

7-2 Oxidation Numbers

Oxidation Number/State – charges assigned to atoms of a molecular compound or ion to indicate the distribution of electrons

Oxidation numbers are useful for:

- 1) naming compounds
- 2) writing formulas
- 3) balancing equations
- 4) studying types of reactions

Oxidation numbers are meant for covalently bonded molecules.

Oxidation numbers for ionic compounds are equal to the ion charges.

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Assigning Oxidation Numbers

- 1) Pure elements have oxidation of 0 (ex. Na, O₂, N₂, etc)
- 2) The more electronegative element takes its anion charge. The less electronegative element takes its cation charge.
- 3) Fluorine is always -1
- 4) Oxygen is -2 (Unless with halogens or as a peroxide/superoxide)
- 5) Hydrogen is +1 with more electronegative elements and +1 with metals
- 6) The sum of oxidation numbers for a neutral compound is 0
- 7) The sum for polyatomic ions is equal to the charge of the ion

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Using Oxidations Numbers for Formulas and Names

Oxidation numbers can help predict possible molecular formulas

S can be +4 and +6. This could predict that SO₂ and SO₃ can exist.

The Stock system can be used for molecular compounds.

	SO ₂	SO ₃
Stock System →	sulfur(IV) oxide	sulfur(VI) oxide
Prefix System →	sulfur dioxide	sulfur trioxide

This is more practical for complicated compounds.

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