



## **ST. CHRISTOPHER AND NEVIS**

### **CHAPTER 23.33**

### **METROLOGY ACT**

**Revised Edition**  
showing the law as at 31 December 2017

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#### **METROLOGY ACT**

**Act 30 of 2012** ... in force 28th January 2015

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**CHAPTER 23.33**  
**METROLOGY ACT**

AN ACT TO REPEAL THE WEIGHTS AND MEASURES ACT, CAP. 23.33 AND TO MAKE PROVISIONS WITH RESPECT TO A NEW SYSTEM OF WEIGHTS AND MEASURES AND FOR RELATED MATTERS.

**PART I**  
**PRELIMINARY MATTERS**

**Short title.**

1. This Act may be cited as the Metrology Act.

**Interpretation.**

2. (1) In this Act, unless the context otherwise requires—

“authorised denomination” means a denomination of weight or measure specified in the Third Schedule;

“authorised units of measurement” means units of measurement specified in the Second Schedule;

“Bureau” means the Bureau of Standards established by section 3 of the National Bureau of Standards Act, Cap. 23.15, Saint Christopher and Nevis;

“container” includes anything in or by which an article is cased, enclosed, contained or packed;

“Director” means the Director of the Bureau of Standards appointed under the National Bureau of Standards Act, Cap. 23.15;

“equipment” means a weight, measure, weighing or measuring instrument or sub-assembly of a weighing or measuring instrument;

“importer” means, an individual, group of persons, agency or company who legitimately brings into the country a container or weighing or measuring equipment;

“initial verification” means the verification of a new or repaired weight, measure or weighing or measuring instrument prior to being placed in service;

“in-service verification” means the periodic verification of a weight, measure or weighing or measuring instrument which has been subject to initial verification and has been in service;

“Inspector” means a person appointed as an Inspector of Weights and Measures;

“measure” means a vessel of determinate capacity for determining the volume of a liquid or the length of a graduated rod or line;

“measuring instrument” means a device used for making measurements, alone or in conjunction with one or more supplementary devices;

“measurement standard” means a material measure, measuring instrument, reference material or measuring system intended to define, realize, conserve or reproduce a unit or, one or more values of a quantity to serve as a reference;

“Minister” means the Minister responsible for Metrology;

“National standard” means the primary standard of measurement set out in section 13;

“packer” means an individual, group of persons, agency or company that is responsible for placing in a container the item or product which is to be offered for sale;

“pattern approval” means the approval by the Director of a specific model of a weighing or measuring instrument for its intended use, after one or more instruments have been tested in accordance with the prescribed requirements;

“pre-packaged” means in relation to goods offered for sale, a product that is wrapped, encased or placed in a container, otherwise than in the presence of a person purchasing the goods and where—

- (a) the goods, with the exception of gas compressed in a cylinder, cannot be removed from the container without disturbing the integrity of the package; and
- (b) the quantity of the goods has already been determined and is indicated on the label prior to being offered for sale;

“prescribed mark of verification” means a mark prescribed by regulations made by the Minister under this Act;

“primary standard” means a measurement standard which—

- (a) represents or reproduces a unit of measurement referred to in section 13;
- (b) has been calibrated and certified to the satisfaction of the Bureau by reference to an appropriate international measurement standard;
- (c) is or is to be used as a National Standard for determining the accuracy of a secondary standard.

“reference material” means a material where one or more of its properties are sufficiently homogeneous so as to be used for the calibration of an apparatus, the assessment of a measurement method or the assignment of values to materials;

“secondary standard” means a measurement standard being a copy of, or measurement standard equivalent to, a primary standard which—

- (a) has been calibrated and certified to the satisfaction of the Bureau by reference to a primary standard; and
- (b) is or is to be used as a standard for the purpose of determining the accuracy of a working standard;

“Specified Standards Laboratory” means the national standards laboratory of any country or an international standards laboratory specified by the Minister for the purpose of this Act by notification published in the *Gazette*;

“stamp” means a mark, applied by an Inspector of Metrology, for use as evidence that a measuring device is in conformity with the regulations, whether applied by impressing, casting, engraving, etching, branding, transferring or by any other means approved by the Bureau;

“standard” means a measurement standard that may be recognised through national and international agreements;



“trade” means the selling, purchasing, exchanging, leasing, rendering, consigning or providing of any goods, land, facility, service or work on the basis of measurement and includes the collecting of tolls, duties and taxes on the basis of measurement and the business of providing facilities for measuring by means of a prescribed measuring device;

“verification” includes the operations carried out by an organ of the national service of legal metrology or other legally authorised organisation having the object of ascertaining and confirming that the measuring instrument entirely satisfies the requirements of the regulations for verification as well as examination and stamping;

“weight” means a body of determinate mass for use within a weighing instrument;

“weighing instrument” means an instrument for the measuring of mass or weight;

“working standard” means a measurement standard being a copy of, or a measurement standard equivalent to, a secondary standard which—

- (a) has been calibrated and certified to the satisfaction of the Bureau by reference to one or more secondary standards; and
  - (b) that is to be used routinely to calibrate or check material measure, measuring instruments or reference materials.
- (2) For the purposes of this Act—
- (a) a weight or measure shall be deemed to be correct, if upon comparison with a reference of a working standard of that denomination, any error determined is equal to or less than the prescribed limit of error allowed; and
  - (b) a weighing or measuring instrument shall be deemed to be correct, if upon verification, it has not a greater limit of error than the prescribed limits of error allowed on verification.

## PART II

### ADMINISTRATION OF NATIONAL METROLOGY SERVICE

#### **National Metrology Service.**

3. There is hereby established a National Metrology Service which shall be administered by and form part of the operations of the Bureau.

#### **Designation of Custodian and Deputy Custodian of Standards.**

4. (1) The Director of the Bureau is hereby designated as the official Custodian of the Saint Christopher and Nevis Standards.

(2) An officer of the Bureau shall be designated by the Director of the Bureau to be or to act as the Deputy Custodian of Standards.

(3) The Deputy Custodian of Standards designated under subsection (2) may, subject to the general direction and control of the Director exercise, perform or discharge all or any of the powers, duties or functions, conferred or imposed on or assigned to the Director by or under this Act.

**Designation of Inspectors.**

5. For the purposes of this Act, the Minister shall, on the advice of the Director, designate employees of the Bureau or other public officers to be Inspectors of Weights and Measures and provide every Inspector with documentary evidence of his or her designation.

**Use of unstamped standards, et al by Inspectors.**

6. (1) No Inspector shall use any working standard for the purposes of testing any weight or measure at any time after the expiry of a period of two years from the date on which that standard was last stamped as correct.

(2) No Inspector shall use for the purposes of this Act a weighing or measuring instrument which is provided for his or her use unless that instrument has been verified in the prescribed manner.

**Inspectors not to derive profit from selling of weights and measures.**

7. (1) No Inspector shall derive any profit from or be employed in the making or selling of weights or measures or weighing or measuring instruments.

(2) No Inspector shall repair, alter or adjust any weight or measure or weighing or measuring instrument.

(3) Notwithstanding subsection (2) where the Director is satisfied that it is desirable that an Inspector should be allowed to adjust weights and measures and weighing and measuring instruments within the area of any District as the case may be, the Director may, if he thinks fit, authorize that Inspector to act in that area as an adjuster of weights and measures and weighing and measuring instruments.

(4) Where there is an adjustment permitted by the Director pursuant to subsection (3) the weight or measuring instrument shall be immediately verified by another Inspector in the presence of that Inspector who has been authorised to be an adjuster.

(5) Pursuant to subsection (3), the use of the services of an Inspector as an adjuster, shall be subject to the payment of a prescribed fee by the person requesting the use of the services.

**Disposal of fees.**

8. All fees paid under this Part to any Inspector shall be credited to the Saint Christopher and Nevis Bureau of Standards.

**Inspectors to give security.**

9. Every person designated as an Inspector—

- (a) shall be held responsible for the due remittance of all fees to the Bureau that he or she receives under this Act and for the safety of the working standards and stamps and other appliances entrusted to that Inspector for the purposes of this Act;
- (b) may be required to give security in the prescribed amount for the remittance of all fees received and the safety of the working standards, stamps and other appliances; and
- (c) shall ensure that any fees received by him or her shall be remitted to the Bureau within three days of receipt.

