsion balance, whether unloaded or loaded with certified mass pieces equal to the capacity of the scale, must turn in accordance with table 10, any error having been corrected:

1	2	3
Table 10		
Capacity not exceeding	Turning allowance	
	At the time of Verification	measuring Instruments in actual use
240 g	75 mg	150 mg
300 g	200 mg	400 mg

(7) Self-indicating cream test scales

(a) Method of testing

A self-indicating cream test scale must be tested for accuracy of indication and discrimination according to Regulation 38 of Part VII:

(b) Allowance of error

The allowances of error for self-indicating cream test scales are those prescribed for self-indicating scales in regulation 38 of Part VII.

(8) Position of verification mark and protective marks

(a) The certifying stamp must be placed –

(i) in the case of a cream test beam scale, in accordance with the provisions of SANS 302;

(ii) in the case of a cream test torsion balance, upon the sealing plug provided on the gravity ball or, where no gravity ball is fitted or where the gravity ball is within the housing, upon a lead plug inserted in the housing which must be sealed; or

(iii) in the case of a self-indicating cream test scale, in accordance with the provisions SANS 1649.

(b) Protective marks (seals) must be affixed to prevent unauthorised access to the working parts of any cream test scale provided with a housing.

42 Road vehicle scale for the determination of the mass of road vehicles in motion or axle by axle

(1) Conformity to appropriate regulations

A road vehicle scale used for measuring the tare or gross mass of a road vehicle or vehicles in motion or axle by axle must conform to section 22 (2) c of the Act, unless otherwise provided in a certificate issued in terms of Section 22 of the Act".

(2) Special Requirements

(a) A road vehicle scale used for measuring the tare or gross mass of a road vehicle or vehicles, in accordance with the provisions of regulation 13 (2) (b) of this Part, by adding together the individual axle mass loads of a road vehicle or vehicles, must be incorporated in a system designed to do such measuring while the vehicle is or vehicles are in motion.

(b) Unless otherwise provided in a certificate issued in terms of Section 22 of the Act, each of the approaches to a road vehicle scale referred to in subsection (a) of this sub- regulation must -

(i) for a distance of not less than 10 m adjoining the load receptor be constructed of concrete or any other similar construction product and be capable of sustaining, without undue yielding, a load of 20 t across any line at right angles to the direction of travel of a vehicle moving over the load receptor; and

(ii) for a distance of 20 m, which includes the required 10 m in subsection (i), be such that a vehicle will move smoothly over the load receptor and the correct measurement of the mass of the vehicle not be adversely affected.

43 Conventional length measuring instruments

(1) Conformity

A measure of length must comply to sub-regulations 3; 4; 5; 6; 10;16; 17; 19; 21; 22 and 23 of Part VII, consistent with its design and any such measure which so conforms may be verified without having to be of a model approved in terms of section 22 of the Act.

(2) Material

(a) A measure of length must be made of stainless steel, steel, brass, ivory, hard wood, woven tape, reinforced fibreglass or other material of similar durability.

(b) The principal qualities of the material of which a measure of length is made must be such that-

(i) an increase or decrease in temperature of 8 ºC above or below the reference temperature does not result in a variation in its measuring length exceeding the allowance of error;

(ii) in the case of a measure of length which is required to be used under a specified tension or in respect of which a tension is specified in sub-regulation (9) (d) of this regulation, an increase or decrease of 10 per cent in tension does not result in a variation in its measuring length exceeding the allowance of error;

(iii) the measure cannot become permanently distorted with normal use or with changes in environmental conditions.

(3) Construction

(a) A measure of length must be straight, the material free from flaws and of sufficient strength and durability to withstand wear and tear in their operational state.

(b) A new measure of length made of wood or of another material of similar durability and rigidity must have both ends capped or tipped with metal, which must be permanently secured in position.

(c) Any sliding or calliper arm of a measure of length must have no more play than is required for easy movement and when moved, the measuring surface of such arm must remain perpendicular to the longitudinal edge of the measure.

(d) A measure of length made of wood or of another material of similar durability and rigidity and constructed as a T-square must have the free end of the measuring blade capped or tipped with metal permanently secured in position and must have the measuring edge of the crosspiece provided with a securely fixed edging of metal, extra hard wood or similarly durable substance.

(e) A measure of length made of any material other than brass or wood must be provided with a suitable means, near the beginning of the measuring scale, for receiving the certifying stamp.

(4) Nominal lengths and values of graduations

The nominal lengths must be in accordance with table 11.

1	2	3
Table 11		
200 m	10 m	1 m
100 m	5 m	0,5 m or 50 cm
50 m	3 m	0,3 m or 30 cm
30 m	2 m	0,2 m or 20 cm
20 m	1,5 m	0,1 m or 10 cm

Partial nominal values (nominal values of graduations)

1 m or 1×10^n, 2×10^n or 5×10^n, of 1 m where the exponent "n" is a negative whole number, provided that major graduations of the measure may be subdivided.

(5) Scale marks and graduation lines

(a) The surfaces forming the principal end scale marks of a measure of length must be flat, parallel to each other and perpendicular to the longitudinal edge of the measure.

(b) The graduation lines of a measure of length must be clear, distinct, of equal width, parallel to each other and must extend to and be perpendicular to the longitudinal edge of the measure:

Provided that, in the case of a measure of length made of round section, one end of such lines must be on a straight line running along the length of the measure and in the case of a measure of length provided with sliding or calliper arms the lines need not extend to an edge.

(c) The width of graduation lines of a graduated measure of length must be such that it cannot cause any inaccuracy in the results of measuring, provided that the width of any such line must not be more than 1 mm.

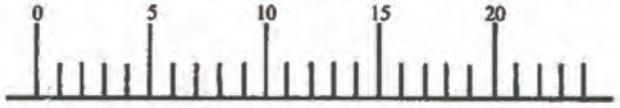
(d) Figured graduation lines of a graduated measure of length must be distinguished by their being longer than the nearest four intermediate lines on either side.

(e) Where every graduation line of a measure of length is figured all such lines may be of equal length or where every second graduation line of a measure of length is figured all such figured lines may be of the same length and all intermediate graduation lines must be of the same length but shorter than the figured lines.

(f) Measures of length not figured nor marked in accordance with the provisions of the preceding paragraph, must bear figuring and marking in accordance the following diagram:

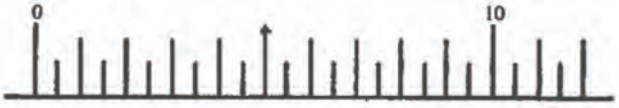
(i) 1×10^n

or

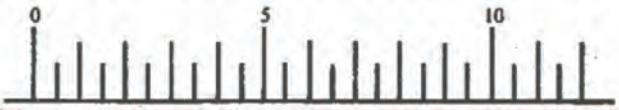


(ii) 2×10^n

(iii) 5×10^n



or



(g) On a tape measure provided with a link at the zero end, which forms a part of the measuring length, the link section need not be graduated.

(h) On a tape measure, the zero mark must be either at the end of the link or at the inside of a fixed hook where one is provided, or at any point on the tape:

Provided that -

(i) where the zero mark is on the tape, there must be no scale marks or graduations in advance of the zero, but this part of the tape may bear the marking of the nominal length of the measure and other marking required.

(ii) where a sliding or hinged hook is provided, the zero mark must be on the inside of the hook when this is extended (for outside measurement) and on the outside of the hook when this is retracted (for inside measurement); and

(iii) where both a link and a hook are provided, the zero mark must be at the hook, as required in accordance with proviso (ii) hereof, or on the tape.

(iv) a tape measure which is wound in a case or frame when not in use may be graduated beyond its nominal length for a distance equal to not more than 0,05 m of its nominal length or 0,5 m, whichever is the lesser.

(6) Denomination

(a) A rigid measure of length must be marked with the denomination denoting its nominal length near the extreme end of the measure:

Provided that the letters of the denomination must be of a size compatible with that of the figures denoting numerical values, but in no case less than one half of the size of such figures.

(b) A tape measure of length must be marked with the denomination denoting its nominal length near the beginning of the measuring scale, or on the case or frame.

(c) Figures on a measure of length denoting values in decimal submultiples of the metre or in mm or, where permitted, in cm, do not required to be followed by the relevant symbol of the measuring unit:

Provided that, where the figures denote mm or cm rather than decimal submultiples of the metre, the figure denoting each metre must be followed by the symbol m and these figures and symbols must be larger than, or of a contrasting colour to, the intermediate figures.

(8) Other markings

Where a measure of length is calibrated at a temperature other than 20 ºC or under a tension greater than that specified in sub-regulation (9) (d) of this regulation, such other temperature or tension must be marked on the measure near the beginning of the measuring scale.

(9) Method of testing

(a) The allowances of error on measures of length are prescribed in table VIII of 'Table of Allowances" in the Annexure.

(b) A measure of length must be tested for accuracy at its principal scale marks and at as many graduations as the market surveillance inspector or verification officer considers necessary, by comparison with a verified measure of length.

(c) During testing, a measure of length must, as far as is practicable, be supported through its whole length on a plane and even base.

(d) A tape or linked measure of length must be subjected, during testing, to the tension marked on the measure, or if this is not marked, to the following tension:

(i) A tape measure made of a material other than metal: 10 N

(ii) A metal tape measure: 50 N.

(iii) A linked measure: 70 N.

(10) Position of verification mark

A measure of length must have the verification mark placed near the beginning of the measuring scale on each graduated side, provided that, in the case of a linked measure or a tape measure, the verification mark may be placed upon a non-destructible label or disc permanently secured to such measure.

44 Length measuring instruments including self -indicating measures of length

(1) Capacity marking

The capacity of a length measuring instrument and the value of the smallest graduation of indication must be marked on the indicating dial or on a non-destructible plate securely attached to an essential part of the measuring instrument and in a prominent position.

(2) Construction

On a length measuring instrument of which the measuring device is a roller -

(a) the measuring roller must be made of a material strong enough to preclude any deformation of the roller or change in its dimensions in normal use;

(b) the peripheral surface of the measuring roller must be made of a material that are roughened sufficiently to prevent slipping of the material being measured relative to the roller;

(c) the axis of the measuring roller must be perpendicular to the direction of travel of the material;

(d) the measuring roller and any pressing or driving roller or device must be truly parallel when in position for measuring;

(e) where required due to the construction or method of introducing the material to be measured into the measuring instrument, an index or datum line must be provided on the length measuring instrument for denoting the beginning and the end of the quantity of material measured;

(f) a device must be provided to prevent indication of measurement without material passing through the measuring instrument and to prevent the measuring instrument from continuing to register when the end of a piece of material being measured has passed the measuring roller; and

(g) must not impact on the material which is measured e.g. change the shape or density of the material.

(3) Indicator or counter resetting

In the case of a length measuring instrument for use in the retail trade -

(a) a device for resetting the indicator or counter to zero must be provided;

(b) the resetting device must be so arranged that the rollers are freed when the device is operated;

(c) the resetting device may operate automatically in conjunction with a marking or cutting device or manually by means of a special control;

(d) the device specified in sub-regulation (2) (f) of Part VII must be interlocked with the resetting device so that material cannot be introduced into the measuring instrument until it has been reset;

(e) the lengths measured and the money values, where provided, must be indicated on both the seller's and purchaser's sides of the measuring instrument.

(4) Graduations

(a) The value of the smallest graduation of a length measuring instrument must be 1 m or 1×10^n, 2×10^n or 5×10^n of 1 m where the exponent "n" is a negative whole number.

(b) In the case of a length measuring instrument for use in the retail trade -

(i) the value of the smallest graduation on the dial must be not more than 0,1 m;

(ii) where the value of the smallest graduation is 0,1 m, the distance between graduation lines measured from centre to centre must be not less than 15 mm and where the value of the smallest graduation is less than 0,1 m such minimum distance must bear the same relation to the value of the graduations, but must be not less than 1,5 mm;

Provided that this requirement must not apply to a measuring instrument which indicates lengths by means of a digital or semi-digital counter on which each graduation is figured;

(iii) where a measuring instrument indicates money values, the distance between money value graduation lines measured from centre to centre must be not less than 0,6 mm;

(iv) the width of any graduation line must be not more than one quarter of the distance between graduation lines but not less than 0,2 mm or more than 1 mm;

(v) the width of any index pointer, line or cord must be not greater than the width of the graduation lines.

(c) In the case of a length measuring instrument for use in the wholesale trade -

(i) the value of the smallest graduation on the dial must be not more than one ten-thousandth of the capacity of the measuring instrument;

(ii) where the value of the smallest graduation is 1 m, the distance between graduation lines measured from centre to centre must be not less than 15 mm and where the value of the smallest graduation is less than 1 m such minimum distance must bear the same relation to the value of the graduations but must be not less than 1,5 mm:

Provided that this requirement must not apply to a measuring instrument which indicates lengths by means of a digital or semi-digital counter on which each graduation is figured.

(5) Figuring of graduations

Graduations of a length-measuring instrument must be figured at intervals of not more than 10 graduations and where the indications are partly enclosed, the aperture through which the indication is read must be large enough to permit the next lower figured graduation to be read.

(6) General

(a) Any totalising counter, ticket printer, pre-setting device or other ancillary device on a length measuring instrument must function properly throughout its range and printed results of measurements must be clearly legible.

(b) Any length-measuring instrument approved after the promulgation of these regulations, which is intended for measuring a stretchable material, must be provided with a relaxing device to ensure that the material is not stretched while it is being measured.

(c) A length-measuring instrument provided with a pre-setting counter must be provided with a locking device which, once the required length has been measured, will prevent any further measurement until the counter is again set.

