STATUTORY RULES.

1961. No. 142

REGULATIONS UNDER THE WEIGHTS AND MEASURES (NATIONAL STANDARDS) ACT 1960.*

I, THE GOVERNOR-GENERAL in and over the Commonwealth of Australia, acting with the advice of the Federal Executive Council, hereby make the following Regulations under the *Weights and Measures (National Standards) Act* 1960.

Dated this Ninth day of March

day of March, 1961.

DE L'ISLE

Governor-General.

By His Excellency's Command,

DONALD A. CAMERON

Minister of State for Health, acting for and on behalf of the Prime Minister.

WEIGHTS AND MEASURES (NATIONAL STANDARDS) REGULATIONS.

PART I.—PRELIMINARY.

1. These Regulations may be cited as the Weights and Measures (National Standards) Regulations. Citation.

2. These Regulations are divided into Parts, as follows:— Parts.

Part I.—Preliminary (Regulations 1-3).

Part II.—Units of Measurement.

Division 1.—Preliminary (Regulation 4).
Division 2.—Length (Regulations 5-6).
Division 3.—Area (Regulations 7-9).
Division 4.—Mass and Weight (Regulations 10-14).
Division 5.—Volume (Regulations 15-20).
Division 6.—Density (Regulations 21-23).
Division 7.—Time Interval (Regulations 24-26).
Division 8.—Frequency (Regulations 27-28).
Division 9.—Velocity and Speed (Regulations 29-31).
Division 10.—Acceleration (Regulations 32-34).
Division 11.—Force (Regulations 35-37).
Division 12.—Work and Energy (Regulations 38-40).
Division 13.—Power (Regulations 41-43).
Division 14.—Pressure (Regulations 44-46).

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* Notified in the *Commonwealth Gazette* on 29th November, 1961.
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Division 15.—Viscosity and Kinematic Viscosity (Regulations 47-48).
Division 16.—Electric Current (Regulations 49-50).
Division 17.—Electric Charge (Regulations 51-52).
Division 18.—Potential Difference and Electromotive Force (Regulations 53-55).
Division 19.—Electrical Resistance (Regulations 56-57).
Division 20.—Electrical Conductance (Regulations 58-59).
Division 21.—Electrical Capacitance (Regulations 60-61).
Division 22.—Electrical Inductance (Regulations 62-63).
Division 23.—Temperature (Regulations 64-65).
Division 24.—Luminous Intensity (Regulations 66-68).
Division 25.—Luminous Flux (Regulations 69-70).
Division 26.—Illumination (Regulations 71-73).
Division 27.—Luminance (Regulations 74-76).

Part III.—Standards of Measurement (Regulations 77-81).

Interpretation.

3.—(1.) In these Regulations, unless the contrary intention appears—

"the Act" means the *Weights and Measures (National Standards) Act* 1960;

"time interval" means time interval not related to the calendar;

"verifying authority", in relation to the verification or reverification of a standard of measurement, means a person who is a verifying authority in relation to the verification and reverification of such a standard of measurement by virtue of an appointment under regulation 77 of these Regulations.

(2.) In these Regulations, a reference to a Schedule by number shall be read as a reference to the Schedule to these Regulations so numbered.

PART II.—UNITS OF MEASUREMENT.

Division 1.—Preliminary.

Part II. to take effect on 1st January, 1964.

4. This Part shall take effect on the first day of January, 1964.

Division 2.—Length.

Units of measurement of length.

5.—(1.) The units of measurement of length are—

(*a*) the units specified in the first column of the First Schedule; and

(*b*) the point.

(2.) The units of measurement of length specified in the first column of the First Schedule are related to the metre or the yard, as the case may be, as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of length specified in the first column of the First Schedule may be referred to by the abbreviation or symbol (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

6.—(1.) The metre is the length equal to 1,650,763.73 wave-lengths in vacuum of the radiation corresponding to the transition between the levels $2p_{10}$ and $5d_5$ of the krypton-86 atom. The metre, the yard and the point.

(2.) The yard is 0.9144 metre.

(3.) The point is 1/100th part of one inch.

Division 3.—Area.

7.—(1.) The units of measurement of area are the units specified in the first column of the Second Schedule and are related to the square metre or the square yard, as the case may be, as respectively specified in the second column of that Schedule. Units of measurement of area.

(2.) A unit of measurement of area specified in the first column of the Second Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

8.—(1.) The square metre is the area of a square each side of which is one metre in length. The square metre and the square yard.

(2.) The square yard is the area of a square each side of which is one yard in length.

9. One square yard shall, for all legal purposes, be deemed to be equal to 0.83613 square metre. Conversion factor.

Division 4.—Mass and Weight.

10. The units of measurement of mass are— Units of measurement of mass.

(*a*) the units specified in the first column of the Third Schedule; and

(*b*) the units specified in the first column of the Fourth Schedule.

11.—(1.) The units of measurement of mass specified in the first column of the Third Schedule are related to the kilogramme or the pound, as the case may be, as respectively specified in the second column of that Schedule. Units specified in the Third Schedule.

(2.) A unit of measurement of mass specified in the first column of the Third Schedule may be referred to by the abbreviation or symbol (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

12.—(1.) The kilogramme is the International kilogramme, being the mass of the cylinder that— The kilogramme and the pound.

(*a*) is deposited in the International Bureau of Weights and Measures; and

(*b*) was declared by the First General Conference on Weights and Measures held in Paris in the year 1889 to be the International Prototype Kilogramme.

(2.) The pound is 0.45359237 kilogramme.

Units specified in the Fourth Schedule.

13.—(1.) The units of measurement of mass specified in the first column of the Fourth Schedule are related to the gramme, the pound or the grain, as the case may be, as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of mass specified in the first column of the Fourth Schedule may be referred to by the abbreviation or symbol (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

Units of measurement of weight.