**Registers to be kept by Inspectors.**

**10.** Every Inspector shall keep a register in the prescribed form in which he or she shall enter such particulars as may be prescribed relating to the performance of his or her duties under this Act and shall, at such times as may be prescribed, transmit the register to the Director for examination.

**Powers of inspection of Director and other officers.**

**11.** The Director or the Deputy Custodian or any Inspector may at any reasonable time enter any factory, shop, store, warehouse, fuel dispensing service station, shed, land, vehicle or premises in which any weight or measure or weighing or measuring instruments is or is suspected to be kept or used for the purpose of any trade, or where any article or goods are offered or exposed for sale and may—

- (a) search for, or require the person for the time being in charge thereof to produce for inspection, all or any of the weights and measures and weighing and measuring instruments kept therein;
- (b) inspect any weight or measure which is found therein or produced for examination, and compare it with a working standard of that weight or measure;
- (c) inspect and test any weighing or measuring instrument which is found therein or produced for examination;
- (d) seize and detain for the purpose of a prosecution for an offence under this Act or any other law, any weight or measure or weighing or measuring instrument which is found upon such comparison or test to be incorrect, or which appears to the inspector to have been or likely to be used in contravention of any provision of this Act or such other law, as the case may be;
- (e) inspect and weigh or inspect and measure, any article or goods which are kept therein, offered or exposed for sale in order to ascertain whether the provisions of this Act are being complied with in respect of such article or goods and seize and detain any article or goods in respect of which or in relation to which a contravention of any provision of this Act has been or is suspected to have been committed;
- (f) require the production of all books, accounts or documents relating to goods therein and inspect and copy any of those books, accounts or documents;
- (g) take such samples of any goods therein as may be reasonably required by him or her for the proper performance of his or her duties;
- (h) keep confidential any information that comes to his or her knowledge in the execution of his or her duties in so far as that information is not relevant to the prosecution of an offence.

## PART III

## LEGAL UNITS AND STANDARDS OF MEASUREMENT

**Principal system of measurement.**

12. (1) The International System of Units as defined in the First Schedule shall be the legal units of measurement of Saint Christopher and Nevis.

(2) The units indicated in Part I of the Second Schedule may be used with SI units, because of their practical importance, wide usage or use in specialized fields.

(3) The Minister may, by Order published in the *Gazette*, appoint a date from or after which the units specified in Part I of the Second Schedule shall cease to have legal force and validity in Saint Christopher and Nevis and the Minister may appoint different dates for different undertakings or classes of undertakings as specified in the Order.

(4) The British Imperial System of units as defined in Part II of the Second Schedule may also be used concurrently with the International System of Units.

(5) The Minister may, by Order published in the *Gazette*, appoint a date from or after which the units specified in Part II of the Second Schedule shall cease to have legal force and validity in Saint Christopher and Nevis and the Minister may appoint different dates for different undertakings or classes of undertakings, as specified in the Order.

**Primary standards to be legal units.**

13. (1) The Minister shall procure and cause to be maintained a primary standard metre and a primary standard kilogram which shall be National Standards for the purpose of this Act and from time to time procure and cause to be maintained such standards of the other units of measurement as the Minister may consider necessary.

(2) Every standard of any unit of measurement procured under subsection (1) shall be the equivalent of a unit of measurement defined in the First Schedule or Part II of the Second Schedule or any multiple or sub-multiple of any such unit of measurement, and shall be made of such materials and in such manner as to be, as far as practicable, proof against mechanical and atmospheric agents and other sources of error.

**Verification of primary standards.**

14. Every standard of any unit of measurement procured under section 13 shall be verified and authenticated at a specified standards laboratory before such standard is brought into use in Saint Christopher and Nevis.

**Declaration of Saint Christopher and Nevis' primary standards.**

15. The Minister may by Notice published in the *Gazette* declare that a standard of any unit of measurement which has been procured and verified under this Part shall be brought into use in Saint Christopher and Nevis as a primary standard and shall for all purposes be deemed to be true and accurate.

**Periodic verification of Saint Christopher and Nevis' primary standards.**

16. (1) Subject to subsection (2), the Minister shall, once at least in every period of ten years, cause such primary standards as he or she deems necessary, to be verified at a specific standards laboratory.

(2) Before any primary standard of any unit of measurement is sent out of Saint Christopher and Nevis for verification pursuant to subsection (1), the Minister shall cause a secondary standard of that unit of measurement to be verified by comparison with that primary standard and to be authenticated in such manner as the Minister may direct.

(3) Once a secondary standard is authenticated pursuant to subsection (2), it shall be placed under the care and control of the Director in his capacity as Custodian, and that secondary standard shall, during such time as the actual primary standard is out of Saint Christopher and Nevis, be deemed to be a primary standard.

#### **Secondary standards and periodic calibration.**

**17.** (1) The Minister may, for the purposes of this Act, cause such copies as he or she may consider necessary of any primary standard to be made into secondary standards in such manner and of such material, form and specification, as may be prescribed.

(2) Every secondary standard of any unit of measurement shall be kept and preserved in such manner as may be prescribed at the Bureau and in the custody of the Director, who shall, once at least in each period of five years, cause such standard to be compared with the Saint Christopher and Nevis primary standard of that unit of measurement, and if necessary, to be corrected or adjusted.

#### **Cancellation, etc. of secondary standards.**

**18.** (1) The Minister may at any time by Notice published in the *Gazette* cancel any secondary standard and any standard so cancelled shall cease to be used as a secondary standard.

(2) The Director may for the purposes of this Act, procure such copies as may be necessary of the secondary standards of any unit of measurement and every such copy shall be made in accordance with specifications as may be prescribed.

#### **Verification and authentication of working standards.**

**19.** (1) The Director shall cause every such copy of a secondary standard to be verified, and if found to be correct, to be authenticated, in the prescribed manner and every copy so authenticated shall be a working standard for the purpose of this Act, and shall be deemed unless the contrary is proved, to be true and accurate.

(2) Every working standard in the custody of the Director, an Inspector or any other agency to which custody has been assigned shall be verified once at least in every period of two years by comparison against a secondary standard of that unit of measurement.

(3) In the event of damage to a working standard, such standard shall not be used unless it has been compared with a secondary standard of that unit of measurement and found to be true and accurate, and authenticated by the Director in the prescribed manner.

#### **Judicial notice of standards.**

**20.** A court shall take judicial notice of every Saint Christopher and Nevis primary standard, secondary standard or working standard.

**Custodian of Saint Christopher and Nevis' standards.**

21. Pursuant to section 4, the Director shall have ultimate responsibility for the care and control of Saint Christopher and Nevis' primary, secondary and working standards.

## PART IV

## USE OF AUTHORISED UNITS OF MEASUREMENT

**Use of authorised units for all purposes.**

22. (1) Every contract, bargain, sale or dealing made or had in Saint Christopher and Nevis whereby any work, goods, wares, merchandise or other thing is to be done, sold, hired, delivered, carried, measured, computed, paid for, or agreed to by a unit of measurement, shall be made and dealt with in accordance with any one of the authorised units of measurement.

(2) All fees and duties charged or collected in Saint Christopher and Nevis shall be based on the authorised units of measurement.

(3) The packing in Saint Christopher and Nevis of any article or container for the purpose of sale shall be done in accordance with any one of the authorised units of measurement.

**Exemption of export goods.**

23. Section 22 shall not apply to goods, which are intended for dispatch to a destination outside of Saint Christopher and Nevis.

## PART V

## USE OF WEIGHING AND MEASURING EQUIPMENT

**Weighing and measuring equipment.**

24. All weighing and measuring equipment for trade used in Saint Christopher and Nevis shall be in the authorised units of measurement specified in the Second Schedule.

**Use of authorised denominations of weights and measures.**

25. (1) A person shall, for the purposes of trade, use only a weight or measure of an authorised denomination specified in Part I or Part II of the Third Schedule.

(2) Subject to subsection (3), a person shall, for the purposes of any trade, only use or have in his or her possession for use in any trade—

- (a) a weight which purports to be of an authorised denomination, if the denomination is indelibly marked on the top or side of it in legible figures and letters;
- (b) a measure of length or volume which purports to be of a denomination equivalent to an authorised denomination, if the denomination is marked indelibly on the outside of it in legible figures and letters.

