**Reprint**
**as at 20 May 2019**

# National Standards Regulations 1976

(SR 1976/239)

National Standards Regulations 1976: revoked, on 20 May 2019, by regulation 9 of the Measurement Standards Regulations 2019 (LI 2019/91).

Denis Blundell, Governor-General

## Order in Council

At the Government House at Wellington this 23rd day of August 1976

Present:
His Excellency the Governor-General in Council

Pursuant to the Scientific and Industrial Research Act 1974, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

### Contents



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**Note**

Changes authorised by subpart 2 of Part 2 of the Legislation Act 2012 have been made in this official reprint.

Note 4 at the end of this reprint provides a list of the amendments incorporated.

**These regulations are administered by the Ministry of Business, Innovation, and Employment.**

# Regulations

## 1 Title and commencement

(1) These regulations may be cited as the National Standards Regulations 1976.

(2) These regulations shall come into force on 1 September 1976.

## 2 Interpretation

In these regulations, unless the context otherwise requires,—

**base unit** means one of the units specified in Part 1 of the Schedule

**Callaghan Innovation** means the entity established under section 7 of the Callaghan Innovation Act 2012

**derived unit** means a compound unit expressed algebraically in terms of base units or supplementary units or both; and includes the derived units with the special names specified in Part 3 of the Schedule

**instrument** means a thing, or a combination of things, by means of which a measurement of a physical quantity may be made; and includes a thing, or combination of things, by which a grading may be effected by reference to the measurement of a physical quantity

**Measurement Standards Laboratory of New Zealand** means that laboratory of Callaghan Innovation that maintains the principal standard measures for New Zealand

**physical quantity** includes a time element that is not related to the calendar, but does not include a time element that is related to the calendar

**prefix** means a verbal element placed at the beginning of a unit name to quantify a multiple or submultiple of that unit

**supplementary unit** means one of the units specified in Part 2 of the Schedule.

Regulation 2 **Callaghan Innovation**: inserted, on 1 May 2014, by regulation 4(1) of the National Standards Amendment Regulations 2014 (LI 2014/68).

Regulation 2 **Industrial Research Limited**: revoked, on 1 May 2014, by regulation 4(2) of the National Standards Amendment Regulations 2014 (LI 2014/68).

Regulation 2 **Measurement Standards Laboratory of New Zealand**: inserted, on 1 July 1992, by regulation 2 of the National Standards Regulations 1976, Amendment No 1 (SR 1992/163).

Regulation 2 **Measurement Standards Laboratory of New Zealand**: amended, on 1 May 2014, by regulation 4(3) of the National Standards Amendment Regulations 2014 (LI 2014/68).

### 3 Standards of measurement

It is hereby declared that a standard of measurement may—

(a) be associated with a particular material object; or

(b) be based on the bulk properties of a pure material, or the atomic properties of a single isotope; or

(c) result from a series of measurements made by means of an instrument, or instruments, of stable and proven characteristics; or

(d) result from measurements made by means of an instrument that has been calibrated by an overseas national laboratory in terms of units that are of the same magnitude as units for the time being accepted by the nations adhering to the Convention of the Metre 1875.

### 4 Matters prescribed in Schedule

(1) For each of the physical quantities specified in Parts 1, 2, and 3 of the Schedule, a unit of measurement of the quantity is prescribed in relation thereto in the second column of that schedule.

(2) The abbreviation specified in the third column of Parts 1, 2, and 3 of the Schedule in relation to each of those units shall be the abbreviation by which reference may be made to that unit.

(3) In the case of each of the base units specified in Part 1 of the Schedule, the standard of measurement for the unit shall be that specified in relation thereto in the fourth column of that schedule.

(4) In the case of each of the supplementary units specified in Part 2 of the Schedule, the definition of the unit shall be that specified in relation thereto in the fourth column of that schedule.

(5) In the case of each of the derived units specified in Part 3 of the Schedule, the unit of measurement shall be defined in the manner specified in the fourth column of that schedule.

(6) The prefixes specified in Part 4 of the Schedule may be used to form the names and symbols of the decimal multiples and submultiples of the units. The prefix is combined with the unit name, and the combination thereof is written as 1 word. The factor by which the unit is to be multiplied for each prefix is given in the first column of the said Part 4 in relation to that prefix.

(7) Notwithstanding subclause (6), in the case of the base unit kilogram, which relates to mass and contains the prefix kilo, the names of the decimal multiples and submultiples of the unit of mass are formed by adding the appropriate prefixes to the word gram. As an example but without restricting this subclause, milligram (mg) is used instead of microkilogram (μkg).