14. The units of measurement of weight—

(*a*) have the same names, and may be referred to by the same abbreviations or symbols, as the units of measurement of mass; and

(*b*) are such that the weight of an object expressed in terms of any one of them is numerically the same as the mass of the object expressed in terms of the unit of measurement of mass having the same name.

Division 5.—Volume.

Units of measurement of volume.

15. The units of measurement of volume are—

(*a*) the units specified in the first column of the Fifth Schedule;

(*b*) the units specified in the first column of the Sixth Schedule; and

(*c*) the cord, the superficial foot and the acre-foot.

Units specified in the Fifth Schedule.

16.—(1.) The units of measurement of volume specified in the first column of the Fifth Schedule are related to the cubic metre, the cubic yard, the litre or the gallon, as the case may be, as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of volume specified in the first column of the Fifth Schedule may be referred to by the abbreviation or symbol (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

The cubic metre, cubic yard, &c.

17.—(1.) The cubic metre is the volume of a cube each side of which is one metre in length.

(2.) The cubic yard is the volume of a cube each side of which is one yard in length.

(3.) The litre is the volume of one kilogramme of pure water at its maximum density when at a pressure of one atmosphere.

(4.) The gallon is 4.54596 litres.

Conversion factors.

18. For all legal purposes—

(*a*) one cubic yard shall be deemed to be equal to 0.764555 cubic metre;

(*b*) one litre shall be deemed to be equal to 0.001000028 cubic metre; and

(*c*) one gallon shall be deemed to be equal to 277.42 cubic inches.

Units specified in the Sixth Schedule.

19.—(1.) The units of measurement of volume specified in the first column of the Sixth Schedule are related to the gallon as respectively specified in the second column of that Schedule.

(2.) The bushel may be referred to by the abbreviation " bus ".

The cord, the superficial foot and the acre-foot.

20.—(1.) The cord is one hundred and twenty-eight cubic feet.

(2.) The superficial foot is one hundred and forty-four cubic inches.

(3.) The acre-foot is 1,613⅓ cubic yards.

Division 6.—Density.

Units of measurement of density.

21.—(1.) The units of measurement of density are the units specified in the first column of the Seventh Schedule and are related to the kilogramme per cubic metre, the kilogramme per litre, the pound per cubic foot or the pound per gallon, as the case may be, as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of density specified in the first column of the Seventh Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

The kilogramme per cubic metre, kilogramme per litre, &c.

22.—(1.) The kilogramme per cubic metre is the density of a uniform substance a mass of one kilogramme of which occupies a volume of one cubic metre.

(2.) The kilogramme per litre is the density of a uniform substance a mass of one kilogramme of which occupies a volume of one litre.

(3.) The pound per cubic foot is the density of a uniform substance a mass of one pound of which occupies a volume of one cubic foot.

(4.) The pound per gallon is the density of a uniform substance a mass of one pound of which occupies a volume of one gallon.

Conversion factors.

23. For all legal purposes—

(*a*) one kilogramme per litre shall be deemed to be equal to 999.972 kilogrammes per cubic metre;

(*b*) one pound per cubic foot shall be deemed to be equal to 16.0185 kilogrammes per cubic metre; and

(*c*) one pound per gallon shall be deemed to be equal to 6.22884 pounds per cubic foot.

Division 7.—Time Interval.

Units of measurement of time interval.

24.—(1.) The units of measurement of time interval are—

(*a*) the units specified in the first column of the Eighth Schedule; and

(*b*) the mean solar second.

(2.) The units of measurement of time interval specified in the first column of the Eighth Schedule are related to the second as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of time interval specified in the first column of the Eighth Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

The second and the mean solar second.

25.—(1.) The second is 10,000/315,569,259,747th parts of the length of the tropical year for 1900.0.

(2.) The mean solar second is 1/86,400th part of the mean time interval between successive upper transits of the sun across a particular meridian.

Conversion factor.

26. For all legal purposes, one second shall be deemed to be equal to one mean solar second.

Division 8.—*Frequency.*

Units of measurement of frequency.

27.—(1.) The units of measurement of frequency are the units specified in the first column of the Ninth Schedule and are related to the cycle per second as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of frequency specified in the first column of the Ninth Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

The cycle per second.

28. The cycle per second is the frequency of a regularly recurrent phenomenon that repeats itself once each second.

Division 9.—*Velocity and Speed.*

Units of measurement of velocity and speed.

29.—(1.) The units of measurement of velocity and speed are the units specified in the first column of the Tenth Schedule and are related to the metre per second or the foot per second, as the case may be, as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of velocity and speed specified in the first column of the Tenth Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

The metre per second and the foot per second.

30.—(1.) The metre per second is the mean velocity or the mean speed of a point that moves its position rectilinearly a distance of one metre in one second.

(2.) The foot per second is the mean velocity or the mean speed of a point that moves its position rectilinearly a distance of one foot in one second.

Conversion factor.

31. For all legal purposes, one foot per second shall be deemed to be equal to 0.3048 metre per second.

Division 10.—*Acceleration.*

Units of measurement of acceleration.

32.—(1.) The units of measurement of acceleration are—

(*a*) the units specified in the first column of the Eleventh Schedule; and

(*b*) the foot per second per second.

(2.) The units of measurement of acceleration specified in the first column of the Eleventh Schedule are related to the metre per second per second as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of acceleration specified in the first column of the Eleventh Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

(4.) The foot per second per second may be referred to by the abbreviation " ft/sec^2 ".

The metre per second per second and the foot per second per second.

33.—(1.) The metre per second per second is the mean acceleration of a point that changes its velocity by one metre per second in one second.

(2.) The foot per second per second is the mean acceleration of a point that changes its velocity by one foot per second in one second.

Conversion factor.

34. For all legal purposes, one foot per second per second shall be deemed to be equal to 0.3048 metre per second per second.

Division 11.—*Force.*

Units of measurement of force.

35.—(1.) The units of measurement of force are the units specified in the first column of the Twelfth Schedule and are related to the newton or the poundal, as the case may be, as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of force specified in the first column of the Twelfth Schedule may be referred to by the abbreviation (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

The newton and the poundal.