(3) Nothing in this section shall be deemed to require the marking of a denomination of any weight, if the small size of such weight renders such marking impracticable.

**Use of weighing or measuring instruments.**

**26.** No person shall use for the purpose of any trade, or have in his or her possession for use in any trade, any weighing or measuring instrument which does not bear a stamp indicating the maximum weight or measure, as the case may be, which may be weighed or measured by means of such instrument.

**Prohibition on sale and use of weights, measures and measuring instruments.**

**27.** (1) A person shall only sell or expose for sale a weight or measure or weighing or measuring instrument which has been properly verified and stamped by an Inspector with the prescribed mark of verification.

(2) A person shall only use a weight, measure or weighing or measuring instrument which has been verified and stamped by an Inspector with the prescribed mark of verification, for purposes of trade.

**Seller to weigh or measure article if required.**

**28.** (1) A person who in any shop, warehouse, store, market or public place, sells any goods by weight or measure, whether on his or her own behalf or on behalf of the owner of such goods, shall on demand made by the person to whom the goods are to be delivered—

- (a) if the goods are sold by weight, weigh the goods in a weighing instrument, in the presence of that person; or
- (b) if the goods are sold by volume or capacity, measure the article in a measure of volume or capacity, in the presence of that person; or
- (c) if the article is sold by linear measure, measure the article using a measure of length, in the presence of that person.

(2) Subsection (1) shall not apply to the sale of pre-packaged goods.

PART VI

MANUFACTURE, INSPECTION, ETC. OF WEIGHING AND MEASURING EQUIPMENT

**Verification of weighing and measuring equipment.**

**29.** (1) All weighing and measuring equipment for use in trade and for purposes specified in subsection (2) shall be subject to—

- (a) pattern approval as specified in section 33;
- (b) initial verification in accordance with requirements to be prescribed by the Minister in Regulations;
- (c) in-service verification in accordance with the requirements to be prescribed by the Minister in Regulations; and
- (d) verification after repair or modification.

(2) The purposes referred to in subsection (1), include the use of weighing and measuring equipment in the following areas—

- (a) in the field of public health;
- (b) for use in postal services;
- (c) for sale of electricity and water;
- (d) for use in industry, engineering or any other field;

**Periodic examination of weights and measuring instruments.**

**30.** (1) The Director shall fix the times and the places within each area at which an Inspector shall examine and verify weights and measures and weighing and measuring instruments.

(2) Public notice of the time and place fixed under subsection (1) for the examination and verification of weights and measures and weighing and measuring instruments shall be given by the Director as the case may be, in such manner and at such times as he or she considers necessary.

(3) Every Inspector shall at the time and place fixed under this section for examination by him or her, attend with the working standards provided for his or her use and shall—

- (a) examine in the prescribed manner every weight or measure which is produced to him or her for that purpose and compare it with a working standard of that weight or measure; and
- (b) examine and test in the prescribed manner every weighing or measuring instrument which is produced to him or her for that purpose.

(4) Nothing in subsection (1) shall be deemed to prevent an Inspector from examining, comparing or testing any weight or weighing or measuring instrument which is produced to him or her for examination at any time or place other than a time or place fixed under this section.

(5) Where an inspector examines a weight or measure or weighing or measuring instruments under this section, that examination shall be subject to the payment of a prescribed fee.

**Stamping of mark of verification.**

**31.** (1) An Inspector who, upon examination under section 30, finds any weight or measure or measuring instrument to be correct, and otherwise in all respects to comply with this Act and any regulations made under this Act, shall stamp such weight, measure or instrument in the prescribed manner with the prescribed mark of verification.

(2) Where a prescribed measuring device is in the opinion of the Inspector, too small or too delicate to be stamped but the device nevertheless satisfies the requirements of the appropriate Regulations made under this Act, an Inspector shall issue a certificate endorsed to that effect.

(3) No Inspector shall stamp with a mark of verification any weight or measure or weighing or measuring instrument which is not correct or which does not comply with this Act or any regulation which is applicable in the case of such weight, measure or instrument, as the case may be.



(4) No Inspector shall stamp any weight or measure with a mark of verification—

- (a) unless such weight or measure is of an authorised denomination; and
- (b) unless he or she has tested it by comparison with a working standard of that weight or measure.

**Legal status of weights, etc. stamped by inspectors.**

32. A weight or measure or weighing or measuring instrument which has been duly stamped by an Inspector under this Act with the prescribed mark of verification shall be classified as a legal weight, measure or instrument, unless it is found thereafter to be false or incorrect as the case may be in any part of St. Christopher and Nevis.

**Pattern approval of weighing and measuring equipment.**

33. (1) All weights, measures and weighing and measuring instruments used for purposes of trade and in the fields specified in section 29(2) shall be subject to pattern approval by the Director in accordance with the specifications and limits of error, as may be prescribed.

(2) The fee to be charged for any such pattern examination and approval shall be as prescribed.

(3) Where a subsequent examination of any weight, measure or weighing or measuring instrument which has been approved earlier by the Director is found to be defective, the Director may cancel such earlier approval and notify any person of such cancellation.

**Prohibition of sale, etc. of weights and measures.**

34. (1) No person shall sell, manufacture or repair any weight or measure or any weighing or measuring instrument except under the authority of a licence issued by the Director under this section.

(2) A person who wishes to obtain a licence under subsection (1) —

- (a) to repair any weight, measure or weighing or measuring instrument shall—
  - (i) demonstrate to the satisfaction of the Director his or her ability or the ability of the persons employed by him or her, to repair the type of measuring instrument which he or she seeks to repair; and
  - (ii) be in possession of such equipment, tools and other facilities as may be required for the proper execution of such repair;
- (b) to manufacture any weight, measure or weighing or measuring instrument shall—
  - (i) demonstrate to the satisfaction of the Director, his or her ability or the ability of persons employed by him or her to manufacture the type of weight, measure or weighing or measuring instrument which he or she seeks to manufacture;
  - (ii) be in possession of such equipment, tools and other facilities as may be required for the manufacture or assembly of such weight, measure or weighing or measuring instrument; and

(iii) submit to the Director the drawings and samples as may be required of the weight, measure or weighing and measuring instrument which he or she intends to manufacture, for pattern approval.

(3) No licence to sell, manufacture or repair weights, measures and weighing and measuring instruments shall be issued to any person except upon payment of the prescribed fee.

(4) Every licence issued by the Director under this section shall be in the prescribed form, subject to such conditions as may be prescribed, and shall be in force until such date as may be specified in the licence.

(5) The Director may revoke any licence issued under this section if the holder of the licence is convicted of an offence under this Act.

(6) Regulations may be made, prohibiting persons licensed under this section from demanding or accepting, in respect of the repair or adjustment of weights, measures, and measuring and measuring instruments, fees in excess of such maximum fees as may be prescribed by such regulations.

## PART VII

### PRODUCT QUANTITIES AND PRE-PACKAGES

#### **Sale to be by Net Weight or Measure.**

**35.** (1) No person shall sell any goods by weight or measure unless he or she does so by net weight or measure.

(2) Subject to section 36(2), any person who, in selling or purporting to sell any goods by weight or other measurement or by number, delivers or causes to be delivered to the buyer a lesser quantity than that purported to be supplied or than corresponds with the price charged commits an offence.

#### **Pre-packaged goods.**

**36.** (1) The net weight or measure marked on a container of pre-packaged goods shall be subject to the tests and limits as prescribed by Order made by the Minister and published in the *Gazette*.

(2) No person shall sell or expose for sale any goods in a container or pre-package by weight or by measure unless such goods comply with the limits specified by the Minister by order and published in the *Gazette*.

(3) Subject to such exemptions as may be prescribed by the Minister by Order, no person shall sell any pre-packaged goods by weight or measure unless the net weight or the net measure is marked on the container in the prescribed manner in terms of authorised units of measurement specified in the Second Schedule.

(4) Any person who supplies, sells or exposes for sale goods in a container or pre-package which is so made, formed or filled as to be misleading as to the nature, weight or capacity of the contents commits an offence.

