

SI – International System of Units of Measure

All systems of weights and measures, metric and non-metric, are linked through a network of international agreements supporting the International System of Units. The International System is called the **SI**, using the first two initials of its French name *Système International d’Unités*.

Canada adopted the International System of Units in the Weights and Measures Act of 1971. Approximately 98% of the world’s population uses these international measures.

SI is founded on the seven base units in the chart below. The short form is referred to as an SI Symbol, not an abbreviation.

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

Rules for Writing SI Units

- 1. The symbols are always written in normal type – i.e. never italics.**
- 2. Symbols are written in lower case, except when the unit name came from a proper name (someone’s family name).**

km (kilometres) – for distance

kg, g, L, mL (kilogram, gram, litre, millilitre) – for packaged foods, drugs, household products

cm (centimetres) – for height

kg (kilogram) – for weight

One tonne = 1,000 kg (also called a metric ton)

Exceptions:

L (litre) – the symbol is always a capital.

°C (degrees Celsius) – for temperature

Examples of symbols deriving from proper names

SI symbols derived from someone's name (typically those relating to energy) are capitalized and remain capitalized when combined with prefixes.

W = watt (James Watt)

kW = kilowatt

MW = megawatt

V = volt (Count Alessandro Giuseppe Antonio Anastasio Volta)

kV = kilovolt

A = ampere (Amp is used as well) (Andre-Marie Ampere)

Hz = hertz (Heinrich Rudolf Hertz)

S = siemens (Werner von Siemens)

T = tesla (Nikola Tesla)

When the word is written out, use lower case.

- To make their home more energy efficient, Bob and Marianne installed 13-watt compact fluorescent light bulbs.
- The radio station transmits in megahertz.

3. There is no space between a prefix symbol and the unit symbol.

kw = kilowatt

mL = millilitre

4. Symbols are never pluralized.

5,432 kWh – not 5,432 kWhrs

5,000 MW – not 5,000 MWs

However, when the word is written out, the plural form is used (if appropriate).

Example: The plant generates five thousand megawatts of electricity.

However, in the energy industry, in documents it is permissible to write 5,000 megawatts.

5. There is never a period after a symbol, except at the end of a sentence.

6. There is always a full space between the number and the symbol.

432 m (not 432m) = 432 metres

1 g (not 1g) = 1 gram

200 mL (not 200mL) = 200 millilitres

100 kWh (not 100kWh)

7. If the symbol or the name modifies a noun, a hyphen replaces the space.

A 100-watt light bulb; a 100-W light bulb

Hyphens should also be used when in compounds with two sets of numbers, to avoid confusion.

Two 500-MW machines - Note: Always spell out the first number of a phrase using two sets of numbers, for clarity and ease of reading.

8. Symbols should be used with numbers instead of writing out the unit names. When no numbers are involved, unit names should be written out.

2,345 km – not 2,345 kilometres

A metre is about the length of a man's step.

9. Prefixes are not capitalized until you reach one million.

milli = m – one thousandth

centi = c – one hundredth

deci = d – one tenth

kilo = k – one thousand

mega = M – one million

giga = G – one billion

tera = T – one trillion

Examples: MW, kW, MV, kV, MHz, kHz

10. The products of two or more units of measure in symbolic form is preferably indicated by a dot unless there is no risk of confusion with any other symbol.

kW·h – this is the correct way of expressing kilowatt-hour. However, common usage is for kWh.

11. Units derived from division use a slash

Revolutions per minute = r/min

12. Numbers should be expressed as decimals, not fractions.

0.25 g = not $\frac{1}{4}$ gram

13. Use a zero before the decimal marker in numerical values of less than one.

0.50 L