36.—(1.) The newton is the force which, when applied to a body having a mass of one kilogramme, causes an acceleration of one metre per second per second in the direction of application of the force.

(2.) The poundal is the force which, when applied to a body having a mass of one pound, causes an acceleration of one foot per second per second in the direction of the application of the force.

Conversion factor.

37. For all legal purposes, one poundal shall be deemed to be equal to 0.138255 newton.

Division 12.—*Work and Energy.*

Units of measurement of work and energy.

38.—(1.) The units of measurement of work and energy are—

(*a*) the units specified in the first column of the Thirteenth Schedule; and

(*b*) the water kilocalorie, the water calorie and the water British thermal unit.

(2.) The units of measurement of work and energy specified in the first column of the Thirteenth Schedule are related to the joule or the foot poundal, as the case may be, as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of work and energy specified in the first column of the Thirteenth Schedule may be referred to by the abbreviation (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

(4.) The water kilocalorie, the water calorie and the water British thermal unit may be referred to by the abbreviations " water kcal ", " water cal " and " water Btu ", respectively.

The joule, foot-poundal, &c.

39.—(1.) The joule is the work done or the energy expended when a force of one newton moves the point of application a distance of one metre in the direction of that force.

(2.) The foot poundal is the work done or the energy expended when a force of one poundal moves the point of application a distance of one foot in the direction of that force.

(3.) The water kilocalorie is the work done or the energy expended in heating one kilogramme of pure water from 14.5 Celsius degrees to 15.5 Celsius degrees at an invariable pressure of one atmosphere.

(4.) The water calorie is 0.001 water kilocalorie.

(5.) The water British thermal unit is the work done or the energy expended in heating one pound of pure water from sixty Fahrenheit degrees to sixty-one Fahrenheit degrees at an invariable pressure of one atmosphere.

Conversion factors.

40. For all legal purposes—

(*a*) one foot poundal shall be deemed to be equal to 0.0421401 joule;

(*b*) one water kilocalorie shall be deemed to be equal to 4,185.5 joules; and

(*c*) one water British thermal unit shall be deemed to be equal to 1,054.54 joules.

Division 13.—*Power.*

Units of measurement of power.

41.—(1.) The units of measurement of power are—

(*a*) the units specified in the first column of the Fourteenth Schedule; and

(*b*) the horsepower.

(2.) The units of measurement of power specified in the first column of the Fourteenth Schedule are related to the watt as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of power specified in the first column of the Fourteenth Schedule may be referred to by the abbreviation or symbol specified in the third column of that Schedule opposite the reference to that unit in the first column.

(4.) The horsepower may be referred to by the abbreviation " hp ".

The watt and the horsepower.

42.—(1.) The watt is the power used when work is done or energy is expended at the rate of one joule per second.

(2.) The horsepower is the power used when work is done or energy is expended at the rate of five hundred and fifty foot pounds-force per second.

Conversion factor.

43. For all legal purposes, one horsepower shall be deemed to be equal to 745.7 watts.

Division 14.—*Pressure.*

Units of measurement of pressure.

44.—(1.) The units of measurement of pressure are—

(*a*) the units specified in the first column of the Fifteenth Schedule;

(*b*) the inch of water; and

(*c*) the inch of mercury.

(2.) The units of measurement of pressure specified in the first column of the Fifteenth Schedule are related to the newton per square metre, the pound-force per square inch or the centimetre of mercury, as the case may be, as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of pressure specified in the first column of the Fifteenth Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

(4.) The inch of water may be referred to by the abbreviation " inH_2O " and the inch of mercury may be referred to by the abbreviation " inHg ".

The newton per square metre, pound-force per square inch, &c.

45.—(1.) The newton per square metre is the pressure resulting from a force of one newton applied uniformly over an area of one square metre.

(2.) The pound-force per square inch is the pressure resulting from a force of 32.174 poundals applied uniformly over an area of one square inch.

(3.) The centimetre of mercury is the pressure exerted by the weight of a vertical column of pure mercury one centimetre high at a temperature of zero Celsius degrees and a pressure of one atmosphere and subject to a gravitational acceleration of 980.665 centimetres per second per second.

(4.) The inch of water is the pressure exerted by the weight of a vertical column of pure water one inch high at a temperature of twenty Celsius degrees and a pressure of one atmosphere and subject to a gravitational acceleration of 32.174 feet per second per second.

(5.) The inch of mercury is the pressure exerted by the weight of a vertical column of pure mercury one inch high at a temperature of zero Celsius degrees and a pressure of one atmosphere and subject to a gravitational acceleration of 32.174 feet per second per second.

Conversion factors.

46. For all legal purposes—

(*a*) one pound-force per square inch shall be deemed to be equal to 6,894.76 newtons per square metre;

(*b*) one centimetre of mercury shall be deemed to be equal to 1,333.224 newtons per square metre;

(*c*) one inch of mercury shall be deemed to be equal to 0.491154 pound-force per square inch;

(*d*) one inch of water shall be deemed to be equal to 0.036062 pound-force per square inch; and

(*e*) one inch of mercury shall be deemed to be equal to 2.54 centimetres of mercury.

Division 15.—*Viscosity and Kinematic Viscosity.*

Units of measurement of viscosity and kinematic viscosity.

47.—(1.) The units of measurement of viscosity and kinematic viscosity are the units specified in the first column of the Sixteenth Schedule and are related to the poise or the stokes, as the case may be, as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of viscosity or kinematic viscosity specified in the first column of the Sixteenth Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

The poise and the stokes.

48.—(1.) The poise is the viscosity of a fluid for which there is a tangential force of one dyne on one square centimetre of either of two infinite parallel planes one centimetre apart when—

(*a*) the space between those planes is filled with the fluid;

(*b*) one of the planes moves with a velocity of one centimetre per second in its own plane relative to the other; and

(*c*) the movement of the fluid is laminar.