(5) Any person, who is an importer or a packer of pre-packaged goods shall ensure that such pre-packaged goods are marked in the prescribed manner with—

- (a) a statement of the quantity contained in terms of authorised units of measurement; and
- (b) the name and address of the manufacturer, or the packer or the importer or a mark which enables the manufacturer or the importer or the packer to be readily ascertained.

## PART VIII

### OFFENCES AND PENALTIES

#### **Use of unmarked weights or measures.**

**37.** Subject to section 25(3), any person who uses for any trade or has in his or her possession for use in any trade, any weight or measure which is unmarked with its denomination commits an offence and is liable on summary conviction to a fine not exceeding three thousand dollars or to imprisonment for a term not exceeding three months or to both such fine and imprisonment.

#### **Sale of unstamped weights and measures.**

**38.** Any person who sells or exposes for sale any weight or measure or weighing or measuring instrument which has not been stamped by an Inspector with the prescribed mark of verification commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

#### **Use and possession of unstamped weights and measures.**

**39.** (1) Any person who uses for the purposes of any trade or has in his or her possession for use in any trade, any weight or measure or weighing or measuring instrument which has not in the prescribed period, been stamped by an Inspector with the prescribed verification mark commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

(2) Any person who contravenes section 29(1) in respect of weighing and measuring equipment for use in the fields specified in section 29(2) commits an offence and is liable on summary conviction to a fine not exceeding three thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

#### **Forgery of stamp or mark used by inspectors etc.**

**40.** Any person who—

- (a) forges or counterfeits any stamp or mark provided under this Act for the use of Inspectors in stamping weights or measures or weighing or measuring instruments;
- (b) uses, sells, exposes for sale, utters or otherwise disposes of any weight or measure or weighing or measuring instrument bearing any stamp or mark which he or she knows to be false, forged or counterfeited; or
- (c) removes any mark which has been stamped by an Inspector on any weight or measure or weighing or measuring instrument and inserts

such mark on any other weight, measure or weighing or measuring instrument; or

- (d) increases or diminishes a weight or measure which has been stamped or certified by an Inspector under this Act, or tampers with a weighing or measuring instrument which has been so stamped, or uses, sells, exposes for sale, utters for sale, keeps in his or her possession for use in a trade or otherwise disposes of any weight or measures which he or she knows to be so increased, diminished or false or any weighing or measuring instrument which he or she knows to be tampered with,

commits an offence and is liable on summary conviction to a fine not exceeding twenty thousand dollars or to imprisonment for a term not exceeding two years or to both such fine and imprisonment.

#### **Use or possession of incorrect weights or measures.**

**41.** Any person who uses for the purpose of any trade, or has in his or her possession for use in any trade, any weight or measure or weighing or measuring instrument which is incorrect commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

#### **False, incorrect or untrue declaration or statement, etc.**

**42.** Any person who—

- (a) in any place or area by any means whether direct or indirect, makes any false, incorrect or untrue declaration or statement as to the number, quality, measure, gauge or weight of any goods or things in connection with their purchase, sale, weighing or measurement;
- (b) in the computation of any charges for services rendered on the basis of weight or measure, sells or causes to be sold, delivers or causes to be delivered to a purchaser, anything by weight or measure, short of the quantity demanded or represented by the seller,

commits an offence and is liable on summary conviction to a fine not exceeding ten thousand dollars or to imprisonment for a term not exceeding one year or to both such fine and imprisonment.

#### **Deceptive packaging.**

**43.** Any person who supplies, sells or exposes for sale any goods in a container or pre-package which is so made, formed or filled as to be misleading as to the nature, weight or capacity of the contents, commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

#### **Use of false weight or measure.**

**44.** Whoever uses any false weight or false measure or capacity, or uses any weight or any measure of length or capacity representing it to be a different weight or measure from what it is, commits an offence and is liable on summary conviction to a fine not exceeding ten thousand dollars or imprisonment for a term not exceeding one year or to both such fine and imprisonment.

**Importing or packing of pre-packaged goods.**

45. Any person who is an importer or a packer of pre-packaged goods—
- (a) who imports or packs pre-packaged goods in contravention of the requirements of section 27(2);
  - (b) fails to mark in authorised units on any pre-package the number, net weight or measure contained therein; or
  - (c) fails to indicate the name and address of the manufacturer, or the importer or a mark enabling identification of such name and address,

commits an offence and is liable on summary conviction to a fine not exceeding seven thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

**Selling of unmarked pre-packaged goods.**

46. Any person who sells or exposes for sale a pre-packaged good or container of pre-packaged goods of which the number, the goods net weight or measure is not marked on the pre-packaged good or the container in terms of units specified in the Second Schedule commits an offence and is liable on summary conviction to a fine not exceeding ten thousand dollars or to imprisonment for a term not exceeding one year or to both such fine and imprisonment.

**Repair or manufacture of weights and measures without licence.**

47. Any person who—
- (a) except under the authority of a licence issued in that behalf under this Act, manufactures or repairs any weight or measure or weighing or measuring instruments; or
  - (b) being the holder of such licence, commits a breach of any condition lawfully inserted in the licence,

commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding three months or to both such fine and imprisonment.

**Refusal to produce weights, etc., for inspection.**

48. Any person who refuses to produce a weight or measure or weighing or measuring instrument when required to do so by the Director, the Deputy Custodian or an Inspector acting under section 11 or who resists or obstructs that person in the exercise of the powers conferred upon him or her by that section commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

**Breach by Inspectors.**

49. Any Inspector who commits a breach of any provision of Part II or of any regulation relating to the examination, verification or stamping of weights or measures or weighing or measuring instruments, commits an offence and is liable on summary conviction to a fine not exceeding three thousand dollars or to imprisonment for a term not exceeding three months or to both such fine and imprisonment.

**General penalty.**

50. Any person who commits a breach of any provision of this Act or of any regulation shall, where no punishment is expressly provided for such breach, be liable on summary conviction, to a fine not exceeding five thousand dollars.

**Forfeiture of weights and measures.**

51. Any court may on the conviction of any person for an offence under this Act relating to any weight or measure or weighing or measuring instrument, make an order declaring that such weight or measure or weighing or measuring instrument shall be forfeited to the Crown and every weight and measure or weighing or measuring instrument which is so forfeited shall be disposed of in such manner as may be prescribed.

**Evidence of possession.**

52. For the purposes of this Act any weight or measure or weighing or measuring instrument which is found in the possession of any person who carries on any trade, shall be deemed, until the contrary is proved, to be in the possession of that person for use in trade.

**Principal liable for offences of servants and agents.**

53. Where an offence under this Act is committed by an agent or servant of a manufacturer or trader, such offence shall be deemed to have been committed by that manufacturer or trader unless he or she proves that the offence was committed without his or her knowledge.

**Offences committed by body of persons.**

54. (1) Subject to subsection (2), where an offence under this Act is committed by a body of persons—

- (a) if the body of persons is a body corporate, every person who at the time of the commission of the offence was a director or officer of that body corporate; or
- (b) if the body of persons is a body other than a body corporate, every person who at the time of the commission of the offence was a member of that body, shall be deemed to have committed the offence.

(2) Any such director, officer or member shall not be deemed to have committed that offence if he or she proves that the offence was committed without his or her knowledge or that he or she exercised due diligence to prevent the commission of that offence.

**PART IX****MISCELLANEOUS PROVISIONS****Police assistance.**

55. (1) The Director, Deputy Custodian, an Inspector or other person authorised by the Director may request the assistance of a police officer in uniform in the enforcement of the provision of this Act.

(2) A police officer who is requested to give assistance under subsection (1) shall give such assistance.

**Fees.**

56. The fees to be levied for testing, verification and stamping of weights, measures or weighing and measuring instruments shall be as prescribed by the Minister.

**Regulations.**

57. (1) The Minister may make regulations for the purpose of carrying out or giving effect to the provisions of this Act.

(2) A fine of five thousand dollars or a term of imprisonment of six months may be attached to regulations made under this Act.

**Amendment of Schedules.**

58. The Minister may by Order amend the Schedules to this Act.

**Settlement of disputes.**

59. (1) If any dispute arises between an Inspector and any other person as to the meaning or construction of any regulation or as to the methods to be adopted in testing any weight, measure or weighing or measuring instrument, such dispute shall be brought to the attention of the Director by either party.