(7) Method of testing

(a) A length-measuring instrument provided with a price computing chart must be examined to ensure that the indications of unit prices and money values are in correct alignment with the indications of length and at least three computations must be checked to ensure their general accuracy.

(b) When a certified testing tape or a measured length of material normally measured by a length measuring instrument is passed through the measuring instrument at right angles to the axis of the measuring roller, indications must be accurate throughout the measuring range of the measuring instrument whether the test direction flow is forward or backward.

(c) In the case of a length-measuring instrument for use in the retail trade the indications on both the seller and purchaser sides must agree.

(d) Unless a length-measuring instrument is provided with a device to prevent reverse action, a verified tape or measured material must be passed through the measuring instrument in a reverse direction in order to discover any possible backlash in the mechanism and such backlash must not exceed one-tenth of the value of the smallest graduation.

(e) When the end of a piece of material being measured by a length measuring instrument has passed the measuring roller, the result of measurement must not be more than one half of the value of the smallest graduation.

(8) Errors permitted

The errors permitted on length measuring instruments are shown in table 12:

1	2	3
Table 12		
Length tested	Error permitted	
	In deficiency	In excess
Up to 1 m	5 mm	10 mm

Over 1 m but under 5 m	10 mm	20 mm
5 m and over	0, 2 per cent of the length measured	0,4 per cent of the length measured

(9) Position of verification mark and protective marks

(a) The verification mark must be applied in a position as described in the type approval documentation, if not described it shall be applied in a conspicuous, essential and accessible part of a length measuring instrument or in a cup securely attached thereto.

(b) Protective marks (seals) must be applied to the measuring instrument to prevent unauthorised access to any adjusting device or to the working parts, in a position as described in the type approval documentation.

45 Area-measuring instruments

(1) Capacity marking

The measuring capacity of an area measuring instrument and value of the smallest graduation of indication must be indelibly marked on the indicating dial or on a non-destructible plate permanently secured to an essential part of the measuring instrument and in a prominent position.

(2) Construction

(a) An area-measuring instrument of the multi-roller type must be so constructed that the material to be measured is flattened but not stretched or damaged when fed through the measuring rollers

(b) The correct adjustment of any device for resetting the indicating mechanism of an area measuring instrument or for setting the adjusting shaft which effects the raising and lowering of the rollers must be ensured by means of lock nuts or by other satisfactory means.

(c) An area-measuring instrument of which the measuring device does not comprise of measuring rollers must be so constructed that the material to be measured is not stretched or damaged when fed through the measuring device, provided that the transporting device may be so arranged as to flatten the material without interfering with its makeup.

(3) Indication

(a) The measuring unit for the indication of the area measured by an area-measuring instrument must be the dm^2.

(b) An area-measuring instrument referred to in subsection (2) (c) which does not flatten the material being measured may be provided with a device for compensating, in the indication of area, for unevenness or wrinkling of the material:

Provided that such compensation must not exceed 0,5 per cent of the area measured.

(4) Method of testing

(a) An area-measuring instrument must be tested for accuracy of measurement by means of certified templates.

(b) Each template must be passed through an area measuring instrument at least five times in various positions, the indication being reset to zero before each pass, and the error in respect of each pass must not exceed the allowance of error prescribed in sub-regulation (5) of this regulation, while the average error in respect of the five or more passes must not exceed one half of such prescribed allowance of error.

(c) A template may also be passed through an area measuring instrument several times without the indication being reset to zero, and the total error must not exceed the allowance of error prescribed in sub-regulation (5) of this regulation.

(d) For an area-measuring instrument having a sufficiently large capacity a combination of the templates may be used and such combination of templates may be passed through the measuring instrument successively, or together without overlapping, in such a manner as to pass under as many sets of measuring rollers as possible, or through as wide a section of a measuring device not provided with rollers as possible, the indication in either case not being reset to zero until all templates used in combination have been passed through the measuring instrument, provided that only templates of the same thickness must be used in such a combination.

(5) Errors permitted

The errors permitted on area measuring instruments are shown in table 13.

1	2
Table 13	
Area tested	Error permitted in excess (under registration) or in deficiency (over registration)
Up to 100 dm^2	1,5 dm^2
Over 100 dm^2 to 200 dm^2	2 dm^2
Over 200 dm^2 to 500 dm^2	2,5 dm^2
Over 500 dm^2	0, 5 per cent of area measured

(6) Position of verification mark and protective marks

(a) The verification mark must be applied in a position as described in the type approval documentation, if not described, it shall be applied in a conspicuous, essential and accessible part of the area measuring instrument or in a cup securely attached thereto.

(b) Protective marks (seals) must be applied to the measuring instrument to prevent unauthorised access to any adjusting device or to the working parts, in a position as described in the type approval documentation.

46 Conventional measures of volume

(1) Conformity

A conventional measure of volume of any of the following classes or kinds must conform to sub-regulations 3; 4; 5; 6; 10; 16; 17; 18; 20; 21; 22; 23; and 24 of Part VII consistent with the design of the measure and, in particular, to regulations 49 to 53 of Part VII relative to each class or kind, and any

such measure which so conforms may be verified without requiring to be of a model approved in terms of section 22 of the Act:

(a) Any measure of volume of conventional design;

(b) dipping measures used for the measurement of milk;

(c) measures used for the testing of water meters;

(d) vehicle tanks calibrated to hold a fixed quantity; and

(e) graduated glass measures for pharmaceutical dispensing and comparable measurement.

(f) measuring flasks;

(g) pipettes;

(h) burettes.

(2) Material

(a) Any measure may be made of any durable material approved by the National Regulator e.g. glass, tin, tin alloy, pewter, brass, bronze, copper, tin plate, white metal, aluminium, aluminium alloy, nickel, nickel-plated steel, chromium-plated steel, stainless steel or galvanised sheet iron.

(b) Any measure made of brass, bronze or copper must be well tinned all over on the inside.

(c) The coating of tin, nickel or chromium on a plated measure must be uniform and must show no sign of peeling.

(d) Where the National Regulator has approved iron or mild steel which is not plated or galvanised as the material of which a measure for a special purpose may be made, such measure must, where necessary with regard to the material to be measured, be coated all over on the inside with a protective coating to prevent deterioration of the measure.

(3) Construction

(a) A measure must be constructed as not to be easily damaged, dented, lose its shape or interfering with its measuring capabilities.

(b) Where a measure has strengthening ribs or bands, such ribs or bands must not be of such form as to show, by indentation or otherwise, divisions inside the measure which might be mistaken for quantity indications.

(c) Except as otherwise provided in any regulation of Part VII, a single value metal measure having a capacity of 200 ml or more, except a dipping measure for milk, must be provided with a lip or other suitable retainer to prevent spilling:

Provided that -

(i) such lip or retainer must not increase the size of the measure by more than 10 per cent of the nominal capacity;

(ii) such lip or retainer must extend from the brim of the measure at an angle of not less than 30 º from the vertical;

(iii) such retainer may incorporate a bonnet or funnel:

Provided further that the retainer must extend from the brim at an angle of not less than 30 º from the vertical for not less than one third of its circumference.

(d) Except as otherwise provided in any regulation of Part VII, a measure must be of such shape that it is completely emptied when tilted to an angle of 120 º from the vertical.

(e) A measure provided with a discharge tap must be of such shape and the tap must be so positioned that the measure can be completely emptied without tilting.

(f) A metal measure may be provided with a bottom rim, provided that the depth of such rim is not greater than is required to protect the bottom of the measure.

(g) A measure must not have a false bottom.

(4) Denomination

(a) The denomination of a measure, other than a measure used for testing water meters or a vehicle tank or a graduated glass measure for pharmaceutical dispensing and comparable measurement, must be in accordance table 14:

1	2	3
TABLE 14		
(i) Single value measures		
Denominations:		
Any multiple of 10 L above 500 L		
500 L	2 L	20 ml
200 L l	1 L	10 ml
100 L	750 ml	5 ml
50 L	500 ml	2 ml
25 L	375 ml	1 ml
20 L	200 ml	
10 L	100 ml	
5 L	50 ml	
and for the sale of potable spirits only - 25 ml		

(ii) Subdivided or graduated glass measures, other than graduated glass measures, measuring flasks, pipettes and burettes for pharmaceutical dispensing and comparable measurement:

Total denominations: 5 L and under, as prescribed in table 14,

Value of graduations: 0,2 ml or 0,5 ml or 1 x 10^n, 2 x 10^n or 5 x 10^n of 1 ml or of 1 L, where the exponent "n" is a positive whole number or zero.

(iii) Subdivided or graduated non-transparent measures provided with gauge glasses:

Total denominations: 5 l and above, as prescribed in table 14, provided that graduations may extend to not more than 10 per cent above the total value.

Value of graduations: 0,05 l; 0,1 l; 0,2 l; 0,5 l or 1×10^n, 2×10^n or 5×10^n of 1 l, where the exponent "n" is a positive whole number or zero.

(b) Every measure must have its denomination clearly and indelibly marked on the outside of the body thereof and not on any handle, bottom, rim or lid.

(5) Datum level

Except as otherwise provided in any regulation of this Part, the datum level or levels, respectively, defining the capacity of values of -

(a) a single value metal measure must be the brim which, in the case of such measure provided with a lip or retainer, is the bottom of the lip or retainer;

(b) a single value glass measure having a capacity of less than 200 ml must be the brim and a glass measure having a capacity of 200 ml or more, where the datum level is the brim must not be permitted;

(c) a single value glass measure of which the datum level is not the brim must be an indelible, horizontal line not less than 25 mm in length, placed not less than 10 mm or more than 35 mm from the brim;

(d) a graduated glass measure, having a total capacity of 5 L or under, other than a measure for pharmaceutical dispensing and comparable measurement, must be the respective graduations defined by indelible horizontal lines not less than 25 min in length, and not less than 2,5 mm apart.

(6) Non-transparent measures

Except as otherwise provided in any regulation of Part VII, a non-transparent measure must not be subdivided unless the measure is fixed in position and is provided with a graduated gauge.

(7) Method of testing

(a) Every measure of volume must be tested for accuracy, by means of water, against a corresponding certified measure, pipette or burette.

(b) A containing measure must be tested for accuracy by transferring the water from a certified delivering measure to the measure being tested.

(c) A delivering measure must, where practicable, be tested by transferring the water from the delivering measure being tested to a certified containing measure, or, where this is not practicable, the inside of the delivering measure must be thoroughly wetted and drained before the water is transferred from a certified delivering measure to the delivering measure being tested.

(d) When testing a graduated glass measure or other glass measure of which the datum level is a line, the level of the water must be taken at the bottom of the meniscus and readings must be taken at the top of the lines.

(e) Notwithstanding the provisions of subsections (a), (b) and (c) of this sub-regulation, where any factor precludes the method of direct comparison with a measure of volume, the net mass of the liquid contained in or delivered by a measure may be determined by means of a suitable certified mass meter, such mass being converted to measure of volume on the basis of the density of the liquid.

(8) Errors permitted

(i) The errors permitted on vehicle tanks or compartments thereof are prescribed in regulation 49 (6) of Part VII.

(ii) The errors permitted on measures other than vehicle tanks are prescribed in table IX; table X; table XI and table XII in "Table of Allowances" in the Annexure.

(9) Verification mark

Position and method of application

(a) The verification mark on a glass measure must be etched or sandblasted beneath or near the denomination mark.

(b) The verification mark on a metal measure other than one provided with a lip or retainer must be placed on a solder stud, or other similar means, near the denomination mark.

(c) The verification mark on a metal measure provided with a lip or retainer must, wherever practicable, be placed on a solder stud or other similar means, at a convenient point on the inside of the lip or retainer.

47 Dipping measure

A metal dipping measure for measuring milk must conform to the applicable provisions of regulation 48 of Part IX and, in addition, to the following provisions:

(a) A metal dipping measure must -

(i) have a capacity not exceeding 1 L;

(ii) be of circular or elliptical section with vertical sides; and

(iii) be provided with a long handle to preclude the hand from being placed in the milk into which the measure is dipped.

(b) The height of a metal dipping measure must be not less than one and one half times or more than twice the mean diameter of the section.

48 Measuring devices and systems for the measurement of cryogenic liquids and specified liquid gases

(1) Applicable requirements for static measurements

(a) All measuring systems for measuring the mass of liquid gases specified in clause 1.4 of SANS 319 when contained in vertical tanks of known dimensions and using the pressure differential method for level determination must comply with the requirements of SANS 319.

(b) From the date of implementation of this regulation no measuring system for liquid gases using the pressure differential method may be fitted to a new installation incorporating a horizontal tank for use for a prescribed purpose.

(c) A horizontal tank fitted with a measuring system for liquid gases using the pressure differential method and used for a prescribed purpose prior to the date of implementation of this regulation, is exempted from compliance with requirements for tanks provided that the measuring system is verified according to the requirements of annex AA of SANS 319.

(d) Measuring systems for static measurement of the mass or volume of liquid gases in tanks using methods other than a pressure differential method, must comply with any applicable provisions of the regulations in Part VII, consistent with the design and method of measurement.

(2) Applicable requirements for dynamic measurements

(a) All measuring devices and systems, excluding mass flow meters, for the dynamic measurement of cryogenic liquids, must comply with the requirements of SANS 344.

(b) Mass flow meters must comply with the provisions of regulation 56 of Part VII, pertaining to liquid measuring systems other than water.

(c) Meters and systems for dynamic measurement of liquefied carbon dioxide, or nitrous oxide must comply with the provisions of Regulation 56 of Part VII, pertaining to liquid measuring systems other than water.