(2.) The stokes is the kinematic viscosity of a fluid having a viscosity of one poise and a density of one gramme per cubic centimetre.

Division 16.—*Electric Current.*

Units of measurement of electric current.

49.—(1.) The units of measurement of electric current are the units specified in the first column of the Seventeenth Schedule and are related to the ampere as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of electric current specified in the first column of the Seventeenth Schedule may be referred to by the abbreviation or symbol specified in the third column of that Schedule opposite the reference to that unit in the first column.

The ampere.

50. The ampere is the unvarying electric current that, when flowing in each of two parallel straight conductors of infinite length of negligible circular cross section separated by a distance of one metre from each other in free space, produces between those conductors a force equal to 0.0000002 newton per metre length of conductor.

Division 17.—*Electric Charge.*

Unit of measurement of electric charge.

51.—(1.) The unit of measurement of electric charge is the coulomb.

(2.) The coulomb may be referred to by the abbreviation " C ".

The coulomb.

52. The coulomb is the quantity of electric charge that is transferred each second by an electric current of one ampere.

Division 18.—*Potential Difference and Electromotive Force.*

Units of measurement of potential difference.

53.—(1.) The units of measurement of potential difference are the units specified in the first column of the Eighteenth Schedule and are related to the volt as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of potential difference specified in the first column of the Eighteenth Schedule may be referred to by the abbreviation or symbol specified in the third column of that Schedule opposite the reference to that unit in the first column.

The volt.

54. The volt is the potential difference that exists between two points on a conductor carrying an unvarying electric current of one ampere when the power dissipated between those points is equal to one watt.

Units of measurement of electromotive force.

55. The units of measurement of electromotive force—

(*a*) have the same names, and may be referred to by the same abbreviations or symbols, as the units of measurement of potential difference; and

(*b*) are such that the electromotive force necessary to maintain a potential difference between two points in a circuit, expressed in terms of any one of them, is numerically the same as that potential difference expressed in terms of the unit of measurement of potential difference having the same name.

Division 19.—*Electrical Resistance.*

Units of measurement of electrical resistance.

56.—(1.) The units of measurement of electrical resistance are the units specified in the first column of the Nineteenth Schedule and are related to the ohm as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of electrical resistance specified in the first column of the Nineteenth Schedule may be referred to by the symbol specified in the third column of that Schedule opposite the reference to that unit in the first column.

The ohm.

57. The ohm is the electrical resistance between two points on a conductor which does not contain any source of electromotive force when a constant potential difference of one volt maintained between those points results in a current of one ampere in the conductor.

Division 20.—*Electrical Conductance.*

Units of measurement of electrical conductance.

58. The units of measurement of electrical conductance are the mho and the micromho.

The mho and the micromho.

59.—(1.) The mho is the electrical conductance of a conductor that has an electrical resistance of one ohm.

(2.) The micromho is 0.000001 mho.

Division 21.—Electrical Capacitance.

Units of measurement of electrical capacitance.

60.—(1.) The units of measurement of electrical capacitance are the units specified in the first column of the Twentieth Schedule and are related to the farad as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of electrical capacitance specified in the first column of the Twentieth Schedule may be referred to by the abbreviation or symbol specified in the third column of that Schedule opposite the reference to that unit in the first column.

The farad.

61. The farad is the electrical capacitance that exists between two conductors when the transfer of an electric charge of one coulomb from one to the other changes the potential difference between them by one volt.

Division 22.—Electrical Inductance.

Units of measurement of electrical inductance.

62.—(1.) The units of measurement of electrical inductance are the units specified in the first column of the Twenty-first Schedule and are related to the henry as respectively specified in the second column of that Schedule.

(2.) A unit of measurement of electrical inductance specified in the first column of the Twenty-first Schedule may be referred to by the abbreviation or symbol specified in the third column of that Schedule opposite the reference to that unit in the first column.

The henry.

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

Division 23.—Temperature.

Units of measurement of temperature.

64.—(1.) The units of measurement of temperature are—

(*a*) Celsius degrees, being degrees of temperature on the International Practical Temperature Scale;

(*b*) Fahrenheit degrees, being degrees of temperature on the Fahrenheit Temperature Scale;

(*c*) Kelvin degrees, being degrees of temperature on the Kelvin Temperature Scale; and

(*d*) Rankine degrees, being degrees of temperature on the Rankine Temperature Scale.

(2.) Celsius degrees may also be referred to as Centigrade degrees.

Temperature Scales.

65.—(1.) The International Practical Temperature Scale is the International Practical Temperature Scale of 1948 described in the Proceedings of the Eleventh General Conference on Weights and Measures held in Paris in the year 1960 and adopted by that Conference.

(2.) The Fahrenheit Temperature Scale is such that the numerical value of a temperature on that scale is related to the numerical value of that temperature on the International Practical Temperature Scale by the formula—

$$t^\circ F = 32 + \frac{9}{5} t^\circ C$$

where—

$t^\circ F$ is the numerical value of a temperature on the Fahrenheit Temperature Scale; and

$t^\circ C$ is the numerical value of that temperature on the International Practical Temperature Scale.

(3.) The Kelvin Temperature Scale is such that the numerical value of a temperature on that scale is greater by 273.15 than the numerical value of that temperature on the International Practical Temperature Scale.

(4.) The Rankine Temperature Scale is such that the numerical value of a temperature on that scale is greater by 459.67 than the numerical value of that temperature on the Fahrenheit Temperature Scale.

(5.) Temperatures on the International Practical Temperature Scale, the Fahrenheit Temperature Scale, the Kelvin Temperature Scale and the Rankine Temperature Scale may be referred to by the symbols " °C ", " °F ", " °K " and " °R ", respectively.

(6.) Temperature intervals on the International Practical Temperature Scale, the Fahrenheit Temperature Scale, the Kelvin Temperature Scale and the Rankine Temperature Scale may be referred to by the abbreviations " degC ", " degF ", " degK " and " degR ", respectively.

Division 24.—Luminous Intensity.

