

CHEMISTRY REFERENCE SHEET – Mrs. Bauck

POLYATOMIC IONS

Chemistry 1 Honors students must memorize these 28 ions.
Chemistry 1 students must memorize 21 ions (delete the seven marked with ***).

+1 CHARGE:

ammonium (NH₄)⁺

-1 CHARGE:

acetate
(C₂H₃O₂)⁻ or (CH₃COO)⁻

bicarbonate or
hydrogen carbonate (HCO₃)⁻

*** bisulfate or
hydrogen sulfate (HSO₄)⁻

*** bromate (BrO₃)⁻

chlorate (ClO₃)⁻

chlorite (ClO₂)⁻

cyanide (CN)⁻

hydroxide (OH)⁻

hypochlorite (ClO)⁻

nitrate (NO₃)⁻

nitrite (NO₂)⁻

perchlorate (ClO₄)⁻

permanganate (MnO₄)⁻

*** thiocyanate (SCN)⁻

-2 CHARGE:

carbonate (CO₃)⁻²

*** carbonite (CO₂)⁻²

chromate (CrO₄)⁻²

dichromate (Cr₂O₇)⁻²

*** oxalate (C₂O₄)⁻²

silicate (SiO₃)⁻² [or (SiO₄)⁻]

sulfate (SO₄)⁻²

sulfite (SO₃)⁻²

*** thiosulfate (S₂O₃)⁻²

-3 CHARGE:

*** arsenate (AsO₄)⁻³

phosphate (PO₄)⁻³

phosphite (PO₃)⁻³

COMMON ACIDS

Students must know these acids and how to dissociate them.

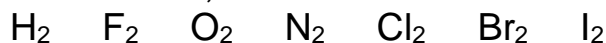
These are skeleton equations.

(Chemistry 1H will have more acids to name.)

acetic acid	HC ₂ H ₃ O ₂	HC ₂ H ₃ O ₂ (aq) → H ⁺ (aq) + (C ₂ H ₃ O ₂) ⁻ (aq)
	or CH ₃ COOH	CH ₃ COOH (aq) → H ⁺ (aq) + (CH ₃ COO) ⁻ (aq)
carbonic	H ₂ CO ₃	H ₂ CO ₃ (aq) → H ⁺ (aq) + (CO ₃) ⁻² (aq)
hydrochloric	HCl	HCl (aq) → H ⁺ (aq) + Cl ⁻ (aq)
nitric	HNO ₃	HNO ₃ (aq) → H ⁺ (aq) + (NO ₃) ⁻ (aq)
phosphoric	H ₃ PO ₄	H ₃ PO ₄ (aq) → H ⁺ (aq) + (PO ₄) ⁻³ (aq)
sulfuric	H ₂ SO ₄	H ₂ SO ₄ (aq) → H ⁺ (aq) + (SO ₄) ⁻² (aq)

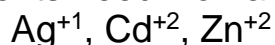
THE SEVEN DIATOMIC MOLECULES (“Super Seven”)

diatomic when alone, uncombined with other symbols



“MIDDLE METALS”

Ions of transition elements need Roman numerals, EXCEPT



Pb and Sn have ionic charges of +2 and +4

COMMON CHARGES (OXIDATION NUMBERS)

“Charge Chant”: +1 +2 +3 mixed -3 -2 -1 0
+2 in the middle, unless they tell you otherwise

Group number:	IA	IIA	IIIA	IVA	VA*	VIA*	VIIA*	VIIIA
	1	2	13	14	15	16	17	18
Main ionic charge:	+1	+2	+3	M	-3	-2	-1	none

M most of Group IVA (14) don't usually form ions; when they do, mixed charges are possible
* when applicable