(2) The Director shall investigate the matter and make a decision which decision shall be final and conclusive on questions of fact.

**Certificate of Director or Deputy Custodian to be *prima facie* evidence.**

60. A certificate purporting to be issued by the Director or Deputy Custodian regarding the condition of any weight, measure or weighing or measuring instrument, examined by him or her shall, without further proof, be admissible in evidence in any court, and shall be *prima facie* proof of the facts stated therein.

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**FIRST SCHEDULE**

## DEFINITION OF THE INTERNATIONAL SYSTEM OF UNITS (SI)

**1. Definition of the system SI**

1.1 The SI units belong to the International System of Units, of which the international abbreviation of the name is «SI»

1.2 The SI units consist of:

the base units;

the derived units;

**2. Base units:**

2.1 The names and symbols of the base units are respectively

for length	metre	m
for mass	kilogram	kg
for time	second	s
for electric current	ampere	A
for thermodynamic temperature	kelvin	K
for amount of substance	mole	mol
for luminous intensity	candela	cd

2.2 Definitions of base units:

The base units shall have the definitions assigned by the Minister from time to time by way of regulations, being the meaning appearing to the Minister to reproduce in English the international definition adopted by the General Conference of Weights and Measures (CGPM) and in force at the date of the making of the regulations.

**3. Derived units**

3.1 The derived units are formed by combining base units with each other, by combining base units with other derived units, and by combining derived units with each other, according to the algebraic relations linking the corresponding quantities. The symbols for derived units are obtained by means of the mathematical signs for multiplication, division and use of exponents. Most commonly used derived units are indicated in sections 3.2, 3.3, 3.4, 3.5, 3.6 and 3.7.

3.2 Units of Space, Time and Periodic Phenomena

3.2.1 Plane angle : radian (symbol: rad)

The radian is the plane angle between two radii which cut off on the circumference of a circle an arc equal in length to the radius.

(1 rad =  $l_m/l_m = 1$ )

3.2.2 Solid angle : steradian (symbol: sr)

The steradian is the solid angle, which having its vertex in the centre of sphere, cuts off an area of the surface of the sphere equal to that of a square with its side of equal length to the radius of the sphere.



$$(1 \text{ sr} = \text{lm}^2/\text{lm}^2 = 1)$$

3.2.3 Wave number : 1 per metre (symbol:  $\text{m}^{-1}$ )

1 per metre is the wave number of a monochromatic radiation whose wave length is equal to 1 metre.

$$(1 \text{ m}^{-1} = 1/\text{lm})$$

3.2.4 Area : the square metre (symbol:  $\text{m}^2$ ).

The square metre is the surface of a square having a side of 1 metre.

$$(1\text{m}^2 = 1 \text{ m}\cdot\text{m}.)$$

3.2.5 Volume : the cubic metre (symbol:  $\text{m}^3$ ).

The cubic metre is the volume of a cube having a side of 1 metre.

$$(\text{lm}^3 = 1 \text{ m}\cdot\text{m}\cdot\text{m}.)$$

3.2.6 Frequency : the hertz (symbol: Hz).

The hertz is the frequency of a periodic phenomenon of which the periodic time is 1 second.

$$(1\text{Hz} = 1 \text{ s}^{-1} = 1/\text{ls}.)$$

3.2.7 Angular velocity : radian per second (symbol :  $\text{rad} / \text{s}$  or  $\text{rad}\cdot \text{s}^{-1}$ ).

The radian per second is the angular velocity of a body which, animated by a uniform rotation around a fixed axis, turns 1 radian in 1 second.

$$(1 \text{ rad/s} = 1 \text{ rad}/\text{ls} )$$

3.2.8 Angular acceleration : radian per second squared

( symbol:  $\text{rad} / \text{s}^2$  or  $\text{rad}\cdot \text{s}^{-2}$ )

The radian per second squared is the angular acceleration of a body which is animated by a rotation varying uniformly around a fixed axis, and whose angular velocity varies by 1 radian per second in 1 second.

$$(1 \text{ rad} / \text{s}^2 = 1 \text{ rad} / \text{s}/\text{ls}.)$$

3.2.9 Speed : metre per second (symbol :  $\text{m}/\text{s}$  or  $\text{m}\cdot\text{s}^{-1}$ ).

The metre per second is the speed of a body which, animated by a uniform movement, covers 1 metre in 1 second.

$$(1 \text{ m/s} = \text{lm}/\text{ls}.)$$

3.2.10 Acceleration : metre per second squared (symbol :  $\text{m}/\text{s}^2$  or  $\text{m}\cdot\text{s}^{-2}$ ).

The metre per second squared is the acceleration of a body, animated by a uniformly varied movement whose speed varies in 1 second by 1 metre per second.

$$(\text{lm}/\text{s}^2 = 1 \text{ m}/\text{s}/\text{ls}.)$$

### 3.3 Units of Mechanics

3.3.1 Linear density : kilogram per metre (symbol:  $\text{kg}/\text{m}$  or  $\text{kg}\cdot\text{m}^{-1}$ ).

The kilogram per metre is the linear density of a homogeneous body of uniform section having mass of 1 kilogram and a length of 1 metre.

$$(\text{lkg}/\text{m} = \text{lkg}/\text{lm}.)$$

- 3.3.2 Surface density: kilogram per square metre (symbol :  $\text{kg/m}^2$  or  $\text{kg}\cdot\text{m}^{-2}$ ).  
The kilogram per square metre is the density of a homogeneous body having a mass of 1 kilogram and a surface area of one square metre.  
( $1 \text{ kg/m}^2 = 1 \text{ kg/1 m}^2$ ).
- 3.3.3 Density (mass density): kilogram per cubic metre  
(symbol:  $\text{kg/m}^3$  or  $\text{kg}\cdot\text{m}^{-3}$ ).  
The kilogram per cubic metre is the density of a homogeneous body having a mass of 1 kilogram and a volume of 1 cubic metre.  
( $1 \text{ kg/m}^3 = 1 \text{ kg/1m}^3$ ).
- 3.3.4 Force : newton (symbol: N)  
The Newton is the force which, when applied to a body having a mass of 1 kilogram gives it an acceleration of 1 metre per second squared.  
( $1 \text{ N} = 1 \text{ kg}\cdot\text{m/s}^2$ )
- 3.3.5 Pressure : stress : pascal (symbol : Pa)  
The pascal is the uniform pressure which, when acting on a plane surface of 1 square metre, exercises perpendicularly to that surface a total force of 1 newton. It is also the uniform stress which, when acting on a plane surface of 1 square metre, exercises on that surface a total force of 1 newton.  
( $1 \text{ Pa} = 1 \text{ N/1m}^2$ ).
- 3.3.6 Dynamic viscosity : pascal second (symbol : Pa·s).  
The pascal second is the dynamic viscosity of a homogeneous fluid in which the uniform linear movement of a plane surface of 1 square metre leads to a retarding force of 1 newton, when there is a difference in velocity of 1 metre per second between two parallel planes separated by a distance of 1 metre.  
( $1 \text{ Pa}\cdot\text{s} = 1 \text{ Pa}\cdot\text{m/lm/s}$ ).
- 3.3.7 Kinematic viscosity : metre squared per second (symbol :  $\text{m}^2/\text{s}$  or  $\text{m}^2\cdot\text{s}^{-1}$ )  
The metre squared per second is the kinematic viscosity of a fluid whose dynamic viscosity is 1 pascal second and whose density is 1 kilogram per cubic metre. ( $1 \text{ m}^2/\text{s} = 1 \text{ Pa}\cdot\text{s}/1 \text{ kg/m}^3$ ).
- 3.3.8 Work, Energy, Quantity of heat: joule (symbol : J)  
The joule is the work done when the point of application of a force of 1 newton is displaced through a distance of 1 metre in the direction of the force.  
( $1 \text{ J} = 1 \text{ N}\cdot\text{m}$ )
- 3.3.9 Power, Energy flow rate, Heat flow rate : watt (symbol : W).  
The watt is the power which gives to a production of energy equal to 1 joule per second.  
( $1 \text{ W} = 1 \text{ J/1s}$ ).
- 3.3.10 Volume flow rate : cubic metre per second (symbol :  $\text{m}^3/\text{s}$  or  $\text{m}^3\cdot\text{s}^{-1}$ )

The cubic metre per second is the volume flow rate of a uniform flow such that a substance having a volume of 1 cubic metre passes through the cross section considered in 1 second.

$$(1\text{ m}^3/\text{s} = 1\text{ m}^3/1\text{s}).$$

- 3.3.11 Mass flow rate : kilogram per second (symbol : kg/s or kg·s<sup>-1</sup>).