66.—(1.) The unit of measurement of luminous intensity is the candela. Unit of measurement of luminous intensity.

(2.) The candela may be referred to by the abbreviation " cd ".

(3.) The candela may also be referred to as the candle.

67. The candela is one sixtieth part of the luminous intensity of a projected area of one square centimetre of a black body radiator at the temperature of solidification of platinum. The candela.

68. The luminous intensity of a light source shall be determined in terms of the candela in accordance with the relation between luminosity and wave-length adopted by the International Committee on Weights and Measures in the year 1933 and approved by the Ninth General Conference on Weights and Measures held in Paris in the year 1948. Determination of luminous intensity.

Division 25.—Luminous Flux.

69.—(1.) The unit of measurement of luminous flux is the lumen. Unit of measurement of luminous flux.

(2.) The lumen may be referred to by the abbreviation " lm ".

70. The lumen is the luminous flux emitted into unit solid angle by an isotropic point source having a luminous intensity of one candela. The lumen.

Division 26.—Illumination.

Units of measurement of illumination.

71.—(1.) The units of measurement of illumination are—

(*a*) the units specified in the first column of the Twenty-second Schedule; and

(*b*) the lumen per square metre.

(2.) The units of measurement of illumination specified in the first column of the Twenty-second Schedule are related to the lumen per square foot as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of illumination specified in the first column of the Twenty-second Schedule may be referred to by the abbreviation specified in the third column of that Schedule opposite the reference to that unit in the first column.

(4.) The lumen per square metre may be referred to by the abbreviation "lm/sq m" or "lm/m^2".

(5.) The lumen per square metre may also be referred to as the lux.

The lumen per square metre and the lumen per square foot.

72.—(1.) The lumen per square metre is the illumination produced at the surface of a sphere having a radius of one metre by a point source that—

(*a*) is situated at its centre; and

(*b*) has a luminous intensity of one candela in all directions.

(2.) The lumen per square foot is the illumination produced at the surface of a sphere having a radius of one foot by a point source that—

(*a*) is situated at its centre; and

(*b*) has a luminous intensity of one candela in all directions.

Conversion factor.

73. For all legal purposes, one lumen per square foot shall be deemed to be equal to 10.764 lumens per square metre.

Division 27.—Luminance.

Units of measurement of luminance.

74.—(1.) The units of measurement of luminance are—

(*a*) the units specified in the first column of the Twenty-third Schedule; and

(*b*) the candela per square metre.

(2.) The units of measurement of luminance specified in the first column of the Twenty-third Schedule are related to the candela per square foot as respectively specified in the second column of that Schedule.

(3.) A unit of measurement of luminance specified in the first column of the Twenty-third Schedule may be referred to by the abbreviation (if any) specified in the third column of that Schedule opposite the reference to that unit in the first column.

(4.) The candela per square metre may be referred to by the abbreviation "cd/sq m" or "cd/m^2".

(5.) The candela per square metre may also be referred to as the candle per square metre.

The candela per square metre and the candela per square foot.

75.—(1.) The candela per square metre is the luminance of a surface that has a uniform luminous intensity of one candela per square metre of projected area.

(2.) The candela per square foot is the luminance of a surface that has a uniform luminous intensity of one candela per square foot of projected area.

76. For all legal purposes, one candela per square foot shall be deemed to be equal to 10.764 candelas per square metre. Conversion factor.

PART III.—STANDARDS OF MEASUREMENT.

77.—(1.) The Commission may, by instrument in writing, appoint a person (including a body corporate) to be a verifying authority in relation to the verification and reverification of standards of measurement as subsidiary standards of measurement. Verifying authorities.

(2.) An appointment under this regulation may be an appointment of the person for the time being holding, or performing the duties of, a specified office of—

(*a*) the Commonwealth or a State or Territory of the Commonwealth; or

(*b*) a body corporate.

(3.) An appointment under this regulation may be in relation to the verification and reverification of standards of measurement generally or the verification and reverification of the standards of measurement included in a particular class or particular classes of standards of measurement.

78.—(1.) Subject to this regulation, a standard of measurement shall not be verified or reverified under these Regulations unless a distinguishing mark has been stamped or otherwise legibly and permanently affixed on or to it. Distinguishing marks.

(2.) The last preceding sub-regulation does not apply in relation to a standard of measurement if it is impracticable, by reason of its size or nature, so to stamp or affix a distinguishing mark on or to it.

79.—(1.) Where a standard of measurement to which section 9 of the Act applies is verified or reverified in accordance with that section, an officer or employee of the Organization authorized by the Organization in writing for the purpose or, where the standard of measurement is verified or reverified on behalf of the Organization, any person authorized by the Organization in writing for the purpose may sign and issue a certificate under this regulation. Verification, &c. of standards of measurement to which section 9 of the Act applies.

(2.) There shall be stated in every such certificate the date on which the standard of measurement was verified or reverified, as the case may be, its distinguishing mark (if any), its value, in terms of a Commonwealth legal unit of measurement or Commonwealth legal units of measurement, ascertained upon the verification or reverification and the period within which it is, by virtue of a direction of the Commission under section 9 of the Act, to be reverified or reverified again, as the case requires, and that the standard was verified or reverified in accordance with that section.

(3.) A certificate under this regulation is evidence of the matters stated in it.

(4.) A document purporting to be a certificate under this regulation may be received in evidence as such a certificate in any court (whether exercising federal jurisdiction or not) or in proceedings before a person authorized by a law of the Commonwealth or of a State or Territory of the Commonwealth or by consent of parties to hear, receive and examine evidence.

Verification, &c., of standards of measurement as subsidiary standards.

80.—(1.) The verification and reverification of a standard of measurement as a subsidiary standard of measurement for the purposes of the Act shall be carried out—

(*a*) by the Organization;

(*b*) by a verifying authority being a body corporate; or

(*c*) by, or under the supervision of, a verifying authority not being a body corporate,

in accordance with this regulation.

