STATUTORY INSTRUMENTS.

S.I. No. 154 of 2020

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EUROPEAN COMMUNITIES (UNITS OF MEASUREMENT)
(AMENDMENT) REGULATIONS 2020

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I, HEATHER HUMPHREYS, Minister for Business, Enterprise and Innovation, in exercise of the powers conferred on me by section 3 of the European Communities Act 1972 (No. 27 of 1972) and for the purpose of giving effect to Council Directive 80/181/EEC of 20 December 1979[1] as last amended by Directive 2019/1258/EU of the European Parliament and of the Council of 23 July 2019[2], hereby make the following Regulations:

Citation and Commencement

1. (1) These Regulations may be cited as the European Communities (Units of Measurement) (Amendment) Regulations 2020.

(2) These Regulations come into operation on 13 June 2020.

Interpretation

2. In these Regulations—

"Principal Regulations" means the European Communities (Units of Measurement) Regulation 1992 (S.I. No. 255 of 1992);

3. Section 1.1 of Schedule 1 of the Principal Regulations is replaced by the following—

'1.1. SI base units

Quantity	Unit	
	Name	**Symbol**
Time	second	s
Length	metre	m
Mass	kilogram	kg
Electric current	ampere	A
Thermodynamic temperature	kelvin	K

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[1] Council Directive 80/181/EEC of 20 December 1979 on the approximation of the laws of the Member States relating to units of measurement and on the repeal of Directive 71/354/EEC (OJ L 39, 15.2.1980, p. 40).
[2] OJ L 196, 24.7.2019, p. 6–9

Notice of the making of this Statutory Instrument was published in
"Iris Oifigiúil" of 5th May, 2020.

Amount of substance	mole	mol
Luminous intensity	candela	cd

Definitions of SI base units:

Unit of time

The second, symbol s, is the SI unit of time. It is defined by taking the fixed numerical value of the caesium frequency Δv_{Cs}, the unperturbed ground-state hyperfine transition frequency of the caesium 133 atom, to be 9 192 631 770 when expressed in the unit Hz, which is equal to s^{-1}.

Unit of length

The metre, symbol m, is the SI unit of length. It is defined by taking the fixed numerical value of the speed of light in vacuum c to be 299 792 458 when expressed in the unit m/s, where the second is defined in terms of Δv_{Cs}.

Unit of mass

The kilogram, symbol kg, is the SI unit of mass. It is defined by taking the fixed numerical value of the Planck constant h to be $6,626\,070\,15 \times 10^{-34}$ when expressed in the unit J s, which is equal to $kg\ m^2\ s^{-1}$, where the metre and the second are defined in terms of c and Δv_{Cs}.

Unit of electric current

The ampere, symbol A, is the SI unit of electric current. It is defined by taking the fixed numerical value of the elementary charge e to be $1,602\,176\,634 \times 10^{-19}$ when expressed in the unit C, which is equal to A s, where the second is defined in terms of Δv_{Cs}.

Unit of thermodynamic temperature

The kelvin, symbol K, is the SI unit of thermodynamic temperature. It is defined by taking the fixed numerical value of the Boltzmann constant k to be $1,380\,649 \times 10^{-23}$ when expressed in the unit $J\ K^{-1}$, which is equal to $kg\ m^2\ s^{-2}\ K^{-1}$, where the kilogram, metre and second are defined in terms of h, c and Δv_{Cs}.

Unit of amount of substance

The mole, symbol mol, is the SI unit of amount of substance. One mole contains exactly $6,022\,140\,76 \times 10^{23}$ elementary entities. This number is the fixed numerical value of the Avogadro constant, N_A, when expressed in the unit mol^{-1} and is called the Avogadro number.

The amount of substance, symbol n, of a system is a measure of the number of specified elementary entities. An elementary entity may be an atom, a

molecule, an ion, an electron, any other particle or specified group of particles.

Unit of luminous intensity

The candela, symbol cd, is the SI unit of luminous intensity in a given direction. It is defined by taking the fixed numerical value of the luminous efficacy of monochromatic radiation of frequency 540×10^{12} Hz, K_{cd}, to be 683 when expressed in the unit lm W^{-1}, which is equal to cd sr W^{-1}, or cd sr kg^{-1} m^{-2} s^{3}, where the kilogram, metre and second are defined in terms of h, c and Δv_{Cs}.

1.1.1. Special name and symbol of the SI derived unit of temperature for expressing Celsius temperature

Quantity	Unit	
	Name	Symbol
Celsius temperature	degree Celsius	°C

Celsius temperature t is defined as the difference $t = T - T_0$ between the two thermodynamic temperatures T and T_0 where $T_0 = 273{,}15$ K. An interval or difference of temperature may be expressed either in kelvins or in degrees Celsius. The unit "degree Celsius" is equal to the unit "kelvin".'

GIVEN under my Official Seal,
01 May, 2020.

HEATHER HUMPHREYS,
Minister for Business, Enterprise and Innovation.

L.S.

EXPLANATORY NOTE

(*This note is not part of the Instrument and does not purport to be a legal interpretation.*)

These Regulations are made to give effect to Council Directive No. 2019/1258/EU of the European Parliament and of the Council of 23 July 2019 on the approximation of the laws of Member States relating to units of measurement.

The main changes in the Regulations provide for new definitions of the SI base units. The new definitions are based on the new principle of fixed numerical values of the defining constants and are expected to improve the long-term stability and reliability of the SI base units as well as the accuracy and clarity of measurements.