The kilogram per second is the mass flow rate of a uniform flow such that a substance having a mass of 1 kilogram passes through the cross section considered in 1 second.

$$(\text{kg/s} = 1\text{ kg}/1\text{s}).$$

### 3.4 Units of Heat

- 3.4.1 Entropy : joule per kelvin (symbol : J/K or J·K<sup>-1</sup>).

The joule per kelvin is the increase in the entropy of a system receiving a quantity of heat of 1 joule at the constant thermodynamic temperature of 1 kelvin, provided that no irreversible change takes place in the system.

$$(1\text{ J/K} = 1\text{ J}/1\text{K}).$$

- 3.4.2 Specific heat capacity : joule per kilogram (symbol: J/(kg· K)).

The joule per kilogram kelvin is the specific heat capacity of a homogeneous body having a mass of 1 kilogram in which the addition of a quantity of heat of 1 joule produces a rise in temperature of 1 kelvin.

$$(1\text{ J}/(\text{kg}\cdot\text{K}) = 1\text{ J}/1\text{kg}\cdot\text{K}).$$

- 3.4.3 Thermal conductivity: watt per metre kelvin (symbol : W/(m·K) or W·m<sup>-1</sup>·K<sup>-1</sup>).

The watt per metre kelvin is the thermal conductivity of a homogeneous body in which a difference of temperature of 1 kelvin between two parallel planes having a surface of 1 square metre and which are 1 metre apart produces between these planes a heat flow rate of 1 watt.

$$(1\text{ W}/(\text{m}\cdot\text{K}) = 1\text{ W}/\text{m}^2/1\text{K}/\text{m}).$$

### 3.5 Units of Electricity and Magnetism

- 3.5.1 Quantity of electricity, Electric charge : coulomb (symbol : C)

The coulomb is the quantity of electricity carried in 1 second by a current of 1 ampere.

$$(1\text{ C} = 1\text{ A}\cdot 1\text{s} = 1\text{ A}\cdot\text{s}).$$

- 3.5.2 Electric potential, electric tension, Electromotive force : volt (symbol : V)

The volt is the difference of electric potential between two points of a conducting wire carrying on constant current of 1 ampere, when the power dissipated between these two points is equal to 1 watt.

$$(1\text{ V} = 1\text{ W}/1\text{A}).$$

- 3.5.3 Electric field strength: volt per metre (symbol : V/m).

The volt per metre is the strength of the electric field which exercises a force of

1 newton on a body charged with a quantity of electricity of 1 coulomb.

(1 V/m = 1N/1C).

3.5.4 Electric resistance : ohm (symbol :  $\Omega$ )

The ohm is the electric resistance between two points of a conductor when a constant potential difference of 1 volt, applied to these points, produces in the conductor a current of 1 ampere, the conductor not being the seat of any electromotive force.

(1  $\Omega$  = 1 V/1A.)

3.5.5 Conductance : siemens (symbol : S).

The siemens is the conductance of a conductor having an electric resistance of

1 ohm.

(1 S = 1 $\Omega^{-1}$  = 1/1  $\Omega$ ).

3.5.6 Electric capacitance : farad (symbol : F)

The farad is the capacitance of a capacitor between the plates of which there appears a difference of electric potential of 1 volt, when it is charged by a quantity of electricity of 1 coulomb.

(1 F = 1C/1V).

3.5.7 Inductance : henry (symbol : H)

The henry is the electric inductance of a closed circuit in which an electromotive force of 1 volt is produced when the electric current in the circuit varies uniformly at the rate of 1 ampere per second.

(1 H = 1 V·s/1A).

3.5.8 Magnetic flux, magnetic induction flux : Weber (symbol : Wb)

The weber is the magnetic flux which, linking a circuit of 1 turn, would produce in it an electromotive force of 1 volt, if it were reduced to zero at a uniformed rate in 1 second.

(1 Wb = 1 V·s).

3.5.9 Magnetic induction, magnetic flux density : tesla (symbol : T)

The telsa is the uniform magnetic induction, which distributed normally over a surface of 1 square metre, produces across the surface a total magnetic flux of 1 weber.

(1 T = 1 Wb/1 m<sup>2</sup>).

3.5.10 Magnetomotive force : ampere (symbol : A)

The ampere is the magnetomotive force along any closed curve which surrounds once only an electric conductor through which an electric current of 1 ampere passes.

3.5.11 Magnetic field strength : ampere per metre (symbol : A/m or A·m<sup>-1</sup>)

The ampere per metre is the strength of the magnetic field produced in vacuum along the circumference of a circle of 1 metre circumference, by an electric current of 1 ampere, maintained in a straight conductor of infinite length, of negligible circular cross section, forming the axis of the circle mentioned.

(1 A/m = 1 A/lm).

### 3.6 Units of lights and Electromagnetic Radiation

#### 3.6.1 Radiant intensity : watt per steradian (symbol : W/sr or W·sr<sup>-1</sup>)

The watt per steradian is the radiant intensity of a point source emitting a uniform radiant flux of 1 watt in a solid angle of 1 steradian.

(1 W/sr = 1 W/l sr).

#### 3.6.2 Luminance: candela per square metre (symbol: cd/m<sup>2</sup> or cd·m<sup>-2</sup>)

The candela per square metre is the luminous luminance perpendicular to the plane surface of 1 square metre of a source of which the luminous intensity perpendicular to that surface is 1 candela.

(1 cd/m<sup>2</sup> = 1 cd/l m<sup>2</sup>).

#### 3.6.3 Luminous flux : lumen (symbol : lm).

The lumen is the luminous flux emitted in the unit solid angle (steradian) by a uniform point source having a luminous intensity of 1 candela.

(1 lm = 1 cd·sr).

#### 3.6.4 Illuminance : lux (symbol : lx).

The lux is the illuminance of a surface receiving a luminous flux of 1 lumen, uniformly distributed over a square metre of the surface.

(1 lx = 1 lm/l m<sup>2</sup>).

### 3.7 Units of Ionizing Radiations

#### 3.7.1 Activity (of a radioactive source): becquerel (symbol : Bq).

The becquerel is the activity of a radioactive source in which one nuclear transformation or transition occurs per second.

(1 Bq = 1/1 s).

#### 3.7.2 Absorbed dose : gray (symbol : Gy).

The gray is the dose absorbed in an element of matter of 1 kilogram mass to which the energy of 1 joule is imparted by ionizing radiations whose energy fluence is constant.

(1 Gy = 1 J/l kg ).

#### 3.7.3 Exposure : coulomb per kilogram (symbol : C/kg or C·kg<sup>-1</sup>).

The coulomb per kilogram is the exposure of a photonic ionizing radiation which can produce in a quantity of air of 1 kilogram mass, ions of one sign carrying a total electric charge of 1 coulomb, the energy fluence being uniform in the quantity of air considered.

#### 4. Decimal Multiples and Sub-multiples of SI Units

- 4.1 The decimal multiples and sub-multiples of SI units are formed by means of the decimal numerical factors set out in subparagraph 4.2 by which the SI unit concerned is multiplied.
- 4.2 The names of the decimal multiples and sub-multiples of the SI units are formed by means of SI prefixes designating the decimal numerical factors.