(2.) The verification or reverification shall be carried out in a manner that, having regard to the nature of the standard to be verified or reverified, is appropriate for the purpose and, if it is carried out by, or under the supervision of, a verifying authority, is a manner for the time being approved by the Commission for the purpose.

(3.) Where a standard of measurement is verified or reverified as a subsidiary standard of measurement by the Organization, the Organization shall specify the period within which the standard is to be reverified or reverified again, as the case requires, and the standard shall be reverified within that period.

(4.) Where a standard of measurement is verified or reverified as a subsidiary standard of measurement by, or under the supervision of, a verifying authority, the standard shall be reverified, or reverified again, as the case requires, within such period as the Commission directs for the purposes of this sub-regulation.

(5.) A direction by the Commission for the purposes of the last preceding sub-regulation may relate to a particular standard of measurement or to all the standards of measurement included in a particular class of standards of measurement.

(6.) Where a standard of measurement is verified or reverified in accordance with this regulation—

(*a*) if the verification or reverification is carried out by the Organization or a verifying authority being a body corporate—an officer or employee of the Organization or of the verifying authority authorized in writing for the purpose by the Organization or the verifying authority, as the case may be; or

(*b*) if the verification or reverification is carried out by, or under the supervision of, a verifying authority not being a body corporate—the verifying authority,

may sign and issue a certificate under this regulation.

(7.) There shall be stated in every such certificate the date on which the standard of measurement was verified or reverified, as the case may be, its distinguishing mark (if any), its value, in terms of a Commonwealth legal unit of measurement or Commonwealth legal units of measurement, ascertained upon the verification or reverification and the period within which it is to be reverified or reverified again, as the case may be, and that the standard was verified or reverified as a subsidiary standard of measurement by the Organization or by, or under the supervision of, a specified verifying authority, as the case may be, in accordance with these Regulations.

(8.) A certificate under this regulation is evidence of the matters stated in it.

(9.) A document purporting to be a certificate under this regulation may be received in evidence as such a certificate in any court (whether exercising federal jurisdiction or not) or in proceedings before a person authorized by a law of the Commonwealth or of a State or Territory of the Commonwealth or by consent of parties to hear, receive and examine evidence.

Cancellation of certificate.

81.—(1.) A certificate issued under either of the last two preceding regulations may be cancelled at any time by the Commission.

(2.) A certificate issued under regulation 79 of these Regulations may be cancelled at any time by the Organization.

(3.) A certificate issued under regulation 80 of these Regulations by an officer or employee of the Organization may be cancelled at any time by the Organization and a certificate issued under that regulation by a verifying authority or an officer or employee of a verifying authority may be cancelled at any time by that verifying authority.

(4.) Where a certificate is cancelled in pursuance of this regulation, the Commission, the Organization or the verifying authority, as the case requires, shall cause the word "Cancelled" to be stamped or written across the certificate.

THE SCHEDULES.

FIRST SCHEDULE.

Regulation 5.

UNITS OF MEASUREMENT OF LENGTH.

First Column. Name of Unit.	Second Column. Length in Metres or Yards.	Third Column. Abbreviation or Symbol.
	Metres.	
International nautical mile ..	1 852..	..
Kilometre	1 000..	km
Hectometre	100..	..
Dekametre	10..	..
Metre	1..	m
Decimetre	0.1	dm
Centimetre	0.01	cm
Millimetre	0.001	mm
Micron *or* micrometre ..	0.000 001.. ..	μ *or* μm
Millimicron *or* nanometre ..	0.000 000 001 ..	mμ *or* nm
Angstrom	0.000 000 000 1 ..	Å *or* A
	Yards.	
Admiralty nautical mile ..	2 026⅔	..
Mile	1 760..	..
Furlong	220..	fur
Chain	22..	ch
Link	$\frac{22}{100}$	lk
Fathom	2..	fm
Yard	1..	yd
Foot	$\frac{1}{3}$	ft *or* ′
Inch	$\frac{1}{36}$	in *or* ″
Microinch	$\frac{1}{36000000}$	μin

SECOND SCHEDULE.

Regulation 7.

UNITS OF MEASUREMENT OF AREA.

First Column. Name of Unit.	Second Column. Area in Square Metres or Square Yards.	Third Column. Abbreviation.
	Square Metres.	
Square kilometre	1 000 000	sq km *or* km^2
Hectare	10 000	ha
Are	100	a
Centiare	1	ca
Square metre	1	sq m *or* m^2
Square decimetre	0.01	sq dm *or* dm^2
Square centimetre	0.000 1	sq cm *or* cm^2
Square millimetre	0.000 001	sq mm *or* mm^2
	Square Yards.	
Square mile	3 097 600	sq mile
Acre	4 840	ac
Rood	1 210	rd
Square chain	484	sq ch *or* ch^2
Perch	30¼	p
Square yard	1	sq yd *or* yd^2
Square foot	$\frac{1}{9}$	sq ft *or* ft^2
Square inch	$\frac{1}{1296}$	sq in *or* in^2

THIRD SCHEDULE.

Regulations 10, 11 and 14.

UNITS OF MEASUREMENT OF MASS AND WEIGHT.

First Column. Name of Unit.	Second Column. Mass or Weight in Kilogrammes or Pounds.	Third Column. Abbreviation or Symbol.
	Kilogrammes.	
Tonne *or* metric ton	1 000	t
Quintal	100	q
Myriagramme	10	..
Kilogramme	1	kg
Hectogramme	0.1	..
Dekagramme	0.01	..
Gramme	0.001	g
Decigramme	0.000 1	dg
Centigramme	0.000 01	cg
Milligramme	0.000 001	mg
Microgramme	0.000 000 001	μg *or* γ
	Pounds.	
Ton	2 240	..
Short ton	2 000	sh tn
Hundredweight	112	cwt
Cental	100	ctl
Quarter	28	qr
Stone	14	..
Pound	1	lb
Ounce	$\frac{1}{16}$	oz
Dram	$\frac{1}{256}$	dr
Grain	$\frac{1}{7000}$	gr

FOURTH SCHEDULE.