49 Vehicle tanks

(1) Design and construction

(a) A vehicle tank must be designed to deliver a single value quantity of liquid or a single value quantity from each compartment into which it may have been subdivided.

(b) The strength and construction of a vehicle tank must be such that, when containing any quantity of liquid, which it is designed to measure, any distortion of the tank will not cause incorrect measurements.

(c) All quantity indicators, piping and valves of a vehicle tank must be of such strength, design, construction and material that they withstand usage without the accuracy of the instrument being impaired.

(d) The delivery piping connected to a tank must be of such design and construction that, when the vehicle on which the tank is mounted is standing on a level plane, complete delivery can be made from the tank or from any compartment thereof.

(e) The delivery piping of a vehicle tank, including the manifold outlet where one is provided, must be so constructed as to preclude any liquid being trapped in any empty compartment while delivery is taking place from a compartment.

(f) A tank, or each compartment thereof, must be provided with an air-release vent pipe or pipes so as to prevent the formation of interior air pockets and so as to permit the influx of air to the compartment during the discharge of liquid.

(g) The filler opening of a tank or compartment must be of such size and construction as to readily permit visual internal inspection.

(h)(i) A tank, or each compartment thereof, must be provided with a dome, centrally situated at the highest part of the top of the tank or compartment and having a cross-section area such that, when the surface of the liquid contained in the tank is within the dome, the addition of a quantity of liquid equal to the allowance of error in excess will cause a rise in the surface of not less than 5 mm.

(ii) A dome referred to in paragraph (a) must be of such size that when the tank or compartment is filled to its capacity, there remains not less than 1,75 per cent of the capacity as ullage space for expansion of the liquid.

(2) Markings

(a) Each compartment of the tank or the tank itself must have its nominal capacity clearly and indelibly marked on at least one side thereof or on the dome thus:

"CAPACITY…… L TO INDICATOR".

(b) Where a tank has more than one compartment, each compartment must be marked with a number and its outlet valve must bear the same number.

(3) Position, design and sealing of indicator

(a) The datum level of a tank or compartment must be defined by an indicator comprising a plated or polished flat circular metal disc of at least 25 mm diameter, rigidly fixed within the dome and at the centre thereof.

(b) If the indicator referred to in paragraph (a) is adjustable, it must be so constructed that it can be sealed in such a manner as to prevent any change in its position without the seal being broken.

(4) Emergency valves and calibration

(a) Where an emergency valve is provided for closing the discharge outlet from a tank or compartment, calibration of the tank or compartment must be done with such emergency valve open and the tank must bear a conspicuous notice that such emergency valve must be open when the tank is filled in use.

(b) The whole of the inside of a tank or compartment must be thoroughly wetted and then drained before calibration.

(5) Method of testing

(a) All tests for accuracy of a tank or compartment must be made with the tank in a level position and with all emergency valves open.

(b) The whole of the inside of a tank or compartment must be thoroughly wetted and then drained before commencement of any test for accuracy.

(c) A tank or compartment must be tested for accuracy, by means of water, against a certified measure or measures, or by other means approved by the National Regulator.

(6) Errors permitted

Errors must be allowed on a tank or compartment, in excess or in deficiency, in accordance with table 15.

1	2	3
TABLE 15		
Capacity of tank or compartment	Error allowed	
	In excess	In deficiency
	L	L
200 L	1,5	0,75
over 200 L and up to 500 L	3	1,5
over 500 L and up to 1 000 L	5	2,5
over 1 000 L and up to 2 000 L	8	4
over 2 000 L	8 L and in addition 2 l for every 1000 L in excess of 2 000 L	4 L and in addition 1 L for every 1000 L in excess of 2 000 L

(7) Verification mark and protective marks

(a) The verification mark must be applied in a position as described in the type approval documentation, if not described, it shall be applied in a conspicuous, essential and accessible part of the instrument.

(b) Protective marks (seals) must be applied to the measuring instrument to prevent unauthorised access to any adjusting device or to the working parts, in a position as described in the type approval documentation.

50 Graduated glass measures for pharmaceutical dispensing and comparable measurement

(1) Except as otherwise provided in this regulation, a graduated glass measure for pharmaceutical dispensing and comparable measurement must conform to the applicable provisions of regulation 46 of Part VII.

(2) A graduated glass measure for pharmaceutical dispensing and comparable measurement may be of inverted conical, of beaker or of cylindrical shape and must have a level base at right angles to the vertical axis of the measure.

(3) (a) The datum levels of a graduated glass measure for pharmaceutical dispensing and comparable measurement must be the respective graduations, which must be clear and distinct and etched or engraved parallel to the base and to one another.

(b) Where back graduations are provided on the glass measure they must correspond to front graduations when the measure is standing on a level plane.

(c) The clear interval between graduations may not be less than 1,5 mm

(4) Denominations

The denominations of graduated glass measures for pharmaceutical dispensing and comparable measurement must be in accordance with table 16.

1	2
TABLE 16	
Total denominations:	
1 L or 1000 ml	50 ml
500 ml	20 ml
250 ml	10 ml
200 ml	5 ml
100 ml	
Value of graduations:	
0,5 ml, 1 ml, 2 ml, 5 ml, 10 ml, 20 ml, 50 ml, 100 ml	

(5) Testing

(a) A graduated glass measure for pharmaceutical dispensing and comparable measurement must be placed upon a level plane during its testing for accuracy.

(b) All figured graduations and as many intermediate graduations as the market surveillance inspector or verification officer considers necessary must be tested.

(6) Position of Verification mark

The verification mark must be permanently inscribed e.g. etched or sandblasted, near to the mark denoting the total capacity of the measure.

51 Measuring flasks

(1) Conformity to appropriate regulations

Except as otherwise provided in this regulation, a measuring flask must conform to the applicable provisions of regulations 46 and 50 of Part VII.

(2) Denominations and value of graduations

(a) A measuring flask may have any value of denomination not exceeding 5 L, provided that such denomination meets the requirements of paragraph (b) hereof.

(b) The value of the graduations of a measuring flask must be 1 x 10^n, 2 x 10^n or 5 x 10^n of 1 mℓ, where the exponent "n" is a positive or negative whole number or zero, provided that, where the denomination exceeds 1ℓ, the graduations may be figured as submultiples of 1L.

(3) Errors permitted

The errors allowed on a measuring flask must be in accordance with table XI in the "Table of Allowances" in the Annexure or the value of the smallest graduation of such measuring flask whichever is the lesser, in excess or in deficiency.

52 Pipettes

(1) Conformity to appropriate regulations

Except as provided in this regulation, a pipette must conform to the applicable requirements of regulations 46 and 50 of Part VII.

(2) Denominations and value of graduations

(a) A pipette may have any value of maximum denomination not exceeding 5 L, provided that such denomination meets the requirements of paragraph (b) hereof.

(b) The value of the graduations of a pipette must be 1 x 10^n, 2 x 10^n or 5 x 10^n of 1 mL, where the exponent "n" is a positive or negative whole number or zero, provided that, where the total denomination exceeds 1L, the graduations may be figured in submultiples of 1 L.

(3) Errors permitted

The errors allowed on a pipette are one-half of the allowances in table XII, in "Table of Allowances" in the Annexure.

53 Burettes

(1) Conformity to appropriate regulations

A burette must conform to the applicable provisions of regulations 46; 50; and 52 of Part VII.

(2) Errors permitted

The errors allowed on a burette are one-half of the allowances in table XII, in "Table of Allowances" in the Annexure.

54 Vehicle tanks provided with gauges

(1) Conformity to appropriate regulations

Except as otherwise provided in this regulation, a tank must also conform to the provisions of sub-regulations (1) (a), (c), (d), (f) and (4) of regulation 49 of Part VII.

(2) Construction

(a) A tank shall be of such shape as will make correct measurement possible at any graduation on a gauge.

(b) When of elliptical design, a tank must have a horizontal major axis of a length not exceeding one and one-half times the length of the minor axis.

(3) Position of gauge

A separate gauge must be provided for each compartment and, when the gauge is in the tank or compartment, it must be centrally situated with respect to the longitudinal and diametrical axes in a cylindrical tank and the longitudinal and major axes in an elliptical tank.

(4) Identification of gauges with compartments

A gauge must be identified with the tank or compartment to which it belongs by means of a number clearly and indelibly marked on the gauge and corresponding to a number similarly marked on the tank or compartment.

(5) Construction of gauge

(a) A gauge must be so constructed as to retain, as required, the height of liquid when the gauge is removed from the tank or compartment.

(b) A gauge must comprise a tube of glass or other transparent material, protected by a metal casing and provided with a graduated scale indicating the volume of liquid contained in the corresponding tank or compartment to various levels.

(c) Graduation lines on a gauge must be clear and distinct.

(d) The distance between graduation lines of a gauge, measured from centre to centre, must be not less than 2 mm.

(e) The width of any graduation line of a gauge must be not less than 0,2 mm or more than one-quarter of the distance between the lines measured from centre to centre, provided that the width of any such line must be not more than 1 mm .

(f) Figured graduations of a gauge must be distinguished by their lines being longer than the nearest four intermediate lines on either side.

(6) Diagrams of gauges

(a) The user of the gauge must provide the manager in charge of the legal metrology regional office concerned with an accurate full scale diagram, on suitable drawing paper, of the quantity marks on each gauge.

(b) Each diagram referred to in sub-regulation (a) of this sub-regulation must be cross referenced (numbered) to identify it with the gauge and the tank.

(c) Each diagram referred to in sub-regulation (a) of this sub-regulation must be retained by the legal metrology regional office concerned and must be used for the purpose of verifying any gauge which may have been repaired or replaced, subsequent to its verification.

(7) Method of testing

(a) All tests for accuracy of a vehicle tank or compartment must be made with the tank in a level position and with all emergency valves open.

(b) The whole of the inside of a tank or compartment must be thoroughly wetted and then drained before any test for accuracy and before initial calibration.

(c) A vehicle tank or compartment must be tested for accuracy, by means of water, against a certified measure or measures, or by other means approved by the National Regulator.

(d) Each figured graduation of each gauge and as many intermediate graduations as the market surveillance inspector or verification officer considers necessary must be tested and the volume indicated at each graduation must not differ from the contained volume by more than the allowance of error:

Provided that any error in the indication of the volume of the successive quantities added or withdrawn must not exceed the allowance of error in respect of such added or withdrawn quantity.

(8) Error permitted

Errors must be allowed on the gauge of a tank or compartment, in excess or in deficiency, in accordance with table 17:

1	2	3
TABLE 17		
Quantity tested or value of graduation	Error allowed	
	In excess	In deficiency
Up to 10 L	0,1 L	0,05 L
over 10 L up to 100 L	1%	0,5%
over 100 L up to 200 L	0,75%	0,375%
over 200 L up to 300 L	1,5 L	0,75 L
over 300 L up to 1 600 L	0,5 %	0,25 %
over 1 600 L up to 2 000 L	8 L	4 L
over 2 000 L	8 L and in addition 2 L for every 1000 L in excess of 2 000 L	4 L and in addition 1 L for every 1000 L in excess of 2 000 L

(10) Verification mark and protective marks

Each gauge of a tank must be suitably sealed with a protective mark by means of a soft solder plug or stud and the verification mark must be placed upon such sealing plug or stud.

55 Liquid-measuring devices

(1) Design

A device must be designed to determine the quantity of liquid to be delivered and to repeat such determination indefinitely, without the quantity requiring to be reset, provided that provision may be made for the predetermination by an operator of various quantities to be delivered.

(2) Capacity marking

(a) A device must have its measuring capacity permanently marked on the body of the device or on a metal plate permanently affixed thereto, provided that, in the case of a device which incorporates a visible measuring chamber or chambers, the capacity of each such chamber must be marked thereon and such measuring chamber must not bear any legend other than the said capacity marking, and the number of the certificate of approval of the model if not marked near the indication of the measuring capacity of the measuring instrument.

(b) Where provision is made on a device for the predetermination of various quantities to be delivered, such predetermination must be clearly defined on the device and the denomination of such quantities must be clearly marked.

(3) Construction

A device must be so constructed that -

(a) there is no leakage at any point, especially at any joints, glands and sight glasses, where the latter are provided;

(b) the formation of air pockets is prevented

(c) all valves are effective for their purpose and, where gland nuts are provided, such nuts must not require to be tightened to an extent which makes valve operation difficult;

(d) means are provided for sealing any calibrating or volume adjusting mechanism;

(e) the material from which it is manufactured are of such quality that the device is durable and will provide accurate results during its use.

(4) Devices with measuring chambers

(a) Where a device is provided with a measuring chamber which is alternately filled and emptied, adequate means must be provided for the expulsion of air from the chamber while it is being filled and for admission of air thereto while it is being emptied.

(b) Where measurement by a device is effected by means of a piston moving in a measuring chamber or chambers, such piston and chamber must not comprise the pump for drawing the liquid into the chamber.

(5) Devices measuring by inference

(a) A device which measures a quantity of liquid by inference from the pressure on the liquid flowing through an orifice and the time for which the liquid flows through such orifice must be provided with means for maintaining such pressure and time at levels which ensure the delivery of the correct quantity.

(b) Where a device referred to in paragraph (a) hereof is provided with a nozzle which remains filled at the end of a delivery, such nozzle must be of a "non-drip" type and the outlet must be protected so as to prevent draining of such nozzle.

(6) Supply of liquid

Where the supply of liquid for a device is not visible to an operator or where such measuring instrument is not provided with a visible measuring chamber or chambers, means must be provided for informing the operator when the supply of liquid is depleted and the device must not operate when the supply of liquid is below the minimum level required for accurate measurement.

