

Ion Charges

Ions Formed based on Periodic Group

Group	Val e ⁻	Charge	Group	Val e ⁻	Charge	Group	Val e ⁻	Charge
1A (1)	1	1+	3A (13)	3	3+	6A (16)	6	2-
2A (2)	2	2+	4A (14)	4	4+ / 4-	7A (17)	7	1-
1B – 10B (3 – 12)	2 (Varies)	Varies	5A (15)	5	3-	8A (18)	8	No Charge

Roman Numerals

1	2	3	4	5	6	7	8
I	II	III	IV	V	VI	VII	VIII

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Polyatomic Ions

Ions formed with multiple atoms combine (*covalent bond*) to form a single ion with a negative (-) or positive (+) ion

POLYATOMIC IONS: NAMES, FORMULAE & CHARGES
A polyatomic ion is a charged species consisting of two or more atoms covalently bonded together. Here's a guide to some of the most common examples!

Ion Name	Formula
Acetate	$\text{C}_2\text{H}_3\text{O}_2^-$
Carbonate	CO_3^{2-}
Hydrogen Carbonate	HCO_3^-
Cyanide	CN^-
Nitrate	NO_3^-
Nitrite	NO_2^-
Ammonium	NH_4^+
Hydronium	H_3O^+
Hydroxide	OH^-
Peroxide	O_2^{2-}
Sulfite	SO_3^{2-}
Sulfate	SO_4^{2-}
Hydrogen Sulfate	HSO_4^-
Thiosulfate	$\text{S}_2\text{O}_3^{2-}$
Phosphate	PO_4^{3-}
Hypochlorite	ClO^-
Chlorite	ClO_2^-
Chlorate	ClO_3^-
Perchlorate	ClO_4^-
Carbonate	CO_3^{2-}
Dichromate	$\text{Cr}_2\text{O}_7^{2-}$
Permanganate	MnO_4^-

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Polyatomic Ion Chart

The following is a list of common polyatomic ions

Polyatomic Ion	Ion Formula	Polyatomic Ion	Ion Formula	Polyatomic Ion	Ion Formula
Ammonium	NH_4^+	Hydronium	H_3O^+	Carbonate	CO_3^{2-}
Nitrate	NO_3^-	Cyanide	CN^-	Sulfate	SO_4^{2-}
Fluorate	FO_3^{1-}	Hydroxide	OH^-	Chromate	CrO_4^{2-}
Chlorate	ClO_3^{1-}	Acetate	$\text{C}_2\text{H}_3\text{O}_2^{1-}$	Dichromate	$\text{Cr}_2\text{O}_7^{2-}$
Bromate	BrO_3^{1-}	Permanganate	MnO_4^{1-}	Oxalate	$\text{C}_2\text{O}_4^{2-}$
Iodate	IO_3^{1-}	Bicarbonate	HCO_3^{1-}	Phosphate	PO_4^{3-}

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Polyatomic Ion Conjugations

Some polyatomic ions can be changed by change number of oxygens

-ate (Base)	Ion Formula	-ite (-1 oxy)	Ion Formula	per_ite (+1 oxy)	Ion Formula
Chlorate	ClO_3^{1-}	Chlorite	ClO_2^{1-}	Perchlorate	ClO_4^{1-}
Bromate	BrO_3^{1-}	Bromite	BrO_2^{1-}	Perbromate	BrO_4^{1-}
Nitrate	NO_3^{1-}	Nitrite	NO_2^{1-}		
Carbonate	CO_3^{2-}	Carbonite	CO_2^{2-}		
Sulfate	SO_4^{2-}	Sulfite	SO_3^{2-}		
Phosphate	PO_4^{3-}	Phosphite	PO_3^{3-}		

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