

# Periodic Table of the Elements

**ELEMENT KEY**

Average relative masses are 2001 values, rounded to two decimal places. All average masses are to be treated as measured quantities, and subject to significant figures rules. Do not round them further when performing calculations.

Elements 43, 61, and 84 through 118 are unstable and radioactive. The most stable isotope is listed inside parentheses for radioactive elements.

1	1.01	H	1+	1	1.01	H	1+	1	1.01	H	1+	1	1.01	H	1+	1	1.01	H	1+	1	1.01	H	1+	2	4.00	He	0
2	6.94	Li	1+	3	6.94	Li	1+	3	6.94	Li	1+	3	6.94	Li	1+	3	6.94	Li	1+	3	6.94	Li	1+	9	19.00	F	-1
3	22.99	Na	1+	11	22.99	Na	1+	11	22.99	Na	1+	11	22.99	Na	1+	11	22.99	Na	1+	11	22.99	Na	1+	15	30.97	P	-3
4	39.10	K	1+	19	39.10	K	1+	19	39.10	K	1+	19	39.10	K	1+	19	39.10	K	1+	19	39.10	K	1+	31	69.92	As	-3
5	87.62	Rb	1+	37	87.62	Rb	1+	37	87.62	Rb	1+	37	87.62	Rb	1+	37	87.62	Rb	1+	37	87.62	Rb	1+	51	121.76	Sb	-3
6	137.32	Ba	2+	56	137.32	Ba	2+	56	137.32	Ba	2+	56	137.32	Ba	2+	56	137.32	Ba	2+	56	137.32	Ba	2+	82	207.20	Pb	-2
7	223	Fr	1+	87	223	Fr	1+	87	223	Fr	1+	87	223	Fr	1+	87	223	Fr	1+	87	223	Fr	1+	113	284	Uut	0
8	269	Un	0	103	269	Un	0	103	269	Un	0	103	269	Un	0	103	269	Un	0	103	269	Un	0	103	269	Un	0

OXIDIZING STRENGTH ← → REDUCING STRENGTH

### Common Prefixes

- 1 mono-
- 2 di-
- 3 tri-
- 4 tetra-
- 5 penta-
- 6 hexa-
- 7 hepta-
- 8 octa-
- 9 nona-
- 10 deca-

### To be memorized

acetate	$C_2H_3O_2^-$	arsenate	$AsO_4^{3-}$
ammonium	$NH_4^+$	benzoate	$C_6H_5COO^-$
bromate	$BrO_3^-$	borate	$BO_3^{3-}$
carbonate	$CO_3^{2-}$	cyanate	$OCN^-$
chlorate	$ClO_3^-$	cyanide	$CN^-$
chromate	$CrO_4^{2-}$	dichromate	$Cr_2O_7^{2-}$
hydroxide	$OH^-$	glutamate	$C_5H_8NO_4^-$
hydronium	$H_3O^+$	oxalate	$C_2O_4^{2-}$
iodate	$IO_3^-$	peroxide	$O_2^{2-}$
nitrate	$NO_3^-$	silicate	$SiO_3^{2-}$
permanganate	$MnO_4^-$	tetraborate	$B_4O_7^{2-}$
phosphate	$PO_4^{3-}$	thiocyanate	$SCN^-$
sulphate	$SO_4^{2-}$	thiosulphate	$S_2O_3^{2-}$
		tripolyphosphate	$P_3O_{10}^{5-}$

### Solubility of Ionic Compounds at SATP

CATIONS	Cl <sup>-</sup> , Br <sup>-</sup> , I <sup>-</sup>	S <sup>2-</sup>	OH <sup>-</sup>	ANIONS			
				SO <sub>4</sub> <sup>2-</sup>	CO <sub>3</sub> <sup>2-</sup> , PO <sub>4</sub> <sup>3-</sup> , SO <sub>3</sub> <sup>2-</sup>	C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup>	NO <sub>3</sub> <sup>-</sup>
high solubility (aq)	Most	Group 1, NH <sub>4</sub> <sup>+</sup> , Group 2	Group 1 <sup>+</sup> , NH <sub>4</sub> <sup>+</sup> , Ba <sup>2+</sup> , Tl <sup>+</sup>	Most	Group 1, NH <sub>4</sub> <sup>+</sup>	Most	All
≥0.1 mol/L (at SATP)	Most	Group 1, NH <sub>4</sub> <sup>+</sup> , Group 2	Group 1 <sup>+</sup> , NH <sub>4</sub> <sup>+</sup> , Ba <sup>2+</sup> , Tl <sup>+</sup>	Most	Group 1, NH <sub>4</sub> <sup>+</sup>	Most	All
low solubility (s) ≤0.1 mol/L (at SATP)	Ag <sup>+</sup> , Pb <sup>2+</sup> , Ti <sup>4+</sup> , Hg <sub>2</sub> <sup>2+</sup> (Hg <sup>+</sup> ), Cu <sup>+</sup>	Most	Most	Ag <sup>+</sup> , Pb <sup>2+</sup> , Ca <sup>2+</sup> , Ba <sup>2+</sup> , Sr <sup>2+</sup> , Ra <sup>2+</sup>	Most	Most	None

All group 1 compounds, including acids, and all ammonium compounds are assumed to have high solubility in water.

Metal	Displaces hydrogen from acids	Displaces hydrogen from cold water		<b>Halogens</b>
lithium	↑	↑	Most Reactive	fluorine chlorine bromine iodine
potassium				
barium				
calcium				
sodium				
magnesium				
aluminum				
zinc				
chromium				
iron				
cadmium				
cobalt				
nickel				
tin				
lead				
hydrogen				
copper				
mercury				
silver				
platinum				
gold	Least Reactive			