(7) Totalizers

Where a device is provided with a totalizer, the figures of such totalizer must be clearly legible and where provision is made for resetting such totalizer, the figures must be properly aligned when the totalizer is set to zero.

(8) Use of liquid-measuring devices

A device must be installed and operated in such a manner as to deliver the correct volumes of product for which it is type approved.

(9) Method of testing

(a) Different types of liquids have different viscosities and densities therefore the type of liquid which must be used for testing the device are the liquids for which the device is type approved and are described on the type approval documentation.

(b) After the device and any delivery hose or pipe attached thereto have been thoroughly flushed, each separate measuring chamber or measuring unit must be tested for accuracy and constancy of delivery by allowing the liquid to flow from the device directly into an appropriate certified measure of volume:

Provided that, where the capacity of the device or some other factor precludes the method of direct comparison with a measure of volume, the net mass of the liquid delivered must be determined by means of a certified mass meter and such net mass must be converted to measure of volume on the basis of the density of the liquid.

(c) Where a device provides for the delivery of various predetermined quantities, each such quantity or as many such quantities as the market surveillance inspector or verification officer considers necessary must be tested.

(d) Tests of a device must be repeated a sufficient number of times to provide reliable data.

(e) As far as is practicable all tests of a device must be made at a temperature of 20 ºC.

(10) Allowances of error

Error must be allowed on liquid-measuring devices, in excess or in deficiency, in accordance with table 18 and table 19.

1	2
TABLE 18	
(a) For devices other than devices for delivering quantities of 25 ml or 50 ml of potable spirits in retail trade.	
Quantity delivered	Error allowed in excess or in deficiency

Up to 10 ml	0,4 mL
Over 10 ml and up to 20 ml	4%
Over 20 ml and up to 27 ml	0,8 mL
Over 27 ml and up to 50 ml	3%
Over 50 ml and up to 60 ml	1,5 mL
Over 60 ml and up to 200 ml	2,5%
Over 200 ml and up to 250 ml	5 mL
Over 250 ml and up to 500 ml	2%
Over 500 ml and up to 666 ml	10 mL
Over 666 ml and up to 1 l	1,5%
Over 1 l and up to 1,5 l	15 mL
Over 1,5 l and up to 2 l	1%
Over 2 l and up to 2,9 l	20 mL
Over 2,9 l and up to 5 l	0,7%
Over 5 l and up to 5,8 l	35 mL
Over 5, 8 l and up to 10 l	0,6%
Over 10 l and up to 12 l	60 mL
Over 12 l and up to 50 l	0,5%
Over 50 l and up to 100 l	250 mL
Over 100 l	0,25%

1	2
TABLE 19	
(b) For devices for delivering quantities of potable spirits in retail trade.	
Quantity delivered	Error allowed in excess only
25 mL	1,25 mL
50 mL	2,25 mL

(11) Verification mark and protective marks

(a) The verification mark must be applied in a position as described in the type approval documentation, if not described it shall be applied in a conspicuous, essential and accessible part of the device and in the case of a device provided with metal displacers for altering the volume of the measuring chambers, the verification mark must also be placed upon the displacers unless they can be sealed in position by means of the application of a protective mark..

(b) Protective marks (seals) must be applied to the measuring instrument to prevent unauthorised access to any adjusting device or to the working parts, in a position as described in the type approval documentation.

56 Liquid meters and liquid meter systems

(1) Material and construction

(a) A meter must be -

(i) so designed and constructed as to measure correctly the volume of the liquid or liquids for which it is to be used;

(ii) made of such materials as will effectively preclude inaccurate measurement due to any corrosive or other injurious property of the liquid being measured;

(iii) so constructed and installed that there is no leakage at any point of the installation;

(iv) provided with a means for accurately taking the temperature of the liquid stream at the meter in the case of a fixed installation for wholesale delivery;

(v) provided with a suitable device for adjusting the relation between the indicated and actual volume of liquid passing through it, or suitable change gears must be provided for such purpose:

Provided that a bypass arrangement must not be used as an adjusting device;

(vi) provided with a means for sealing the calibration adjusting mechanism, the registering mechanism and any working parts of a meter to prevent unauthorised access (tampering) thereto.

(b) (i) A meter may be provided with a manually operated or automatic temperature compensating device which adjusts the measuring or recording mechanism so as to indicate the volume of the measured quantity of liquid at 20 ºC:

Provided that, where a manually operated compensator is used, an accurate Celsius thermometer must be fitted in the liquid stream immediately before the meter inlet opening, and provided further that, where an automatic compensator is used, a means for taking the temperature at such point must be provided.

(ii) The temperature range of a compensating device referred to in subsection (i) hereof and the coefficient of expansion or other data on which the compensation is based must be clearly and indelibly marked on the outside of the temperature compensating device.

(2) Ancillary equipment

A meter must be equipped with -

(a) a means for automatically breaking the syphon action in the delivery piping or hose in the case where the delivery piping or hose is not detachable from the meter and where the delivery piping or hose is arranged to empty by gravitation at the end of a delivery;

(b) a device of suitable size, design and construction, fitted as closely as possible to the meter on the inlet side thereof, for the purpose of separating and eliminating any air or vapour from the liquid stream before the liquid enters the meter, such device being provided with effective means to allow air or vapour to escape therefrom or to by-pass the meter, as may be required, or for the purpose of stopping the flow of liquid and air or vapour to the meter in the event that air or vapour is present in the liquid stream:

Provided that, where the viscosity or other physical property of a liquid renders such separating or flow-stopping device ineffective, other suitable means for preventing the entry of air or vapour into the meter must be provided;

(c) a suitable filter or strainer, fitted in the liquid stream on the inlet side of the meter to prevent foreign particles from entering the meter;

(d) any other ancillary device that may be required by the National Regulator to ensure the accuracy of the meter under all conditions which may arise during its use;

(e) a plate, permanently attached to the meter unless it is a meter incorporated in a lubricating oil dispenser or in a liquid fuel dispenser, on which the maximum and minimum rate of flow for which the meter is designed is marked in terms of litres per minute (L / min); and

(f) a plate, permanently attached or sealed to the meter, on which the product or products for which the meter may be used is marked in addition to any other information required by the National Regulator .

(3) Dials, counters and recorders

The figures on all meter dials, counters and recorders must -

(a) be clearly legible;

(b) in the case of any re-set type of counter, be in proper alignment when the counter is set to zero:

Provided that, where the figures are re-set in the forward or increasing direction, they must be obscured during the entire re-setting operation unless the re-setting operation, once started, cannot be stopped until the zero indication is reached.

(4) General requirements

(a) Where a meter is not provided with a non-return check valve, the registration mechanism of a recording device must not be reversible by reversing the direction of liquid flow through the meter.

(b) A meter must be installed in such a manner as to provide ready and convenient access to the position of the verification mark and to the protective mark arrangements.

(c) (i) Where a meter is provided with a flexible delivery hose and the control valve is situated at the outlet thereof, such hose must be of a non-expansible type and a spring loaded check and non-return valve must be provided downstream of the control valve to ensure that the hose remains filled, unless otherwise approved by the National Regulator for a special purpose.

(ii) Any hose, which is required to be drained after a delivery must be so fitted as to allow complete discharge of liquid.

(d) No meter must be operated at a rate of flow below the marked minimum rate of flow, except during the commencement and conclusion of a delivery.

(e) (i) The maximum flow rate of a meter must be limited during use to within any margins in the range between the marked maximum and the prescribed minimum flow rates if such limitation is required for the purpose of ensuring maximum efficiency of air or vapour elimination and accuracy of measurement which could be influenced by the physical properties of the liquid being measured or by any other adverse condition arising during its use.

(ii) The limiting of the flow rate provided for in subsection (i) hereof must be effected by such means and in such manner as may be required by the National Regulator.

(iii) Any orifice plate or flow rate controller required in terms of subparagraphs (i) and (ii) of this paragraph must, unless otherwise approved by the National Regulator, be situated on the outlet side of the meter and means for sealing must be provided for any such device which is adjustable or can be tampered with.

(f) The accuracy of any thermometer or hydrometer for use in testing a meter or in connection with a temperature-compensating device must have been calibrated by a competent SANAS accredited authority.

(5) Means for testing

A meter system used for transferring of liquid where the piping both upstream and downstream of the meter is normally filled with the liquid must be provided with means for delivering the measured liquid into or through a verification device used as a standard.

(6) Method of testing

(a) The type of liquid which is normally measured by a meter must be used for testing the meter.

(b) After the system has been thoroughly flushed, a meter must be tested for accuracy and constancy by direct comparison with a certified measure of volume, or by other means approved by the National Regulator -

(i) at its maximum rate of flow or at the maximum rate of which the system is capable, provided that the latter rate must not exceed the maximum flow rate marked on the meter;

(ii) at one-half of its maximum rate of flow; and

(iii) at one-fifth of its maximum rate of flow or at the minimum flow rate where this is less than one-fifth of the maximum and is marked on the meter.

(c) For the purpose of the tests prescribed in subsection (b) of this sub-regulation, the reduced flow rates must be affected by manipulation of the discharge control valve or by other suitable means.

(d) For tests (i), (ii) and (iii) prescribed in subsection(b) of this sub-regulation, the measurement by the meter must be correct, whether the reset counter, where fitted, is or is not reset to zero before a test is commenced.

(e) Special tests may be carried out to establish -

(i) the efficiency of any ancillary equipment used with the meter; and

(ii) the effect on the accuracy of the meter of any possible condition which may arise during the use of the meter as a result of the peculiarities of the system as a whole.

(f) Any inefficiency or adverse effect revealed during the tests referred to in paragraph (e) of this sub-regulation must not affect the accuracy of measurement by the meter by more than the prescribed allowance of error.

(g) Where a meter is provided with a temperature-compensating device, such device must be tested for efficiency and shall not affect the accuracy of measurement of the liquid meter system by more than the prescribed allowance of error.

(h) Where an automatic temperature-compensating device is provided with a setting device for selecting various densities or coefficients of expansion of liquid to be measured, such setting device must be tested for efficiency and must not affect the accuracy of measurement by the liquid meter system by more than the prescribed allowance of error.

(i) Any test may be repeated as many times as the market surveillance inspector or verification officer considers necessary.

(j) Where practicable the through-put during a test must be not less than the quantity delivered by the meter in the course of one minute.

(k) Where the flow rate or capacity or other circumstance precludes the testing of a meter by direct comparison with a certified measure of volume, the net mass of liquid delivered through the meter must be determined by means of a verified mass meter and, for the purpose of comparing its volume with the meter reading, such net mass must be converted to measure of volume on the basis of the average temperature at which the liquid has passed through the meter and the density of the liquid at such average temperature, and where a meter is provided with a temperature compensating device the mass so determined must, for the purpose of comparing its volume with the meter reading, be converted to a measure of volume at 20 ºC on the basis of the density of the liquid at 20 ºC:

Provided that any meter tested in terms of this sub-regulation must be provided with a means for measuring the temperature of the liquid stream at the meter.

(l) The National Regulator may compile and supply test sheets and tables of density and conversion factors for use by a market surveillance inspector or verification officer in carrying out the various prescribed tests applicable to meters or meter systems.

(7) Allowance of error

Except as otherwise provided in this regulation or in any regulation relating to a meter of a specific class or kind or used for a specific purpose, error(s) is permissible on a meter in accordance with table 20, table 21 and table 22.

1	2	3
TABLE 20		
For a new or repaired meter		
Quantity tested	Error allowed	
	At flow rates from half-maximum up to maximum	At flow rates below half-maximum
	In excess only	In excess only
Up to 500 ml	5 ml	5 ml
Over 500 ml and up to 2 L	1 %	1 %
Over 2 L and up to 4 L	20 ml	20 ml
Over 4 L and up to 50 L	0,5 %	0,5 %
Over 50 L and up to 100 L	250 ml	0,5 %
Over 100 L	0,25 %	0,5 %

1	2	3	4	5
TABLE 21				
For a meter in actual use when verified by a market surveillance inspector or verification officer.				
Quantity tested	Error allowed			
	At flow rates from half-maximum up to maximum		At flow rates below half-maximum	
	In excess	In deficiency	In excess	In deficiency
Up to 500 ml	5 ml	2,5 ml	5 ml	2,5 ml
Over 500 ml and up to 2 L	1 %	0,5 %	1 %	0,5 %
Over 2 L and up to 4 L	20 ml	10 ml	20 ml	10 ml
Over 4 L and up to 50 L	0,5 %	0,25 %	0,5 %	0,25 %
Over 50 L and up to 100 L	250 ml	125 ml	0,5 %	0,25 %
Over 100 L	0,25 %	0,125 %	0,5 %	0,25 %

1	2	3
Table 22		
Drain test: For a new, repaired or meter in actual use when verified by a market surveillance inspector or verification officer.		
Product tested	Error allowed	
	At flow rates from 0 to 500 l/min	At flow rates from 500 l/min up to maximum flow rate
Petrol	-1 L	-1,5 L
Diesel, Paraffin	-1,5 L	-2 L

(8) Position of Verification mark and protective marks

(a) The verification mark must be applied in a position as described in the type approval documentation, if not described it shall be applied in a conspicuous, essential and accessible part of the meter housing.

(b) Protective marks (seals) must be applied to the measuring instrument to prevent unauthorised access to any adjusting device or to the working parts, in a position as described in the type approval documentation.

57 Milk meter systems

(1) Conformity to appropriate regulations

Except as otherwise provided for in this regulation, the meter in a system must conform in particular to any applicable provision of regulation 56 of Part VII.