Regulations 10, 13 and 14.

SPECIAL UNITS OF MEASUREMENT OF MASS AND WEIGHT.

First Column. Name of Unit.	Second Column. Mass or Weight in Grammes, Pounds or Grains.	Third Column. Abbreviation or Symbol.
	Grammes.	
Metric carat	0.2	CM
	Pounds.	
Slug	32.174	..
	Grains.	
Troy ounce..	480	oz tr
Pennyweight	24	dwt
Apothecaries ounce	480	℥ *or* oz apoth
Drachm	60	ʒ
Scruple	20	℈

FIFTH SCHEDULE.

Regulations 15 and 16.

UNITS OF MEASUREMENT OF VOLUME.

First Column. Name of Unit.	Second Column. Volume in Cubic Metres, Cubic Yards, Litres or Gallons.	Third Column. Abbreviation or Symbol.
	Cubic Metres.	
Cubic metre	1	cu m *or* m^3
Cubic decimetre	0.001	cu dm *or* dm^3
Cubic centimetre	0.000 001.. ..	cc *or* cm^3
Cubic millimetre	0.000 000 001 ..	cu mm *or* mm^3
	Cubic Yards.	
Cubic yard	1	cu yd *or* yd^3
Cubic foot	$\frac{1}{27}$	cu ft *or* ft^3
Cubic inch	$\frac{1}{46656}$	cu in *or* in^3
	Litres.	
Kilolitre	1 000..	..
Hectolitre	100..	..
Dekalitre	10..	..
Litre	1..	l
Decilitre	0.1	dl
Centilitre	0.01	cl
Millilitre	0.001	ml
	Gallons.	
Gallon	1	gal
Quart	$\frac{1}{4}$	qt
Pint	$\frac{1}{8}$	pt
Gill	$\frac{1}{32}$	..
Fluid ounce	$\frac{1}{160}$	fl oz *or* ℥
Fluid drachm	$\frac{1}{1280}$	ʒ
Minim	$\frac{1}{76800}$	♏ *or* min

SIXTH SCHEDULE.

Regulations 15 and 19.

SPECIAL UNITS OF MEASUREMENT OF VOLUME.

First Column. Name of Unit.	Second Column. Volume in Gallons.
Hogshead	52
Barrel	35
Half-hogshead	26
Kilderkin	17
Bushel	8
Reputed quart	$\frac{1}{8}$
Reputed pint	$\frac{1}{16}$

SEVENTH SCHEDULE.

Regulation 21.

UNITS OF MEASUREMENT OF DENSITY.

First Column. Name of Unit.	Second Column. Density in Kilogrammes per Cubic Metre, Kilogrammes per Litre, Pounds per Cubic Foot or Pounds per Gallon.	Third Column. Abbreviation.
	Kilogrammes per Cubic Metre.	
Gramme per cubic centimetre	1 000	g/cc *or* g/cm^3
Kilogramme per cubic metre	1	kg/cu m *or* kg/m^3
	Kilogrammes per Litre.	
Kilogramme per litre	1	kg/l
Gramme per millilitre	1	g/ml
	Pounds per Cubic Foot.	
Pound per cubic inch	1 728	lb/cu in *or* lb/in^3
Pound per cubic foot	1	lb/cu ft *or* lb/ft^3
	Pounds per Gallon.	
Pound per gallon	1	lb/gal
Pound per bushel	$\frac{1}{8}$	lb/bus

EIGHTH SCHEDULE.

Regulation 24.

UNITS OF MEASUREMENT OF TIME INTERVAL.

First Column. Name of Unit.	Second Column. Time Interval in Seconds.	Third Column. Abbreviation.
Day	86 400	d
Hour	3 600	h *or* hr
Minute	60	min
Second	1	s *or* sec
Millisecond	0.001	ms
Microsecond	0.000 001	μs

NINTH SCHEDULE.

UNITS OF MEASUREMENT OF FREQUENCY. Regulation 27.

First Column. Name of Unit.	Second Column. Frequency in Cycles per Second.	Third Column. Abbreviation.
Megacycle per second *or* megahertz	1 000 000	Mc/s *or* MHz
Kilocycle per second *or* kilohertz	1 000	kc/s *or* kHz
Cycle per second *or* hertz	1	c/s *or* Hz
Revolution per minute	$\frac{1}{60}$	rev/min *or* rpm

TENTH SCHEDULE.

UNITS OF MEASUREMENT OF VELOCITY AND SPEED. Regulation 29.

First Column. Name of Unit.	Second Column. Velocity and Speed in Metres per Second or Feet per Second.	Third Column. Abbreviation.
	Metres per Second.	
Metre per second	1	m/sec *or* mps
Kilometre per hour	$\frac{5}{18}$	kmph
Centimetre per second	0.01	cm/sec *or* cmps
	Feet per Second.	
Knot	$1\frac{21}{41}$	kt
Mile per hour	$1\frac{7}{15}$	mph
Foot per second	1	ft/sec *or* fps
Foot per minute	$\frac{1}{60}$	ft/min *or* fpm

ELEVENTH SCHEDULE.

UNITS OF MEASUREMENT OF ACCELERATION. Regulation 32.

First Column. Name of Unit.	Second Column. Acceleration in Metres per Second per Second.	Third Column. Abbreviation.
Metre per second per second	1	m/sec^2
Centimetre per second per second	0.01	cm/sec^2

TWELFTH SCHEDULE.

UNITS OF MEASUREMENT OF FORCE. Regulation 35.

First Column. Name of Unit.	Second Column. Force in Newtons or Poundals.	Third Column. Abbreviation.
	Newtons.	
Kilogramme-force	9.806 65	kgf
Newton	1	N
Dyne	0.000 01	dyn
	Poundals.	
Ton-force	72 069.76	tonf
Kip	32 174	..
Pound-force	32.174	lbf
Poundal	1	pdl

THIRTEENTH SCHEDULE.

