Units, Symbols, and Prefixes

Throughout *Nelson Chemistry 11* and in this reference section, we have attempted to be consistent in the presentation and usage of quantities, units, and their symbols. As far as possible, the text uses the Système international d'unités (SI). However, some other units have been included because of their practical importance, wide usage, or use in specialized fields. In our interpretations and usage, *Nelson Chemistry 11* has followed the most recent *Canadian Metric Practice Guide* (CAN/CSA–Z234.1–89), published in 1989 and reaffirmed in 1995 by the Canadian Standards Association.

SI Base Units

Quantity	Symbol	Unit name	Symbol
amount of substance	n	mole	mol
electric current	I	ampere	A
length	L, l, h, d, w	metre	m
luminous intensity	I_v	candela	cd
mass	m	kilogram	kg
temperature	T	kelvin	K
time	t	second	s

Some SI Derived Units

Quantity	Symbol	Unit	Unit symbol	Expression in SI base units
acceleration	$\vec{a}$	metre per square second	m/s^2	m/s^2
area	A	square metre	m^2	m^2
density	ρ, D *	kilogram per cubic metre	kg/m^3	kg/m^3
displacement	$\vec{d}$	metre	m	m
electric charge	Q, q, e *	coulomb	C	$A \cdot s$
electric potential	V	volt	V	$kg \cdot m^2/(A \cdot s^3)$
electric field	E	volt per metre newton per coulomb	V/m N/C	$kg \cdot m/(A \cdot s^3)$
electric resistance	R	ohm	Ω	$kg \cdot m^2/(A^2 \cdot s^3)$
energy	E, E_k, E_p	joule	J	$kg \cdot m^2/s^2$
force	F	newton	N	$kg \cdot m/s^2$
frequency	f	hertz	Hz	s^{-1}
heat	Q	joule	J	$kg \cdot m^2/s^2$
magnetic flux	Φ	weber	Wb	$kg \cdot m^2/(A \cdot s^2)$
magnetic field	B	Tesla weber per square metre	 Wb/m^2	T $kg/(A \cdot s^2)$
momentum	P, p *	kilogram metre per second	 $kg \cdot m/s$	 $kg \cdot m/s$
period	T	second	s	s
power	P	watt	W	$kg \cdot m^2/s^3$
pressure	P p	pascal newton per square metre	Pa N/m^2	$kg/(m \cdot s^2)$
speed	v	metre per second	m/s	m/s
velocity	$\vec{v}$	metre per second	m/s	m/s
volume	V	cubic metre	m^3	m^3
wavelength	λ	metre	m	m
weight	W, w *	newton	N	$kg \cdot m/s^2$
work	W	joule	J	$kg \cdot m^2/s^2$

* preferred

Defined (Exact) Quantities		
1 mL*	=	1 cm^3*
1 kL†	=	1 m^3†
1000 kg	=	1 t
1 Mg	=	1 t
1 atm	=	101.325 kPa
0°C	=	273.15 K
STP	=	0°C and 101.325 kPa
SATP	=	25°C and 100 kPa

*† assume that these are equivalent

Numerical Prefixes

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

* commonly used

Some Examples of Prefix Use

0.0034 mol = 3.4 x 10^{-3} mol = 3.4 **milli**moles or 3.4 mmol
1530 L = 1.53 x 10^{3} L = 1.53 **kilo**litres or 1.53 kL

Common Multiples

Multiple	Prefix
0.5	hemi–
1	mono–
1.5	sesqui–
2	bi–, di–
2.5	hemipenta–
3	tri–
4	tetra–
5	penta
6	hexa
7	hepta–
8	octa
9	nona–
10	deca–

Greek and Latin Prefixes

Prefix	Meaning	Prefix	Meaning
a–	not, without	hydro–	water
ab–	away from	hyper–	above
abd–	led away	hypo–	below
acro–	end, tip	infra–	under
aer–, aero–	air	inter–	between
agg–	to clump	intra–	inside of, within
agro–	land	intro–	inward
alb–	white	iso–	equal
allo–	other	lact–, lacti–, lacto–	milk
ameb–	change	leuc–, leuco–	white
amphi–	around, both	lys–, lyso–	break up
amyl–	starch	macro–	large
an–	without	meg–, mega–	great
ana–	up	melan–	black
ant–, anti–	opposite	mes–, meso–	middle
anth–	flower	micr–, micro–	small
aut–, auto–	self	mono–	one
baro–	weight (pressure)	morpho–	form, shape
bi–	twice	multi–	many
bio–	life	neo–	new
carcin–	cancer	oligo–	few
chlor–, chloro–	green	patho–	disease
chrom–, chromo–	colour	peri–	around
co–	with	pharmaco–	drug
cyan–, cyano–	blue	photo–	light
di–	two	pneum–	air
dors–	back	poly–	many
ec–, ecto–	outside	pseud–, pseudo–	false
em–	inside	pyr–, pyro–	fire
en–	in	radio–	ray
end–, endo–	within	sacchar–, saccharo–	sugar
epi–	at, on, over	sub–	beneath
equi–	equal	super–, supra–	above
erythro–	red	sym–, syn–	with, together
ex–, exo–	away, out	therm–, thermo–	temperature, heat
gastr–	stomach	tox–	poison
glyc–	sweet	trans–	across
halo–	salt	ultra–	beyond
hemi–	half	vitro–	glass
hetero–	different	xanth–, xantho–	yellow
holo–	whole	xer–, xero–	dry
homo–	the same		