(2) Construction

(a) The meter in a system must be so constructed that the end cover of its measuring chamber may be easily detached to facilitate cleaning of the chamber and its associated parts.

(b) Any removable part of the measuring chamber referred to in paragraph (a) of this sub-regulation, such as an oscillating piston or gears, must be clearly and indelibly marked with at least the last three figures of the serial number of the meter, which whole number must also be similarly marked on the meter, or such part must be identified with the meter to which it belongs in such a manner as may be specified when the model is approved in terms of section 22 of the Act.

(3) Receiving systems

In a receiving system -

(a) before the start of any normal measuring operation, the meter, piping and air eliminator must be primed, unless otherwise provided by the National Regulator;

(b) where the National Regulator has provided that the meter piping and air eliminator may be completely empty before the first intake in a series of measurements, the market surveillance inspector or verification officer must, when the meter is first verified, determine by means of tests, the difference between the indication of the quantity of the first intake and the average indication of the quantity of the next three consecutive intakes of like quantities and a notice stating this difference must be permanently and conspicuously affixed on or close to the meter in the following manner:

"QUANTITY TO BE ADDED TO METER READING FOR FIRST INTAKE ……. L"

(c) at the end of any normal measuring operation, the intake hose and any piping upstream of the air eliminator must be automatically emptied of milk;

(d) where the receiving tank is at a lower level than that of the meter outlet, a device must be provided for automatically maintaining the meter full of milk at the end of a delivery; and

(e) where milk is received by a collecting tanker, the length of the intake hose must be not more than 6 m and the hose must have such a bore and be so arranged that it will be emptied of all milk by the suction of the pump.

(4) Delivery systems

The provisions of subsection (3) of this regulation must not apply to delivery systems.

(5) Testing facilities

(a) Provision must be made in a receiving system for the disconnection or isolation of the outlet piping and the connection of a delivery hose or other suitable pipe at a suitable point for the purpose of testing the meter.

(b) The user of any milk meter system must have in his possession-

(i) a certified test measure of suitable design and having a capacity sufficient for measuring the volume of liquid which will pass through the meter at its maximum rate of flow during a period of at least one minute:

Provided that the measure must be so designed as to minimise frothing of milk delivered into it;

(ii) all such ancillary equipment, including valves, couplings and other items, as may be required for testing the meter and including, in the case of a receiving system, a non-expansible delivery hose or other suitable delivery pipe, fitted with a control valve near to its outlet and an air vent valve downstream of the control valve where such control valve is fitted to the filler pipe of a test measure.

(6) Tests for accuracy of the meter

(a) Milk, provided by the user of the meter, must be used for testing a milk meter system and the through-put during each test must be not less than the quantity measured by the meter in the course of one minute at the maximum rate of flow of the meter.

(b) A receiving system must be prepared for the tests for accuracy of the meter by having the outlet piping disconnected or otherwise isolated and by having the delivery hose or pipe referred to in paragraph (a) of sub-regulation (6) of this regulation suitably connected.

(c) (i) The meter in any system must be tested for accuracy in accordance with sub-regulation 6 (b), (c), (d), (e) and (f) of regulation 56 of Part VII:

Provided that, where the pump in a receiving system is of a positive displacement type and is arranged for a single fixed rate of flow only, the meter may be tested at such rate of flow only.

(ii) The proviso to subsection (i) hereof must not apply where the National Regulator has permitted the verification of the meter in a system other than in situ and the normal pump referred to in that proviso is not used.

(iii) At the end of each delivery to the test measure during tests prescribed in subsection (i) of this sub-regulation, the air vent valve on the filler pipe downstream of the control valve must be opened to the atmosphere where a measure having the control valve fitted to its filler pipe is used.

(d) When a meter is tested in accordance with this sub-regulation, any error must not exceed 0,25 per cent in excess or in deficiency of the volume measured.

(7) Tests for accuracy of intake in a receiving system

When the meter in a receiving system has been found to measure correctly when tested in accordance with sub-regulation (6) of regulation 57, the system must be tested for accuracy and constancy when measuring predetermined quantities of milk by the following method:

(a) After the test measure has been drained, a quantity of milk, equivalent to approximately half the capacity of the test measure must be measured through the meter into the test measure and the meter reading must be noted.

(b) The meter must then be operated, with its outlet disconnected from the test measure, until the supply of milk is depleted and the meter stops registering.

(c) The milk in the test measure must then be drained into the empty supply vessel and again measured through the meter into the test measure until the meter stops registering, and the meter reading must be noted.

(d) The operation described in paragraph (c) must be repeated as many times as the market surveillance inspector or verification officer considers necessary.

(e) At the end of a test according to sub-regulations (a), (b), (c) and (d), any difference between the various meter readings must not exceed 1,5 L.

(f) Where circumstances preclude testing by the method specified in subsections (a), (b), (c) and (d) of this sub-regulation, the system may be tested by any method approved by the National Regulator which will have the same effect.

(8) Sealing

Protective marks must be affixed to prevent unauthorised access to the adjusting mechanism of the meter in a system.

58 Liquid petroleum gas meter systems

(1) Conformity to appropriate regulations

Except as otherwise provided in this regulation, the system must conform to provisions of sub-regulation 1; 3; 4 and 5 of regulation 56 of Part VII.

(2) Construction and operation

(a) The meter in a liquid petroleum gas meter system must be operated under pressure from a pump.

(b) A device must be provided in a system, situated as closely as possible to the meter on the outlet side thereof, for automatically maintaining the pressure required in the system in order to prevent vaporisation of the product being measured.

(c) Any flexible delivery hose provided in a system must be non-expansible and suited to the product being measured, and must have the control valve together with a spring-loaded check and non-return valve situated at its outlet, or must have a self-sealing coupling for connection to the receiving vessel.

(d) A vapour line must be provided in a system for use when required for equalising the pressure in the supply tank and in the measure used for testing the meter.

(e) A vapour line in a system must not be used between the supply tank and the receiving vessel during the delivery of the product to a purchaser.

(3) Method of testing

(a) The vapour line referred to in sub-regulation (2) (d) of this regulation must be connected, the pressure equalised and the system, including the test measure, flushed before any initial test of a meter is commenced.

(b) The meter in a system must be tested in accordance with the provisions of sub-regulation 6 (a) to (l) of regulation 56 of Part VII, where applicable.

(4) Allowance of error

The permissible errors on a meter in a liquid petroleum gas meter system must be twice those specified in regulation 56 (7) of Part VII.

59 Liquid meter systems for predetermined quantities

(1) Conformity to appropriate regulations

Except as otherwise provided in this regulation, the system must conform to provisions of sub-regulation 1; 2; 3; 4 and 5 of regulation 56 of Part VII.

(2) Design

A system must be designed to determine the quantity of a liquid to be delivered and to repeat such determination indefinitely, without the quantity requiring to be reset.

(3) Capacity marking

(a) A system must have the full details of its measuring capacity marked on the meter or on the housing if the meter is enclosed or on a metal plate permanently affixed thereto.

(b) Where provision is made in a system for the predetermination of various quantities to be delivered, such predetermination must be clearly defined on the system and the denomination of such quantities must be clearly marked on the system.

(4) Supply of liquid

A system not provided with an eliminator referred to in regulation 56 (2) (b) of Part VII, must not operate when the supply of liquid is reduced to the minimum level this is to prevent air from entering the meter.

(5) Method of testing

(a) The type of liquid which is normally measured by a system must be used for testing the system and the liquid must be provided by the user of the system.

(b) After the system and any delivery hose or pipe attached there to have been thoroughly flushed, the meter must be tested for accuracy and constancy of delivery by allowing the liquid to flow from the system directly into an appropriate certified measure of volume:

Provided that, where the capacity of the system or some other factor precludes the method of direct comparison with a measure of volume, the net mass of the liquid delivered must be determined by means of a verified mass meter and such net mass must be converted to the measure of volume on the basis of the density of the liquid.

(c) Where a system provides for the delivery of various predetermined quantities, each such quantity or as many such quantities as the market surveillance inspector or verification officer considers necessary, must be tested.

(d) Tests of a system must be repeated a sufficient number of times as the market surveillance inspector or verification officer considers necessary to provide reliable data.

(6) Allowance of error

Permissible errors allowed on the meter of a system, in excess or in deficiency, in accordance with table 18 in regulation 55 of Part VII.

60 Lubricating oil dispensers

(1) Conformity to appropriate regulations

Except as otherwise provided in this regulation, the system must conform to provisions of sub-regulation 1; 2; 3; 4; and 5 of regulation 56 of Part VII, where applicable.

(2) Construction, and operation

(a) The meter in a dispenser must be operated under pressure from a pump.

(b) Where the pump of a dispenser is driven by a compressed air motor, the air gland on the motor and the oil gland on the pump must be separated by a space open to the atmosphere, or an air escape vent must be provided between the glands.

(c) Where it is impracticable to provide a dispenser with an air or vapour eliminating device referred to in regulation 56 (2) (b) of Part VII, it must be provided with a float-operated valve at the upstream end of the intake pipe, to stop the supply of oil to the dispenser before the oil in the supply tank reaches a level which will permit air to enter the system.

(d) The valve referred to in subsection (c) of this sub-regulation may be provided with a small vent or other suitable device, opening below the surface of the oil at its lowest level, to release the vacuum in the suction pipe when the supply of oil is exhausted.

(e) The delivery outlet nozzle of a dispenser must be of a "non-drip" type and must incorporate a spring-loaded check and non-return valve to ensure that the delivery spout, nozzle and any delivery hose remain filled.

(f) Any clock-type indicator on the meter of a dispenser must be so constructed that the index pointers can be reset to zero in the decreasing direction only.

(g) All pointers of a clock-type indicator on a meter of a dispenser must be reset in one operation and there must be a stop to prevent resetting below zero.

(3) Graduations

(a) The value of the smallest graduation on the meter of a dispenser must be not more than 0,01 L.

(b) The distance between the graduation lines on any clock-type indicator on the meter of a dispenser must be not less than 2 mm when measured from centre to centre at the base line.

(4) Delivery hoses and piping

(a) Any delivery hose or hose connecting the pump and meter of a dispenser must be non-expansible.

(b) Where any hose of a dispenser is retractable on a reel, the length of the hose, measured from the reel to the tip of the delivery outlet nozzle, must be not more than 7 m.

(c) Where any hose of a dispenser is not retractable, the length of the hose, measured from the meter in the case of a rigidly mounted meter, or from the end of the rigid piping in the case of a meter situated at the delivery end of the hose, must be not more than 4 m.

(d) The length of any hose connecting the end of a rigid delivery pipe and a hose reel of a dispenser must be not more than 0,6 m.

(e) The pump of a dispenser must be appropriate for the viscosity of the product being measured and must be such that the rate of flow of the product through the meter is within the limits for proper measurement

(5) General provisions

(a) The meter of a dispenser must be so installed that the indicator is visible to the operator and to a purchaser.

(b) Any cover over the meter of a dispenser or any aperture or recess in which the meter is mounted must be of such size and must be so constructed and fitted as to allow ready access to the meter and particularly to the verification mark and protective marks thereon.

(c) If more than one meter of a dispenser is fed by one pumping unit the accuracy of any of these dispensers must be within the prescribed error allowance.

(d) The maker's model designation must be clearly and indelibly marked on the pumping unit of a dispenser.

(6) Method of testing

Tests for accuracy

(a) The meter of a dispenser must be tested for accuracy and constancy -

(i) at the maximum rate of flow of which the dispenser is capable; and

(ii) at one quarter of such maximum rate of flow.

(b) At least one delivery of a quantity of not less than 5 L must be tested during each test and the market surveillance inspector or verification officer may, in addition, test any number of deliveries of such other quantities as he considers necessary.

Test of float-operated valve

(c) To test the efficacy of the float-operated valve referred to in subsection (2) (c) of this regulation, oil must be pumped through the meter at the maximum rate of flow obtainable and delivered into a certified measure from a supply which is insufficient to fill the measure, and when the meter stops indicating, the supply must be replenished and delivery continued until the measure is filled to the same level as was obtained during the test specified in paragraph (a) (i) of this sub-regulation and the volume then indicated by the meter must not differ from the volume in the measure by more than 10 ml.

(d) In order to simulate the condition required for the test specified in subsection (c) of this sub-regulation the suction pipe may be removed from the normal supply and placed in a supply which just covers the float-operated valve and be returned to the normal supply when the meter stops indicating, the pump being stopped while the transfer takes place.

(7) Allowance of error

Permissible error allowed on the meter of a dispenser, in excess only, in accordance with table 23:

1	2
TABLE 23	
Quantity delivered	Error allowed in excess only
up to 500 ml	5 ml
over 500 ml and up to 2 L	1 %
over 2 L and up to 4 L	20 ml
over 4 L	0,5 %

61 Liquid fuel dispensers

(1) Requirements and test methods

All liquid fuel dispensers must comply with SABS 1650:1995 Liquid fuel dispensers.

62 Water meters

(3) Requirements and test methods

(a) All mechanical water meters of normal bore not exceeding 100 mm, used for the measuring of cold potable water, excluding combination meters, must comply with SANS 1529-1: Metrological characteristics of mechanical water meters of nominal bore not exceeding 100 mm, as amended.

(b) In addition to the applicable requirements referred to in paragraph (a), mechanical water meters fitted with electronic indicators, electronic water meters and electronic pre-payment water

measuring systems, must comply with SANS 1529-9: Requirements for electronic indicators used with mechanical water meters, electronic water meters and electronic prepayment water measuring systems, as amended.

