

Rules for Oxidation Numbers (Chemical Reactions Podcast 7)

<b>Rules for Oxidation Numbers</b>	<b>Examples</b>
Atoms in elemental form = 0	Na, O <sub>2</sub> , As, N <sub>2</sub> , Mg
Monatomic ions = the ion's charge	K <sup>+</sup> , Ca <sup>2+</sup> , Fe <sup>3+</sup> , S <sup>2-</sup> , Al <sup>3+</sup>
Oxygen = -2 except in peroxides = -1	CaO (O = -2); Na <sub>2</sub> O <sub>2</sub> (O = -1)
Hydrogen = +1 except metal hydrides = -1	HCl (H = +1); LiH (H = -1)
Oxidation states in compounds must sum to zero.	FeCl <sub>2</sub> , FeCl <sub>3</sub> contain Fe <sup>2+</sup> and Fe <sup>3+</sup>
Oxidation states in polyatomic ions must sum to the ion charge.	ClO <sub>4</sub> <sup>-</sup> , ClO <sub>3</sub> <sup>-</sup> chlorine = +7 and +5
Assign the more electronegative element a negative oxidation number.	PF <sub>5</sub> contains F = -1 and P = +5

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Oxidation states in compounds must sum to zero.	FeCl <sub>2</sub> , FeCl <sub>3</sub> contain Fe <sup>2+</sup> and Fe <sup>3+</sup>
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Assign the more electronegative element a negative oxidation number.	PF <sub>5</sub> contains F = -1 and P = +5