UNITS OF MEASUREMENT OF WORK AND ENERGY. Regulation 38.

First Column. Name of Unit.	Second Column. Work and Energy in Joules or Foot poundals.	Third Column. Abbreviation.
	Joules.	
Kilojoule	1 000	kJ
Joule	1	J
Erg	0.000 000 1	..
Kilowatt-hour	3 600 000	kWh
Watt-hour	3 600	Wh
Kilocalorie	4 186.8	kcal
Calorie	4.186 8	cal
Therm	105 506 000	..
British thermal unit	1 055.06	Btu
	Foot poundals.	
Horsepower-hour	63 705 000	hph
Foot pound-force *or* foot-pound	32.174	ft lbf *or* ft lb
Foot poundal	1	ft pdl

FOURTEENTH SCHEDULE.

UNITS OF MEASUREMENT OF POWER. Regulation 41.

First Column. Name of Unit.	Second Column. Power in Watts.	Third Column. Abbreviation or Symbol.
Megawatt	1 000 000	MW
Kilowatt	1 000	kW
Watt	1	W
Milliwatt	0.001	mW
Microwatt	0.000 001	μW

FIFTEENTH SCHEDULE.

UNITS OF MEASUREMENT OF PRESSURE. Regulation 44.

First Column. Name of Unit.	Second Column. Pressure in Newtons per Square Metre, Pounds-force per Square Inch or Centimetres of Mercury.	Third Column. Abbreviation.
	Newtons per Square Metre.	
Atmosphere	101 325	atm
Bar	100 000	b
Kilogramme-force per square centimetre *or* kilogramme per square centimetre	98 066.5	kgf/sq cm *or* kgf/cm² *or* kg/sq cm *or* kg/cm²
Millibar	100	mbar *or* mb
Newton per square metre	1	N/sq m *or* N/m²
Dyne per square centimetre	0.1	dyn/sq cm *or* dyn/cm²
	Pounds-force per Square Inch.	
Kip per square inch	$1\ 000_{17}$	kip/sq in *or* kip/in²
Kip per square foot	6_{18}	kip/sq ft *or* kip/ft²
Pound-force per square inch *or* pound per square inch	1	lbf/sq in *or* lbf/in² *or* lb/sq in *or* lb/in² *or* psi
Pound-force per square foot *or* pound per square foot	$\frac{1}{144}$	lbf/sq ft *or* lbf/ft² *or* lb/sq ft *or* lb/ft² *or* psf
	Centimetres of Mercury.	
Centimetre of mercury	1	cmHg
Millimetre of mercury	0.1	mmHg

SIXTEENTH SCHEDULE.

Regulation 47.

UNITS OF MEASUREMENT OF VISCOSITY AND KINEMATIC VISCOSITY.

First Column. Name of Unit.	Second Column. Viscosity in Poises or Kinematic Viscosity in Stokes.	Third Column. Abbreviation.
Viscosity.		
Poise	1	P
Centipoise	0.01	cP
Kinematic Viscosity.		
Stokes	1	S
Centistokes	0.01	cS

SEVENTEENTH SCHEDULE.

Regulation 49.

UNITS OF MEASUREMENT OF ELECTRIC CURRENT.

First Column. Name of Unit.	Second Column. Electric Current in Amperes.	Third Column. Abbreviation or Symbol.
Ampere	1	A *or* amp
Milliampere	0.001	mA
Microampere	0.000 001	μA

EIGHTEENTH SCHEDULE.

Regulations 53 and 55.

UNITS OF MEASUREMENT OF POTENTIAL DIFFERENCE AND ELECTROMOTIVE FORCE.

First Column. Name of Unit.	Second Column. Potential Difference or Electromotive Force in Volts.	Third Column. Abbreviation or Symbol.
Megavolt	1 000 000	MV
Kilovolt	1 000	kV
Volt	1	V
Millivolt	0.001	mV
Microvolt	0.000 001	μV

NINETEENTH SCHEDULE.

Regulation 56.

UNITS OF MEASUREMENT OF ELECTRICAL RESISTANCE.

First Column. Name of Unit.	Second Column. Electrical Resistance in Ohms.	Third Column. Symbol.
Megohm	1 000 000	MΩ
Ohm	1	Ω
Microhm	0.000 001	$\mu\Omega$

TWENTIETH SCHEDULE.

Regulation 60.

UNITS OF MEASUREMENT OF ELECTRICAL CAPACITANCE.

First Column. Name of Unit.	Second Column. Electrical Capacitance in Farads.	Third Column. Abbreviation or Symbol.
Farad	1	F
Microfarad	0.000 001	μF
Micromicrofarad *or* picofarad	0.000 000 000 001	$\mu\mu$F *or* pF

TWENTY-FIRST SCHEDULE.

Regulation 62.

UNITS OF MEASUREMENT OF ELECTRICAL INDUCTANCE.

First Column. Name of Unit.	Second Column. Electrical Inductance in Henrys.	Third Column. Abbreviation or Symbol.
Henry	1	H
Millihenry	0.001	mH
Microhenry	0.000 001	μH

TWENTY-SECOND SCHEDULE.

Regulation 71.

UNITS OF MEASUREMENT OF ILLUMINATION.

First Column. Name of Unit.	Second Column. Illumination in Lumens per Square Foot.	Third Column. Abbreviation.
Lumen per square foot	1	lm/sq ft *or* lm/ft^2
Foot-candela *or* foot-candle	1	ft cd

TWENTY-THIRD SCHEDULE.

Regulation 74.

UNITS OF MEASUREMENT OF LUMINANCE.

First Column. Name of Unit.	Second Column. Luminance in Candelas per Square Foot.	Third Column. Abbreviation.
Candela per square inch *or* candle per square inch	144	cd/sq in *or* cd/in^2
Candela per square foot *or* candle per square foot	1	cd/sq ft *or* cd/ft^2
Foot-lambert	0.318 3	..

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