63 Gas meters

(1) Construction

(a) Material and strength

A gas meter must be made of such material as will effectively preclude inaccurate measurement owing to any corrosive or other injurious property of the gas being measured and must be sufficiently strong to withstand, without distortion, the maximum pressure at which it is designed to work.

(b) External and internal leakage

A gas meter must be so constructed that -

(i) there is no external leakage of gas when the meter is subjected to an internal pressure of 1,25 times the maximum pressure at which it is designed to work or of 5 kPa, whichever is the greater, for a period of not less than two minutes; and

(ii) its indicator moves continuously when the meter is subjected to an inlet pressure, equivalent to the maximum pressure at which it is designed to work or to 1,25 kPa, whichever is the greater, and when gas is passing through the meter at a rate of 0,2 per cent of its maximum rate of flow.

(c) Direction of flow

The direction of flow of gas through a gas meter must be marked clearly and indelibly on the meter by means of an arrow or by means of the word "IN" at the inlet.

(d) Test indicator

(i) The counter of a new gas meter must, for the purpose of testing, be provided with a certified graduated indicator by means of which the quantity of gas measured is continuously indicated and the value represented by the smallest graduation on the test indicator must be not more than the quantity of gas flowing through the meter during one working cycle.

(ii) A separate test indicator need not be provided on a gas meter on which the value of the smallest graduation on the main quantity indicator is not more than the value specified in sub-regulation (d) (i) above.

(e) Quantity indicator

(i) The value represented by the smallest graduation on the quantity indicator of a gas meter, excluding the test indicator referred to in paragraph (d) of this sub-regulation, must be not more than 0,05 of that quantity which will pass through the meter in one hour at the maximum rate of flow, provided that this value must be 1×10^n of 1 m^3, where "n" is a positive or negative whole number or zero.

(ii) On any gas meter provided with a multi-pointer type of quantity indicator, the index pointers must move in a clockwise direction only for increasing quantities.

(f) Ancillary devices

(i) Any ancillary device, such as a pressure or flow rate controller, recording device, automatic or coin operated shut-off mechanism or a similar device, must not be used on or in conjunction with a gas meter, unless any such ancillary device is approved in terms of section 22 of the Act.

(ii) Where a gas meter has any protruding shaft or other working part for the attachment of an ancillary device and such shaft or part is not in use it must be enclosed with a sealed cover.

(2) General provisions

Marking

The following information must be legibly, indelibly and permanently marked on a gas meter or on a plate permanently attached thereto:

(a) the maker's name or trade mark, type designation and serial number;

(b) the approved model number;

(c) the maximum rate of flow at which the meter is designed to operate, in cubic metres per hour, which may be expressed as "Q max…… m^3/h";

(d) the capacity of the meter per revolution or working cycle, which may be expressed as "V……m^3" or "V……dm^3"; and

(e) any other information which may be required on approval of the model in terms of section 22 (1) of the Act.

(3) Capacity per revolution

The actual capacity of a gas meter per revolution or cycle of operation must not differ by more than 5% from the marked capacity per revolution.

(4) Testing

Absorption of pressure

Subject to the provisions of sub-regulation (5) of this regulation, any difference between the pressure at the inlet and the mean pressure at the outlet of a gas meter must not exceed 0,125 kPa when the meter is tested at any prescribed rate of flow and when the pressure at the inlet of the meter is 0,5 kPa:

Provided that in the case of a gas meter fitted with an automatic or coin-operated shut-off mechanism the requirements of this sub-regulation must not apply during the automatic shutting-off period.

(5) Pressure oscillation

When a gas meter is tested as described in sub-regulation (4) of this regulation and there is any oscillation of pressure between the highest and the lowest pressure at the outlet such oscillation must not exceed 0,075 kPa.

(6) Testing medium

Except where a gas meter is tested in situ or in other special circumstances, air may be used as the testing medium.

(7) Method of testing

Unless other means or conditions for testing a gas meter have been approved by the National Regulator, such a meter may be tested for accuracy and constancy by passing air through the meter from a certified holder at a pressure of 0,5 kPa.

(8) Prescribed rates of flow

The tests of a gas meter must be carried out at -

(a) the marked maximum rate of flow of the meter, or, if this rate is greater than the maximum operating rate of the certified holder, at the maximum attainable rate;

(b) one-half of the marked maximum rate of flow of the meter;

(c) 0,6 per cent of the marked maximum rate of flow of the meter; and

(d) any other rate of flow, not less than 0,6 per cent of the marked maximum, which the market surveillance inspector or verification officer may consider necessary.

(9) Temperature

The temperature of the testing medium must not differ by more than 1 ºC from that of the surrounding air, the meter being at the same temperature as the surrounding air.

(10) Errors allowed

Any error on a gas meter must not exceed the amounts shown in table 24.

1	2	3	4	5
Table 24				
Rate of flow	For new or repaired meters		For meters in use	
	in excess (under-registration)	in deficiency (over registration)	in excess (under-registration)	in deficiency (over registration)
Any prescribed rate of flow	3 %	2 %	5 %	5 %

(11) Position of verification mark and protective marks

(a) The verification mark must be applied in a position as described in the type approval documentation, if not described it shall be applied in a conspicuous, essential and accessible part of the gas meter housing.

(b) Protective marks (seals) must be applied to the measuring instrument to prevent unauthorised access to any adjusting device or to the working parts, in a position as described in the type approval documentation.

64 Vessels or containers used for the sale of liquids

(1) Any vessel or container manufactured or supplied for the sale by volume of any liquid must, subject to any applicable tolerance prescribed for pre-packed liquids in Part VII of the regulations and SANS 1840, be large enough to hold the volume of liquid specified thereon or the volume it is intended to contain or specified on order by the user and over and above such volume the vessel or container must have such ullage space as may be required or as may have been specified on order.

(2) A vessel or container used for the purpose of determining the quantity of a pre-packed liquid sold therein must be of a nominal volume not exceeding 5 L, provided that such a vessel or container may only be used for the measuring off of any liquid in the retail trade at the time of sale of such liquid if it has a narrow neck and is presented to the retail dealer by the purchaser and if the denomination of volume thereof is indelibly and permanently marked thereon.

(3) The volume of any glass or mug manufactured, supplied or used for the purpose of determining the quantity of beer, spirit coolers, alcoholic fruit beverages, alcoholic fruit beers or ales sold from bulk for consumption on premises licensed for such sales must be defined by an indelible line or indentation at least 25 mm in length, distant not less than 10 mm and not more than 35 mm from the brim and when such glass or mug is filled up to the bottom of such line or indentation it must hold at least the volume which must be indicated thereon in a position close to such line or indentation in clear and legible figures and letters not less than 5 mm in height.

65 Evidential Breath Analysers

(1) Applicable requirements

All evidential breath analysers must be constructed according to the relevant requirements of SANS 1793.

VERIFICATION AND REPAIR BODIES

1. Scope

This Part specifies the requirements for verification bodies, and repair bodies and the appointment and registration of verification officers and persons responsible for repairs, in terms of the applicable provisions of the Act.

2 Verification Bodies

(1) Designation

The requirements for a body to be designated as a verification body under Section 7 of the Act, that undertakes either initial, subsequent or both initial and subsequent verification of measuring instruments on behalf of the National Regulator, are as follows:

(a) A body that wishes to be designated, as a verification body must:

(i) Be accredited in terms of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act as amended, against SANS 10378 as amended or replaced. In the absence of a recognized accreditation scheme the verification body applying for designation should provide evidence of compliance to the requirements set by the National Regulator,

(ii) Submit an application and proof of accreditation for such designation to the National Regulator,

(iii) Be legally identifiable,

(iv) Be free from any commercial, financial and other pressure that might affect their judgment. Procedures must be implemented to ensure that persons or organisations external to the body cannot influence the results of activities performed by the body,

(v) Have a documented training program in place for the verification officers in its employ that will ensure they have knowledge of the technology and applications of the instruments that are to be examined and also of the subsequent verification process. The education, training and competence of each person must be documented,

(vi) Provide evidence of compliance to the government imperative on BBBEE as well as any other government initiative that affects their business, and

(vii) Enter into an agreement/contract set by the National Regulator on the requirements of carrying out verification under the control of the National Regulator.

(b) Once a body applying for designation as a verification body has met the criteria in sub-regulation (a) above the National Regulator must issue a certificate officially designating such body.

(2) Responsibilities of a Verification Body

After designation the verification body acting on behalf of the regulator, must:

(a) maintain their accreditation in terms of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act or maintain requirements set by the National Regulator in the absence of such a recognized accreditation scheme;

(b) Notify the National Regulator in writing of all verifications or rejections undertaken and include the following particulars relating to every measuring instrument in respect of which a verification certificate or rejection certificate has been issued:

(i) The make, model, approval number, class and measuring capacity of the measuring instrument, and

(ii) The place where the measuring instrument is used for a prescribed purpose;

(c) The particulars which have been furnished under sub-paragraph (b) above have to be submitted within 5 working days after the end of the month in which the verification or rejection took place in a format as specified by the National Regulator;

(d) In the case of a rejection, inform the National Regulator immediately in writing of all non-compliances found and reasons for rejecting the measuring instrument as well as action taken by the verification body to ensure compliance or to ensure that the measuring instrument is removed from use;

(e) Ensure that market surveillance inspectors have access to their business premises and records in line with section 20 of the Act,

(f) Maintain records of:

(i) Type approval pattern description documentation of instruments verified and rejected by the verification body;

(ii) Verifications undertaken;

(iii) Rejections under section 25(3) of the Act;

(iv) List of verification officers in employ as well as all employment documentation;

(v) Appointment, qualification and training records of verification officers;

(vi) Verification officer resignations;

(vii) Verification marks and protective marks used by the verification officer which includes procedures for issuing, loss and withdrawal, and

(viii) Contracts with users of measuring instruments.

(g) Supply the equipment needed for the verification officer's to undertake their work in line with Section 19 of the Act, and

(h) Notify the National Regulatory in writing of the employment of a verification officer or of the termination of the services of a verification officer within 14 days of that event taking place.

(3) Withdrawal of designation of a verification body

(a) Any contravention of the requirements of the Legal Metrology Act, or any other Act, or the agreed criteria in the agreement/contract will result in the withdrawal of the designation of the verification body.

(b) The designated verification body forfeits the right to verify measuring instruments from the date of the suspension or withdrawal of their accreditation by the Accreditation Body or the withdrawal of the designation by the National Regulator.

(c) The National Regulator must publish an updated register of verification bodies of which the designation to verify has been withdrawn or suspended.

3 Registration and qualifications of Verification Officers

(1) A person who wishes to be appointed as a verification officer must:

(a) submit an application to the National Regulator furnishing the following information: name, surname, ID number, race, sex, e-mail address of verification officer, telephone details of the verification officer, name of current employer that the verification officer is working for, verification body designation number of current employer, physical and postal address of the current employer, details regarding the educational level of the verification officer, previous work experience, category of measuring instrument for which the verification officer is applying for, declaration that the information provided is correct, date of application and signature of verification officer, signature of a representative from the designated laboratory authorizing the application on behalf of the designated laboratory, and

(b) any additional information that the National Regulator may deem necessary for the registration of the officer.

(2) No person may be appointed as a verification officer in terms of section 8 (1) of the Act, unless:

(a) he / she has shown by undergoing an assessment of his/her knowledge of the appropriate provisions of the Act and relevant Technical Regulations and has, in accordance with a curriculum laid down from time to time by the National Regulator, passed an assessment in -

(i) theoretical subjects so prescribed by the National Regulator; and

(ii) practical work in verifying all measuring instruments or the particular kind of measuring instrument; and

(3) No person must act as a verification officer, unless he/she:

(a) is employed by the National Regulator or

(b) is employed by a verification body designated in terms of section 7 of the Act to verify all measuring instruments or the particular kind of measuring instrument in respect of which such verification officer is qualified to act in terms of sub-regulation (1) and holds a certificate issued by the National Regulator identifying the verification officer and indicating that the verification officer is qualified to act in respect of all measuring instruments or a particular kind of measuring instrument.

4 Repair Bodies

(1) Designation

(a) The requirements for a body to be designated as a repair body, under Section 9 of the Act which undertakes the repair of measuring instruments falling within the ambit of the Act are as follows;

A body who wishes to be designated as a repair body must:

(i) Be accredited in terms of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act as amended, against SANS 10378 as amended or replaced. In the absence of a recognized accreditation scheme the repair body applying for designation should provide evidence of compliance to the requirements set by the National Regulator,

(ii) Submit an application and proof of accreditation for such designation to the National Regulator,

(iii) be legally identifiable,

(iv) Be free from any commercial, financial and other pressure that might affect their judgment. Procedures must be implemented to ensure that persons or organisations external to the body cannot influence the results of activities performed by the body,

(v) Have a documented training program in place for the repairers in its employ which will ensure they have knowledge of the technology and applications of the instruments that are to be examined and also of the subsequent verification process. The education, training and competence of each person must be documented,

(vi) Provide evidence of compliance to the government imperative on BBBEE as well as any other government initiative that affects their business, and

(vii) Enter into an agreement/contract with the National Regulator on requirements of carrying out repairs under the control of the National Regulator.

(b) Once a body applying for designation as a repair body has met the criteria in sub-regulation (1) (a) (i) to (vii), above the National Regulator may issue a certificate officially designating such body.