### 5 Usage

Except in the case of anything to the contrary in these regulations, the usage of metric units in New Zealand shall be as set out in the version for the time being current of NZS 6501, "The International System (SI) Units and their application".

### 6 Preservation of imperial standards

Nothing in these regulations shall prevent the use in trade of a weight or measure of the imperial system for the purpose of selling by weight or measure according to that system.

### 7 Appointment of a verifying authority

(1) The Minister may, in writing, appoint a person to be a verifying authority in relation to the verification and reverification of any standard or standards of measurement (including the comparison of principal standard measures with corresponding standard measures outside New Zealand).

(2) An appointment under this regulation shall be of—

(a) the person for the time being holding the office or performing the duties of—

(i) the Chief Metrologist of the Measurement Standards Laboratory of New Zealand; or

(ii) a specified office in any department of State that has responsibility for a particular class or particular classes of standards of measurement; or

(b) a named person who for the time being holds any office to which subparagraph (ii) of paragraph (a) relates or performs the duties of any such office.

(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.

Regulation 7(2)(a)(i): substituted, on 1 July 1992, by regulation 3 of the National Standards Regulations 1976, Amendment No 1 (SR 1992/163).

### 8 Powers of a verifying authority

(1) A verifying authority may—

(a) determine the value of standards of measurement in terms of New Zealand units of measurement of physical quantities for those classes of standards of measurement for which he has been appointed:

(b) determine the accuracy, in terms of the New Zealand unit of measurement, with which standards of measurement referred to in paragraph (a) have been verified or reverified:

(c) determine the nature of any distinguishing mark that should be stamped or otherwise legibly or permanently affixed on or to a standard of measurement, and stamp or affix that distinguishing mark on or to any such standard of measurement:

provided that this paragraph shall not apply in relation to a standard of measurement if it is impractical, by reason of its size or nature, so to stamp or affix a mark on or to the standard of measurement:

(d) sign and issue certificates or documents in relation to the verification and reverification of standards of measurement.

(2) A verifying authority may, in writing, delegate to—

(a) where the verifying authority is the Chief Metrologist of the Measurement Standards Laboratory of New Zealand, any other person who works in that laboratory; or

(b) in any other case, an officer or employee of the verifying authority's Department,—

all or any of the verifying authority's powers under subclause (1).

Regulation 8(2): substituted, on 1 July 1992, by regulation 4 of the National Standards Regulations 1976, Amendment No 1 (SR 1992/163).

## 9 Revocation

The Electrical Standards Regulations 1952 (SR 1952/154) are hereby revoked.

# Schedule
# New Zealand units of measurement of physical quantities

rr 3, 4

## Part 1
## Base units

| Physical quantity | Unit of measurement | Authorised abbreviation | Standard of measurement |
|---|---|---|---|
| Length | metre | m | The New Zealand standard of measurement of the metre, and compound units derived from it, shall be the same magnitude as the standard of measurement thereof for the time being accepted by the nations adhering to the Convention of the Metre 1875. The yard is 0.9144 metre. |
| Mass | kilogram | kg | The New Zealand standard of measurement of the kilogram, and compound units derived from it, shall be the same magnitude as the standard of measurement thereof for the time being accepted by the nations adhering to the Convention of the Metre 1875. The pound is 0.45359237 kilogram. |
| Time | second | s | The New Zealand standards of measurement of the second, the ampere, the kelvin, the candela, and the mole, and compound units derived from them, shall be the same magnitude as the standards of measurement of those units for the time being accepted by the nations adhering to the Convention of the Metre 1875. |
| Electric current | ampere | A | |
| Thermodynamic temperature | kelvin* | K | |
| Luminous intensity | candela | cd | |
| Amount of substance | mole | mol | |

*In addition to the thermodynamic temperature (symbol T) expressed in kelvins, use is made of Celsius temperature (symbol t) defined by the equation $t=T-T_0$ where $T_0=273.15$ K by definition.

## Part 2
## Supplementary units

| Physical quantity | Unit of measurement | Authorised abbreviation | Definition |
|---|---|---|---|
| Plane angle | radian | rad | The radian is the plane angle between 2 radii of a circle that cut off on the circumference an arc equal in length to the radius. |
| Solid angle | steradian | sr | The steradian is the solid angle that, having its vertex in the centre of a sphere, cuts off an area of the surface of the sphere equal to that of a square with sides of length equal to the radius of the sphere. |