Factors	SI Prefix	Symbol
1 000 000 000 000 000 000 000 000= $10^{24}$	yotta	Y
1 000 000 000 000 000 000 000= $10^{21}$	zetta	Z
1 000 000 000 000 000 000= $10^{18}$	exa	E
1 000 000 000 000 000= $10^{15}$	peta	P
1 000 000 000 000= $10^{12}$	tera	T
1 000 000 000= $10^9$	giga	G
1 000 000= $10^6$	mega	M
1 000= $10^3$	kilo	k
100= $10^2$	hecto	h
10= $10^1$	deca	da
0.1= $10^{-1}$	deci	d
0.01= $10^{-2}$	centi	c
0.001= $10^{-3}$	milli	m
0.000.001= $10^{-6}$	micro	$\mu$
0.000 000 001= $10^{-9}$	nano	n
0.000 000 000 001= $10^{-12}$	pico	P
0.000 000 000 000 001= $10^{-15}$	femto	f
0.000 000 000 000 000 001= $10^{-18}$	atto	a
0.000 000 000 000 000 000 001= $10^{-21}$	zepto	z
0.000 000 000 000 000 000 000 001= $10^{-24}$	yocto	y

- 4.3 A prefix shall be considered to be combined with the name of the unit to which it is directly attached.
- 4.4 The symbol of the prefix shall be placed before the symbol of the unit without intermediate space; the whole forms the symbol of the multiple or sub-multiple of the unit. The symbol of the prefix is therefore considered to be combined with the symbol of the unit to which is directly attached, forming with it a new unit symbol which can be raised to a positive or negative power and which can be combined with other unit symbols to form the symbols for compound units.

- 4.5 Compound prefixes, formed by the juxtaposition of several SI prefixes, are not permitted.
- 4.6 The names and symbols of the decimal multiples and sub-multiples of the unit of mass are formed by the addition of the SI prefixes to the word «gram». (symbol : g).
- 1 g = 0.001 kg =  $10^{-3}$  kg.

## SECOND SCHEDULE

### PART I

#### AUTHORISED UNITS FOR USE IN TRADE

#### Part I The International System of Units and other Units

##### 1.1 Measurement of length

###### 1.1.1 SI units

Kilometre (km)	=	1000 metres
Metre (m)	=	as defined First Schedule
Centimetre (cm)	=	$10^{-2}$ metre
Millimetre (mm)	=	$10^{-3}$ metre
Micrometre ( $\mu\text{m}$ )	=	$10^{-6}$ metres

###### 1.1.2 Other units

Nautical mile	=	1852 metres
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##### 1.2 Measurement of Area

###### 1.2.1 SI units

Square metre ( $\text{m}^2$ )	=	as defined in First Schedule
Square kilometre ( $(\text{km})^2$ )	=	1 000 000 square metres
Square millimetre ( $(\text{mm})^2$ )	=	$1/1\,000\,000^{\text{th}}$ of square metre

###### 1.2.2 Other Units

Hectare (ha)	=	10 000 square metres
Are (a)	=	100 square metres
Square centimetres ( $\text{cm}^2$ )	=	$1/10\,000^{\text{th}}$ of a square metre

##### 1.3 Measurement of Plane and Solid angle

###### 1.3.1 Plane angle

Radian (rad)	=	as defined in First Schedule
Degree ( $^{\circ}$ )	=	$\pi / 180$ radians
Minute ( $'$ )	=	$\pi / 10\,800$ radians

Second ( " ) =  $\pi / 648\,000$  radians

### 1.3.2 Solid angle

Steradian (sr) = as defined in the First Schedule

## 1.4 Measurement of speed

### 1.4.1 SI units

Metre per second (m/s) = as defined in the First Schedule

### 1.4.2 Other units

Kilometre per hour =  $10/36$  metres per second

Knot = 1.852 kilometres per hour

## 1.5 Measurement of Volume or Capacity

### 1.5.1 SI units

Cubic metre = as defined in the First Schedule

### 1.5.2 Other units

Hectolitre (hl) = 100 litres

Litre (l or L) =  $1/1000^{\text{th}}$  of a cubic metre = 1 cubic decimeter

Cubic centimetre ( $\text{cm}^3$ ) =  $1/100\,000^{\text{th}}$  of a cubic metre

Decilitre (dl) =  $1/10^{\text{th}}$  of a litre

Centilitre (cl) =  $1/100^{\text{th}}$  of a litre

Millilitre (ml) =  $1/1000^{\text{th}}$  of a litre

## 1.6 Measurement of mass

### 1.6.1 SI units

Kilogram (kg) = as defined in the First Schedule

Gram (g) =  $1/1000^{\text{th}}$  of a kilogram

Milligram (mg) =  $1/1000\,000^{\text{th}}$  of a kilogram

Microgram ( $\mu\text{g}$ ) =  $1/1\,000\,000\,000^{\text{th}}$  of a kilogram

### 1.6.2 Other units

Tonne (t) = 1000 kilograms

Metric carat = 200 milligrams

## 1.7 Measurement of Density

### 1.7.1 SI units

Kilogram per cubic metre = as defined in the First Schedule

### 1.7.2 Other units

Tonne per cubic metre = 1000 kilograms per cubic metre

## 1.8 Measurement of Force

### 1.8.1 SI units

Meganewton (MN) = 1 000 000 newtons



Kilonewton (kN)	=1000 newtons
Newton (N)	= as defined in the First Schedule
Millinewton (mN)	= 1/1000 of a newton

## 1.9 Measurement of pressure and stress

### 1.9.1 SI units

Megapascal (MPa)	=1 000 000 pascals
Kilopascal (kPa)	=1 000 pascals
Pascal (Pa)	= as defined in the First Schedule

## 1.10 Measurement of linear density of textiles

### 1.10.1 Other units

Tex (tex)	= The mass in grams of one kilometre of yarn
=1 g/1 km	= $10^{-6}$ kg/m
Millitex (mtex)	=1/1000 <sup>th</sup> of a tex
Decitex (dtex)	=1/10 <sup>th</sup> of a tex
Kilotex (ktex)	1000 tex

## 1.11 Measurement of Time and Frequency

### 1.11.1 Time

Minute (min)	= 60 seconds
Hour (h)	= 3600 seconds
Day(d)	=86400 seconds
Week	= 7 days
Month and year of the Gregorian calendar	

### 1.11.2 Frequency

Gigahertz (GHz)	= 1 000 000 000 hertz
Megahertz (MHz)	= 1 000 000 hertz
Kilohertz (KHz)	= 1000 hertz
Hertz (Hz)	= as defined in the First Schedule

## 1.12 Measurement of Temperature

### 1.12.1 SI units

kelvin (K)	= as defined in the First Schedule
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### 1.12.2 Other units

Degree Celsius ( $^{\circ}$ C) = one kelvin (K)

The Celsius temperature scale is defined by the following equation:

$t=T-T_0$  where

t=temperature in degrees Celsius,

T=temperature in kelvins

$$T_0=273.15\text{K}$$

### 1.13 Measurement of Energy and Power

#### 1.13.1 Energy, Work and Quantity of Heat

Joule (J) = as defined in the First Schedule

Kilojoule (kJ) = 1 000 joules

Megajoule (MJ) 1000 000 joules and all other multiples and sub-multiples as defined in Section 4 of the First Schedule

Watt hour (Wh) =  $3.3 \times 10^3$  joules

Kilowatt hour (k Wh) = 1000 watthour

Electron volt (eV) = The energy acquired by an electron in passing through a potential difference of 1 volt in vacuum.

#### 1.13.2 Power, Energy flow rate and Heat flow rate

Milliwatt (mW) = 1/1 000 of a watt

Watt (W) = as defined in the First Schedule

Kilowatt (kW) = 1000 watts

Megawatt (MW) = 1 000 000 watts and all other multiples and sub-multiples as defined in Section 4, of the First Schedule