(2) Responsibilities of a designated repair body

After designation the repair body must:

(a) Maintain their accreditation in terms of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act or maintain requirements set by the National Regulator in the absence of such a recognized accreditation scheme,

(b) Notify the National Regulator in writing of all the repairs undertaken and include the following particulars relating to every measuring instrument in respect of which a written guarantee has been issued:

(i) The make, model, approval number, class and measuring capacity of the measuring instrument, and

(ii) The place where the measuring instrument is used for a prescribed purpose,

(c) The particulars, which have been furnished under sub-paragraph (b) above, have to be submitted within 5 working days after the end of the month in which the repair took place in a format as specified by the National Regulator,

(d) Inform the National Regulator immediately in writing of any measuring instruments that could not be repaired as well as action taken by the repair body to ensure that the unrepaired measuring instrument is not used for a prescribed purpose,

(e) Have a documented training program in place for the repairers in its employ that is appropriate to the measuring instrument being repaired,

(f) Ensure that market surveillance inspectors have access to their business premises and records in line with section 20 of the Act,

(g) Maintain records of:

(i) Type approval pattern description documentation of instruments for which the repair body will issue a guarantee,

(ii) Repairs undertaken,

(iii) List of repairers in employ of the repair body as well as all employment documentation,

(iv) Appointment, qualifications and training records of repairers,

(v) Repairers resignations,

(vi) Protective marks used by the repairers which includes procedures for issuing, loss and withdrawal,

(vii) Repair/ maintenance contracts with users of measuring instruments, and

(viii) Guarantees issued for measuring instruments repaired.

(h) Supply the equipment needed for the repairer to undertake their work in line with section 19 of the Act,

(i) Notify the National Regulator in writing of the employment of a repairer or of the termination of the services of a repairer within 14 days of that event taking place, and

(j) Issue users with a guarantee in writing in the format specified by the National Regulator as to the compliance of the measuring instrument that has been repaired, and forward a copy of said guarantee to the National Regulator and a designated verification body.

(3) Withdrawal of designation of a repair body

(a) Any contravention of the requirements of the Legal Metrology Act, or any other Act, or the agreed criteria in the agreement/contract may result in the withdrawal of the designation of the repair body.

(b) The repair body forfeits the right to repair from the date of the suspension or withdrawal of their accreditation by the accreditation body or the withdrawal of the designation by the National Regulator.

(c) The National Regulator must publish an updated register of repair bodies of which the designation to repair has been withdrawn or suspended.

(4) Registration and qualifications of persons responsible for repair

(1) A person who wishes to be registered as a person responsible for repair must:

(a) submit an application to the National Regulator furnishing the following information: name, surname, ID number, race, sex, contact details (including e-mail address) of the repair officer, name of employer the repair officer is working for, repair body designation number of current employer, physical and postal address of current employer, details regarding the educational level of the repair officer, previous work experience, category of measuring instrument for which the repair officer is applying for, declaration that the information provided is correct, date of application and signature of repair officer, signature of a

representative from the designated repair body authorizing the application on behalf of the designated repair body, and

(b) supply any additional information upon request to the National Regulator.

(2) No person may be registered as a person responsible for repair in terms of section 10(1) of the Act, unless:

(a) he/she has shown by undergoing an assessment of his/her knowledge of the appropriate provisions of the Act and relevant technical regulations and has, in accordance with a curriculum laid down from time to time by the National Regulator passed an assessment in -

(i) theoretical subjects so prescribed by the National Regulator;

(ii) practical work in repairing and testing all measuring instruments or a particular kind of measuring instrument; and

(iii) procedures needed to allow for the issuing of a guarantee of the verifiable condition of the measuring instrument.

(3) No person shall act as a repairer unless,

(a) he or she is employed by and acts on behalf of a designated repair body contemplated in section 27 of the Act;

(b) he or she holds a certificate issued by the National Regulator identifying the repairer and indicating that the repairer is qualified to act as a repairer in respect of all measuring instruments or a particular kind of measuring instrument.

(5) Commencement

The regulations in this part will come into effect one year from the publication of the Legal Metrology Act regulations.

5 Distinctive marks

(1) Approval mark

An approved measuring instrument or module or a component of a model must be clearly and indelibly marked with the approval number issued and indicated on the certificate of approval, and in the manner as prescribed in the type approval documentation.

(2) Rejection mark

A rejection mark must be a six-pointed star design, which can be in the form of;

(a) a stamp

(b) a seal, or

(c) a sticker indelibly printed with six-pointed star design.

(3) Verification mark

(a) A verification mark can either be in the form of a stamp, a seal or an indelible sticker or be embossed or sandblasted in the case of glassware and must clearly state the following information;

(i) The year of verification

(ii) Company identification

(iii) Identification of the Verification officer

(iv) A consecutive number when in the form of a sticker

(b) All verification marks are to be approved by the National Regulator whether printed or not and whether supplied by the National Regulator or a designated verification body.

(4) Protective mark

(a) Protective marks are applied to prohibit unauthorized or unlawful access to the measuring instrument or any adjustment devices that may influence the measurement setup with the view to negating the chance of fraudulent transactions taking place.

(b) A protective mark can either be in the form of a stamp, seal or a sticker.

(c) A protective mark must comply with the following criteria:

(i) If in the form of a seal or stamp, it should be destroyed when being removed

(ii) If in the form of a sticker it should be clearly marked

(aa) "seal" or "protective" mark to differentiate it from a verification mark

(bb) "Certification void when broken"

(cc) name and/or logo of body applying the protective mark

(dd) date when seal is applied

(ee) Verification Officer (VO) number or repair officer number

(iii) A sticker must not be removable from the instrument without physical damage to the sticker and the same sticker should not be re-usable.

(d) A protective mark meeting the abovementioned criteria is not a verification mark and must not be used as such.

(e) Protective marks must be approved during the type approval of the instrument and the position of application on the instrument must be described in the type approval documentation.

(g) Where designated verification or repair bodies want to apply protective marks in the form of a sticker on instruments, the designated verification or repair body must submit the design and application of the protective mark to the National Regulator.

(5) Repair Mark

(a) A registered person responsible for repair is required to indicate that the repair undertaken is correct and that the measuring instrument is in a verifiable condition by applying a repair mark to the measuring instrument in the following manner.

(i) A repair mark must be in the form of a sticker applied in close proximity to the designated verification mark position as indicated in type approval documentation.

(ii) The repair mark must clearly indicate the following information;

(aa) the date of repair in the form of "R – date"

(bb) name and/or logo of repair body

(cc) repair officer number

(dd) unique serial number of the corresponding certificate of repair

(d) Repairs must be accompanied by a certificate of repair that details the work undertaken and a statement that the measuring instrument meets all requirements of the relevant technical regulations and can be used for a prescribed purpose for a time period of not more than fourteen (14) days from the date that the repair certificate was issued. A copy of this certificate of repair must be forwarded to the National Regulator within five (5) days from the date of repair.

(6) Certificate of Repair

A certificate of repair may only be issued to the user of a measuring instrument by a registered repair officer. Each certificate of repair must include at least the following information:

(a) the title "Repair Certificate";

(b) the name, address and designation number of the repair body;

(c) a unique serial number on all its pages to identify that each page is recognized as a part of the certificate of repair;

(d) page numbers and a clear identifier of the number of pages in the certificate of repair, e.g. page 1 of 1 or a statement at the beginning of the certificate "This certificate consists of 1 page" or a statement at the end of the certificate "End of Certificate";

(e) the name and address of the client;

(f) the number of the procedure used by the repair body, in terms of their documented management system, to establish whether the measuring instrument is in a verifiable condition;

(g) a description and unambiguous identification of the measuring instruments repaired, including the serial number and the type approval number, if the measuring instrument requires type approval in terms of the relevant national legislation;

(h) a statement that will serve as proof that the measurement standards used are directly related to the reading or obtaining of the results of measurement and are traceable to a national standard. The following data must be included as a minimum:

(i) calibration certificate number(s) of the measurement standards used;

(ii) date of calibration of measurement standards;

(iii) identification of the measurement standards, e.g. serial numbers, description, set number, etc.; and

i) the latest software seal identification value, must be indicated on the certificate of repair, if the measuring instrument being placed under guarantee is secured by means of a software seal;

j) expiry date of the repair certificate;

k) the initials, surname and signature of the person responsible for the repair, date of repair and a seal number used for identification of the responsible person undertaking the repair and the designated repair body. The same information must appear on the repair sticker; and

l) the following statement: "*This measuring instrument(s) was/were tested and found to comply in all respects with the requirements of the Legal Metrology Act, 2014 (Act No. 09 of 2014) and may be used for a prescribed purpose as intended by the Act until verified by a designated verification body or the National Regulator if there is no designated body.*"

(7) Reporting of repair results

For every repair the following must be documented, as a minimum, for the interpretation of test results:

a) reference to the applicable certificate of repair;

b) verification status (rejected, repaired or routine maintenance) of the measuring instrument immediately before repair;

c) observations made during the preliminary examination may be combined in a single statement, however, any non-complying aspect needs to be separately documented;

d) indication that each test has passed or failed, for example by means of a code such as a tick or a cross, or by indicating the result of measurement or error, for all tests where an error limit is prescribed, including the conventional true value at which the specific tests were done;

e) a statement of all the applicable maximum permissible errors. This requirement does not include technical requirements such as limits of indication on weighing measuring instruments or time delay on fuel dispensers. All stated maximum permissible errors must either be expressed in a unit of measurement or as required in the relevant national legislation e.g. expressed as a percentage or in terms of scale intervals, as long as the same method is used throughout the document;

f) specific test conditions, such as environmental conditions, where these could affect the accuracy of test results;

g) initials, surname, signature, and seal identification of the person responsible for the repair; and

h) date of testing.

The results, indicated above, required to be documented are not intended to be supplied with the repair certificate but may be given to the customer in every case or on request. However this information must be kept on file for inspection by a NRCS market surveillance inspector.

MEASURING INSTRUMENTS, VESSELS OR CONTAINERS EXEMPTED FROM TYPE APPROVAL AND VERIFICATION

1 Scope

These regulations specify requirements for the measuring instruments, vessels and containers, which are exempt from type approval and verification under sections 22 and 24 of the Act.

2 Measuring instruments

Subject to regulation 3 of Part IV of this regulation, the following measuring instruments may be used without the user or supplier being compelled to submit the instrument to type approval in terms of section 22 or to comply with the provisions of section 24 of the Act.

(a) an instrument being automatic or non-automatic, used to determine the quantity of goods in pre-packed form in consumer and non-consumer packages as defined in SANS 289 and in a measuring unit of mass or volume or by number;

(b) an instrument being automatic or non-automatic, used to determine the quantity of goods in pre-packed form in consumer packages as defined in SANS 289 and in a measuring unit other than mass or volume or by number; or

(c) an automatic instrument used to determine the quantity of goods in prepacked form in non-consumer packages as defined in SANS 289 and in a measuring unit other than mass or volume or by number,

3 Conditions, restrictions and requirements

In the case of a measuring instrument falling within the meaning of regulation 2 above, but excluding instruments used by persons complying with the requirements of SANS 1841 and permitted to apply the "e" mark -

(a) both the supplier and the user must satisfy themselves that such instrument is suitable for the purpose for which it is used or intended to be used and is capable of correct determination of quantity;

(b) the owner or the user must maintain and operate such measuring instrument at all times in such a manner that it determines and discharges the correct quantity of goods to be sold in pre-packed form subject to the provisions of SANS 458;

(c) the user of such measuring instrument must take such steps as will enable him to detect any incorrect quantities of goods which may have been determined by the instrument;

(d) the user of such measuring instrument must keep a suitable verified measuring instrument conforming to the requirements of SANS 458 for the purpose of checking the quantity of goods or articles which may have been determined by the instrument; and

(e) the records of the checks contemplated in sub-regulation (d) must be kept for inspection by an authorised officer to prove that the applicable requirements of SANS 458 were complied with at the time of packing.

4 Declaration of an instrument as unfit for further use

(1) If the National Regulator is satisfied that any measuring instrument which falls within the meaning of regulation 2 of this Part, and which is being used is:

(a) either not suitable for or not capable of determining and discharging correct quantities of goods for sale in pre-packed form; or

(b) not being so maintained or operated that it determines and discharges correct quantities of goods for sale in pre-packed form,

the National Regulator may declare such measuring instrument as unfit for further use by informing the user thereof in writing to that effect;

(2) Should the circumstances contemplated in sub-regulation (1) occur, the user must forthwith:

(a) either dismantle and remove the instrument in question from the premises where packing is performed; or

(b) immediately take such other steps as will satisfy the National Regulator in connection with the continued use of such instrument.

(3) This regulation shall not apply to a measuring instrument used by a wholesale packer for the purpose of predetermining the quantity of goods measured thereby to an approximate quantity which is thereafter adjusted for correctness by means of a verified measuring instrument by an operator.

5 Measuring instruments not exempted under regulation 2

The following measuring instruments must be subject to type approval in terms of section 22 and the requirements of section 24 of the Act in so far as they apply, irrespective of whether those measuring instruments complies with the description set out in regulation 2 of Part VII:

(1) any measuring instrument, irrespective of whether or not it is used for direct sales to the public, that is used by or supplied to a retail dealer for the purpose of determining the mass, volume, length, area or number of a:

(a) quantity of goods taken from bulk and measured at the time of sale in the presence of the purchaser or his agent; or

(b) quantity of goods pre-packed by him for sale on the premises at which the goods are packed or from another premises;

(2) any mass measuring instrument used or supplied for the purpose of determining a quantity of goods sold in pre-packed form and having a declared mass of more than 100 kg;

(3) any mass or volume measuring instrument used or supplied for the purpose of determining the quantity of a liquid sold in pre-packed form and having a declared volume of more than 250 L;

(4) any automatic vending machine used or supplied for use, which itself determines the quantity of goods sold by measure of mass, length, area volume, or number unless such quantity of goods is exempted under the Act from sale by any such physical quantity;

(5) any non-automatic instrument used in a prepacking- process to determine the quantity of individual non-consumer pre-packages as defined in SANS 289 in a measuring unit other than mass or volume or by number, in which case the error on the instrument will apply to the goods in pre-packed form and the requirements of Clause 4.5 of SANS 458 need not be complied with.