## Part 3
## Derived units with special names

| Physical quantity | Unit of measurement | Authorised abbreviation | Definition |
|---|---|---|---|
| Frequency | hertz | Hz | The hertz is the frequency of a periodic phenomenon of which the period is 1 second. |
| Force | newton | N | The newton is the force that, when applied to a body having a mass of 1 kilogram, causes an acceleration of 1 metre per second per second in the direction of application of the force. |
| Pressure and stress | pascal | Pa | The pascal is the pressure, or compressive or tensile stress, that arises when a force of 1 newton is applied normal to, and uniformly over, an area of 1 square metre.<br>The pascal is also the shear stress that arises when a force of 1 newton is applied in the plane of, and uniformly over an area of 1 square metre. |
| Work, energy, quantity of heat | joule | J | The joule is the work done or the energy expended when a force of 1 newton moves the point of application a distance of 1 metre in the direction of that force. |
| Power | watt | W | The watt is the power used when work is done or energy is expended at the rate of 1 joule per second. |

| Physical quantity | Unit of measurement | Authorised abbreviation | Definition |
|---|---|---|---|
| Electric charge, quantity of electricity | coulomb | C | The coulomb is the quantity of electric charge that is transferred each second by an electric current of 1 ampere. |
| Electric potential, potential difference, electromotive force | volt | V | The volt is the potential difference that exists between 2 points on a conductor carrying an unvarying electric current of 1 ampere when the power dissipated between the points is equal to 1 watt. |
| Electric capacitance | farad | F | The farad is the electric capacitance that exists between 2 conductors when the transfer of an electric charge of 1 coulomb from one to the other changes the potential difference between them by 1 volt. |
| Electric resistance | ohm | Ω | The ohm is the electric resistance between 2 points on a conductor, which does not contain any source of electromotive force between those 2 points, when a constant potential difference of 1 volt maintained between those points results in a current of 1 ampere in the conductor. |
| Electric conductance | siemens | S | The siemens is the electric conductance of a conductor that has an electrical resistance of 1 ohm. |
| Magnetic flux, flux of magnetic induction | weber | Wb | The weber is the flux that, linking a circuit of 1 turn, produces in it an electromotive force of 1 volt as the flux is reduced to zero at a uniform rate in 1 second. |
| Magnetic flux density, magnetic induction | tesla | T | The tesla is the density of 1 weber of magnetic flux per square metre. |
| Inductance | henry | H | The henry is the electric inductance of a closed circuit in which an electromotive force of 1 volt is produced when an electric current that traverses the circuit varies uniformly at the rate of 1 ampere per second. |
| Luminous flux | lumen | lm | The lumen is the luminous flux emitted into unit solid angle by an isotropic point source having a luminous intensity of 1 candela. |
| Illumination | lux | lx | The lux is an illumination of 1 lumen per square metre. |

# Part 4
# Prefixes

| Factor by which the unit is multiplied | Prefix | |
|---|---|---|
| | **Name** | **Symbol** |
| $10^{18}$ | exa | E |
| $10^{15}$ | peta | P |
| $10^{12}$ | tera | T |
| $10^{9}$ | giga | G |
| $10^{6}$ | mega | M |
| $10^{3}$ | kilo | k |
| $10^{2}$ | hecto | h |
| 10 | deca | da |
| $10^{-1}$ | deci | d |
| $10^{-2}$ | centi | c |
| $10^{-3}$ | milli | m |
| $10^{-6}$ | micro | µ |
| $10^{-9}$ | nano | n |
| $10^{-12}$ | pico | p |
| $10^{-15}$ | femto | f |
| $10^{-18}$ | atto | a |

The symbol of a prefix is considered to be combined with the unit symbol to which it is directly attached, forming with it a symbol for a new unit that can be provided with a positive or negative exponent (index) and that can be combined with other unit symbols to form symbols for compound units.

Compound prefixes should not be used; for example, write nm (nanometre) instead of mµm.

P G Millen,
Clerk of the Executive Council.

Issued under the authority of the Legislation Act 2012.
Date of notification in *Gazette*: 26 August 1976.

## Reprints notes

### *1 General*

This is a reprint of the National Standards Regulations 1976 that incorporates all the amendments to those regulations as at the date of the last amendment to them.

### *2 Legal status*

Reprints are presumed to correctly state, as at the date of the reprint, the law enacted by the principal enactment and by any amendments to that enactment. Section 18 of the Legislation Act 2012 provides that this reprint, published in electronic form, has the status of an official version under section 17 of that Act. A printed version of the reprint produced directly from this official electronic version also has official status.

### *3 Editorial and format changes*

Editorial and format changes to reprints are made using the powers under sections 24 to 26 of the Legislation Act 2012. See also http://www.pco.parliament.govt.nz/editorial-conventions/.

### *4 Amendments incorporated in this reprint*

Measurement Standards Regulations 2019 (LI 2019/91): regulation 9

National Standards Amendment Regulations 2014 (LI 2014/68)

National Standards Regulations 1976, Amendment No 1 (SR 1992/163)

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