### 1.14 Specific Energy

#### 1.14.1 SI units

Kilojoules per kilogram (kJ /kg) = 1000 joules per kilogram

Joule per kilogram (J/ kg) = 1 joule per kilogram

#### 1.14.2 Other units

Joule per gram (J/g) = 1/1 000<sup>th</sup> joules per kilogram

### 1.15 Electric current

#### 1.15.1 SI units

Ampere (A) = as defined in the First Schedule

Milliampere (mA) = 1/1 000<sup>th</sup> of a ampere

Microampere ( $\mu\text{A}$ ) = 1/1 000 000<sup>th</sup> of a ampere

### 1.16 Electromotive force and Potential difference

#### 1.16.1 SI units

Kilovolt (kV) = 1 000 volts

Volt (V) = as defined in the First Schedule

Millivolt (mV) = 1/1000<sup>th</sup> of a volt

Microvolt ( $\mu\text{V}$ ) = 1/1 000 000<sup>th</sup> of a volt

### 1.17 Electric Capacitance

#### 1.17.1 SI units

Henry (H) = as defined in the First Schedule

Millihenry (mH) = 1/1 000<sup>th</sup> of a henry

Microhenry ( $\mu$ H) = 1/1 000 000<sup>th</sup> of a henry

### 1.18 Electric resistance

#### 1.18.1 SI units

Megaohm (M $\Omega$ ) = 1 000 000 ohms

Kiloohm (k $\Omega$ ) = 1000 ohms

Ohm ( $\Omega$ ) = as defined in the First Schedule

Milliohm (m $\Omega$ ) = 1/1 000<sup>th</sup> of an ohm

Microohm ( $\mu\Omega$ ) = 1/1 000 000<sup>th</sup> of an ohm

### 1.19 Quantity of Electricity

#### 1.19.1 SI units

Coulomb (C) = as defined in the First Schedule

Millicoulomb (mC) = 1/1 000<sup>th</sup> of coulomb

Microcoulomb ( $\mu$ C) = 1/1 000 000<sup>th</sup> of coulomb

#### 1.19.2 Other units

Amperehour (Ah) = 3 600 coulombs

### 1.20 Luminous intensity

#### 1.20.1 SI units

Candela (cd) = as defined in the First Schedule

### 1.21 Illumination

#### 1.21.1 SI units

Lux(lx) = as defined in the First Schedule

### 1.22 Luminous flux

#### 1.22.1 SI units

Lumen (lm) = as defined in the First Schedule

### 1.23 Activity

#### 1.23.1 SI units

Becquerel (Bq) = as defined in the First Schedule

Millibecquerel (mBq) = 1/1 000 of becquerel

### 1.24 Absorbed dose

#### 1.24.1 SI units

Gray (Gy) = as defined in the First Schedule

Milligray (mGy) = 1/1 000 of gray

### 1.25 Exposure

#### 1.25.1 SI units

Coulomb per kilogram (C/kg) = as defined in the First Schedule

## PART II

## THE BRITISH IMPERIAL SYSTEM OF UNITS

1. **Measurement of length**

Yard (yd) = 0.9144 metre

Mile = 1760 yards

Furlong = 220 yards

Chain = 22 yards

Foot (ft) =  $\frac{1}{3}$ <sup>rd</sup> of a yard

Inch (in) =  $\frac{1}{36}$ <sup>th</sup> of a yard

2. **Measurement of area**

Square mile = 640 acres

Acre = 4840 square yards

Rood = 1210 square yards

Square Pole or Perch =  $\frac{121}{4}$  square yards

Square yard = the superficial area of a square each side of which measures 1 yard.

Square foot =  $\frac{1}{9}$ <sup>th</sup> of a square yard

Square inch =  $\frac{1}{144}$ <sup>th</sup> of a square foot

3. **Measurement of volume or capacity**3.1 **Volume in General**

Cubic yard = A volume equal to that of a cube each edge of which measures 1 yard

Cubic foot =  $\frac{1}{27}$ <sup>th</sup> of a cubic yard

Cubic inch =  $\frac{1}{1728}$ <sup>th</sup> of a cubic foot

3.2 **Liquid measures**

Gallon (gal) = 0.004546092 cubic metre

Quart (qt) =  $\frac{1}{4}$  gallon

Pint (pt) =  $\frac{1}{2}$  quart

Gill =  $\frac{1}{4}$  pint

Fluid ounce (fl oz) =  $\frac{1}{20}$  pint

Fluid drachm =  $\frac{1}{8}$  fluid ounce

Minim =  $\frac{1}{60}$  fluid drachm

Bushel = 8 gallons

Peck = 2 gallons

Chaldron = 288 gallons

3.3 **Measurement of mass or weight**

Ton = 2240 pounds

Hundredweight (cwt)	=112 pounds
Quarter	= 28 pounds
Stone	= 14 pounds
Pound (lb)	= 0.453 592 37 kilogram
Ounce (oz)	=1/16 pound
Dram	=1/16 ounce
Grain (gr)	=1/7000 pound
Ounce troy	=480 grains

### THIRD SCHEDULE

#### WEIGHTS AND MEASURES LAWFUL FOR USE IN TRADE

##### PART I

##### THE INTERNATIONAL SYSTEM OF UNITS AND OTHER METRIC UNITS

#### 1.1 Linear measure

##### Measures of—

100 metres

50 metres

30 metres

20 metres

10 metres

5 metres

3 metres

2 metres

1 metre

1 centimetre

1 millimetre

1 micrometre

#### 1.2 Square measures

Measures of, or any multiple of, 1 square decimetre.

#### 1.3 Cubic measures

Measures of, or any multiple of, the cubic decimetre = 0.001m<sup>3</sup>

#### 1.4 Capacity measures

Measures of—

10 litres or any multiple of 10 litres

5 litres

2.5 litres

2 litres

1 litre

500 millilitres

250 millilitres

200 millilitres

100 millilitres

50 millilitres

25 millilitres

20 millilitres

10 millilitres

5 millilitres

2 millilitres

1 millilitre

## 1.5 Weights

### 1.5.1 Weights of —

50 kilograms

20 kilograms

10 kilograms

5 kilograms

2 kilograms

1 kilogram

500 grams

200 grams

100 grams

50 grams

20 grams

10 grams

5 grams

2 grams

1 gram

500 milligrams

200 milligrams

100 milligrams

50 milligrams

20 milligrams

10 milligrams

5 milligrams

2 milligrams

1 milligram

### 1.5.2 Weights of —

500 carats (metric)

200 carats (metric)

100 carats (metric)  
50 carats (metric)  
20 carats (metric)  
10 carats (metric)  
5 carats (metric)  
2 carats (metric)  
1 carat (metric)  
0.5 carat (metric)  
0.25 carat (metric)  
0.2 carat (metric)  
0.1 carat (metric)  
0.05 carat (metric)  
0.02 carat (metric)  
0.01 carat (metric)

## PART II

### THE BRITISH IMPERIAL SYSTEM

#### 2.1 Linear measure

##### Measures of—

100 feet	10 feet
66 feet	8 feet
50 feet	6 feet
33 feet	5 feet
20 feet	4 feet
1 yard	$1/10^{\text{th}}$ of an inch
2 feet	$1/16^{\text{th}}$ of an inch
1 foot	$1/32^{\text{nd}}$ of an inch
6 inches	$1/64^{\text{th}}$ of an inch
1 inch	$1/100^{\text{th}}$ of an inch
	$1/128^{\text{th}}$ of an inch
	$1/256^{\text{th}}$ of an inch
	$1/1000^{\text{th}}$ of an inch

#### 2.2 Square measures

Measures of, or any multiple of, 1 square foot

#### 2.3 Cubic measures

Measures of, or any multiple of,  $1/4$  the cubic yard

**2.4 Capacity measures****Measures of—**

1 gallon or any multiple of 1 gallon

 $\frac{1}{2}$ gallon

1 quart

1 pint

 $\frac{1}{2}$  pint

8 fluid ounces

6 fluid ounces

4 fluid ounces 1 fluid ounce or sub-multiple of 1 fluid ounce

4 fluid drachms

2 fluid drachms

1 fluid drachm

60 minims

30 minims

10 minims

1 bushel

 $\frac{1}{2}$  bushel

1 peck

**2.5 Weights****2.5.1 Weights of-**

56 pounds	7 pounds
50 pounds	5 pounds
28 pounds	4 pounds
20 pounds	2 pounds
14 pounds	1 pound
10 pounds	8 ounces
4 ounces	
2 ounces	100 grains
1 ounce	50 grains
	30 grains
8 drams	20 grains
4 drams	10 grains
	5 grains
2 drams	3 grains
1 dram	2 grains



½ dram            1 grain  
                         0.5 grain  
                         0.03 grain  
                         0.02 grain  
                         0.01 grain

**2.5.2 Weights of —**

500 ounces troy    5 ounces troy  
400 ounces troy    4 ounces troy  
300 ounces troy    3 ounces troy  
200 ounces troy    2 ounces troy  
100 ounces troy    1 ounce troy  
50 ounces troy  
40 ounces troy  
30 ounces troy  
20 ounces troy  
10 ounces troy.

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