APPLICATION FOR EVALUATION AND APPROVAL OF MEASURING INSTRUMENTS

1 Scope

These regulations specify requirements for the submission of measuring instruments for type approval evaluation as required by section 22 of the Act.

2 Application of measuring instruments in terms of section 22 of the Act

(1) Application form and documents

(a) Any application in terms of section 22 of the Act, read with any regulation, for the evaluation of a new, modified model or module of a measuring instrument or an installation or a system of measurement which incorporates any measuring instrument of a model approved together with any attachment, device or ancillary equipment not already approved with a view to the approval of the measuring instrument or module of a measuring instrument must be submitted in the manner prescribed by the National Regulator for approval.

(b) The type approval evaluation application must:

(i) include documentation as prescribed in a technical regulation or any other documentation required by the National Regulator in English for the purpose of type approval evaluation; and-

(ii) supply any additional information and documents that the National Regulator may deem necessary for the purpose of conducting the type evaluation; and

(iii) include such number of printed copies of documentation, indicated in (i) and (ii) above, as the National Regulator may require

(c) The applicant for type evaluation must

(i) deliver an operational specimen of the measuring instrument, module of a measuring instrument or any device related to the measuring instrument or module of a measuring instrument free of charge to the office of the National Regulator or to such other place as the National Regulator may direct, and

(ii) similarly remove such measuring instrument, module of a measuring instrument or device when it is no longer required by the National Regulator within a period prescribed by the National Regulator. If the submitter fails to remove the measuring Instrument within the period prescribed, the National Regulator may dispose of said measuring instrument as the National Regulator deems fit at the cost of the submitter;

(iii) if so required, dismantle, reassemble and erect, and adjust such measuring instrument, module of such measuring instrument or device;

(iv) provide suitable facilities, equipment and labour for the examination and testing of such measuring instrument(s), module(s) of such measuring instrument or device(s) instrument if required by the National Regulator;

3 Marking on specimen

Every specimen of a model of measuring instrument submitted for type approval evaluation must be clearly, indelibly and permanently marked with the markings as prescribed in a regulation or any other markings that may be required by the National Regulator for the purpose of type approval.

REGULATION PERTAINING TO PERIODIC VERIFICATION

1 Scope

These regulations specify requirements for the verification periods for measuring instruments used for a prescribed purpose

2 Requirements

(a) All the measuring instruments, or classes or kinds of measuring instruments mentioned in table 25, in column 1 must be verified, or re-verified by the date specified in column 3, unless they were verified or re-verified, before that date and within the period specified in column 2. Thereafter such measuring instruments must be re-verified or re-verified at intervals not exceeding the intervals specified in column 2 and determined from the date of last verification.

(b) A conventional measuring instrument of volume made of clear glass and a conventional measuring instrument of length made of a material prescribed by regulation must be verified before being taken into use and thereafter only on the instruction of a market surveillance inspector if he has reasonable grounds for believing that it has been altered materially since it was verified or, unless the original mark or verification has been defaced or has become illegible.

(c) The standard period for re-verification will be 12 months unless stipulated differently in any other regulation or SANS document relating to a specific measuring instrument.

1		2	3
Table 25			
1	Liquid fuel dispensers including dispensers for liquid petroleum gas.	18 months	31 December 1996
2	Liquid meters excluding water meters and lubricating oil dispensers used to dispense into the engines of motor vehicles.	12 months	30 June 1996
3	Non-automatic weighing instruments including vehicle scales	24 months	31 December 1996
4	In-motion weighing systems for vehicles	36 months	30 June 1998
5	Conventional measures of volume excluding glass measures	24 months	31 December 1996
6	Liquid measuring devices	24 months	31 December 1996
7	Vehicle tanks (Fixed value or with removable measuring gauges).	24 months	30 June 2008
8	Mass pieces for fine and coarse measurements	24 months	30 June 2008
9	Automatic weighing instruments	24 months	30 June 2008
10	Length measuring instruments	24 months	30 June 2008
11	Area measuring instruments	24 months	30 June 2008

COMMENCEMENT

These regulations must come into effect on ……on which date the regulations published under the Trade Metrology Act must be repealed.

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PART 2 OF 2

ANNEXURE

TABLES OF ALLOWANCES

EXPLANATORY NOTES

1 Allowance for capacities not tabulated and for measuring instruments of approved models

(1) The allowances of error for mass meters of capacities not specified in table I to table IV (inclusive) of this Annexure must be the allowances tabulated in such tables.

(2) The allowances set forth in any specific table must also apply to any model of measuring instrument if so specified in terms of the approval of the model under section 22 of the Act.

2 Allowances for new and repaired mass meters

(1) Except where specific allowances have been prescribed in any regulation of Part VII and subject to the provisions of Explanatory Note 3, the allowances set forth in table II to table IV (inclusive) of this Annexure must apply to the following:

(a) Initial verification of mass meters; or

(b) mass meters subsequently verified after repair or maintenance but before having been used for a prescribed purpose; or

(c) mass meters tested in pursuance of an authority issued in terms of section 30(1) or 27 (3) of the Act.

(2) In the case of a mass meter specified in paragraph (1) of this Explanatory Notes, the prescribed turning allowance must, where applicable, displace the beam or steelyard to the full extent of its travel either way from the horizontal position of equilibrium and hold it in its displaced position.

3 Errors allowed at loads up to capacity

Except as otherwise provided in any regulation of this Part, all mass meters may indicate, within the permissible error, at all loads except zero, to the extent shown below:

(1) Subject to the provisions of Explanatory Note 3, all mass meters;

1	2
TABLE I	
(2) Subject to the provisions of Explanatory Note 3, above, all mass meters	
Load applied	Error allowed
Up to 0,5 of capacity	0,5 of tabulated or applicable turning allowance
Above 0,5 of capacity and up to capacity	Full tabulated or applicable turning allowance

1	2
TABLE II	
Automatic scales having a capacity of not more than 50 kg when tested according to sub-regulation 40 (4) (f)	
Capacity of measuring instrument	Turning allowance
500 g	2,5 g
1 kg	4 g
2 kg	6 g
3 kg	9 g
4 kg	11 g
5 kg	13 g
6 kg	15 g
7 kg	16 g
10 kg	20 g
15 kg	28 g
20 kg	33 g
30 kg	44 g
40 kg	53 g
50 kg	62 g

1	2
TABLE III	
Dead mass scales	
Capacity of measuring instrument	Turning allowance
50 kg	62 g
60 kg	70 g
70 kg	78 g
80 kg	86 g
90 kg	93 g
100 kg	100 g
150 kg	130 g
200 kg	160 g
250 kg	190 g
300 kg	220 g
400 kg	270 g

500 kg	310 g
600 kg	350 g

1	2
TABLE IV	
Automatic scales having a capacity of more than 50 kg when tested according to subsection 40 (4) (f)	
Capacity of measuring instrument	Turning allowance
50 kg	62 g
60 kg	70 g
70 kg	78 g
80 kg	86 g
90 kg	93 g
100 kg	100 g
150 kg	130 g
200 kg	160 g
250 kg	190 g
300 kg	220 g
400 kg	270 g
500 kg	310 g
600 kg	350 g
700 kg	390 g
800 kg	430 g
900 kg	470 g
1 t	500 g
1,5 t	750 g
2 t	1 kg
2,5 t	1,2 kg
3 t	1,5 kg
4 t	2 kg
5 t	2,5 kg
6 t	3 kg
7 t	3,5 kg
8 t	4 kg
9 t	4,5 kg

10 t	5 kg
20 t	8 kg
30 t	11 kg
40 t	13 kg
50 t	15 kg
60 t	17 kg
70 t	19 kg
75 t	20 kg
80 t	21 kg
90 t	23 kg
100 t	25 kg
200 t	40 kg

1	2
TABLE V	
Mass pieces: Metric mass pieces for coarse measurement	
Denomination	Allowance of error in excess only
Over 1 000kg	50 g per 1000 kg
1000 kg	50 g
500 kg	30 g
200 kg	15 g
100 kg	10 g
50 kg	6 g
20 kg	3 g
10 kg	2 g
5 kg	1 g
2 kg	600 mg
1 kg	400 mg
500 g	250 mg
200 g	150 mg
100 g	100 mg
50 g	75 mg
20 g	50 mg
10 g	35 mg

5 g	25 mg
2 g	15 mg
1 g	10 mg

1	2
TABLE VI	
(i) Mass pieces: For fine measurement (pharmaceutical dispensing, chemicals, precious metals and comparable goods)	
Denomination	Allowance of error in excess only
20 kg	1 g
10 kg	500 mg
5 kg	200 mg
2 kg	120 mg
1 kg	80 mg
500 g	50 mg
200 g	30 mg
100 g	25 mg
50 g	15 mg
18 g & 20 g	10 mg
9 g & 10 g	7 mg
5 g	5 mg
2 g	3 mg
1 g	2 mg
500 mg	2 mg
200 mg	1 mg
100 mg	0,6 mg
50 mg	0,5 mg
20 mg	0,3 mg
10 mg	0,2 mg
5 mg	0,2 mg
2 mg	0,2 mg
1 mg	0,1 mg

1	2
TABLE VII	
Metric carat mass pieces	
Denomination	Allowance of error in excess only
10 000 CM	100 mg
5 000 CM	50 mg
2 000 CM	20 mg
1 000 CM	15 mg
500 CM	10 mg
200 CM	7 mg
100 CM	5 mg
50 CM	4 mg
20 CM	2 mg
10 CM	2 mg
5 CM	1 mg
2 CM	1 mg
1 CM	0,5 mg
0,5 CM	0,5 mg
0,2 CM	0,2 mg
0,1 CM	0,2 mg
0,05 CM	0,2 mg
0,02 CM	0,2 mg
0,01 CM	0,2 mg
0,005 CM	0,1 mg

1	2	3
TABLE VIII		
Measures of length: (a) Metal measures		
Length tested	Allowance of error	
	Long or in excess	Short or in deficiency
	mm	mm
200 m	37,5	37,5
100 m	25	25
50 m	15	15
30 m	10	10
20 m	7,5	7,5
10 m	5	5
5 m	3	3
3 m	2	2
2 m	1,5	1,5
1,5 m	1,25	1
1 m	1	0,5

500 mm	0,6	0,3
300 mm	0,4	0,2
200 mm	0,3	0,15
100 mm	0,2	0,1
10 mm	0,1	0,05

(b) Measures of length other than metal:

Double the allowances in (a) above

1	2
TABLE IX	
Measures of volume other than graduated glass measures for pharmaceutical dispensing and comparable measurement: Conical metal measures	
Denomination	Allowance of error in excess only
100 L and over	0,1%
50 L	65 ml
25 L	60 ml
20 L	50 ml
10 L	40 ml
5 L	25 ml
2 L	12 ml
1 L	8 ml
750 ml	6 ml
500 ml	5 ml
375 ml	4 ml
200 ml	2,5 ml
100 ml	1,5 ml
50 ml	1 ml
25 ml	0,6 ml
20 ml	0,5 ml
10 ml	0,25 ml
5 ml	0,15 ml
2 ml	0,1 ml
1 ml	0,05 ml

(b) Measures of volume other than conical metal measures, except graduated glass measures for pharmaceutical dispensing and comparable measurement and glass measures of volume for dispensing quantities of potable spirits in retail trade:

Double the allowances in (a) above, according to denomination of measure or value of graduation tested.

1	2
TABLE X	
Glass measures of volume for dispensing quantities of potable spirits in retail trade:	
Denomination	Allowance of error in excess only
25 ml	1,5 ml
50 ml	2,5 ml

1	2
TABLE XI	
Graduated glass measures for pharmaceutical dispensing and comparable measurement: Inverted conical or beaker measures:	
Approximate internal diameter of measure at graduation tested	Allowance of error in excess or in deficiency
150 mm	9 ml
140 mm	8 ml
130 mm	7 ml
120 mm	6 ml
110 mm	5 ml
100 mm	4 ml
90 mm	3 ml
80 mm	2,5 ml
70 mm	2 ml
60 mm	1,5 ml
50 mm	1 ml
40 mm	0,65 ml
30 mm	0,35 ml
20 mm	0,15 ml
10 mm	0,05 ml

1	2
TABLE XII	
Cylindrical measures and measuring flasks:	
Value of graduation tested or value of quantity between graduations tested	Allowance of error in excess or in deficiency
Over 1 L	5 ml per L
Over 500 ml and up to 1000 ml	5 ml
Over 200 ml and up to 500 ml	3 ml
Over 100 ml and up to 200 ml	1,5 ml
Over 50 ml and up to 100 ml	1 ml
Over 20 ml and up to 50 ml	0,6 ml
Over 10 ml and up to 20 ml	0,3 ml
Over 5 ml and up to 10 ml	0,2 ml
Over 2 ml and up to 5 ml	0,15 ml
Over 1 ml and up to 2 ml	0,1 ml
1 ml	0,05 ml
0,5 ml	0,03 ml
0,2 ml	0,02 ml
0,1 ml and under	10%

Burettes and pipettes:

One-half of the allowances in table XII, above.