

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 meant for covalently bonded molecules.

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

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7-2 Oxidation Numbers

Oxidation numbers are useful for:

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

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Assigning Oxidation Numbers

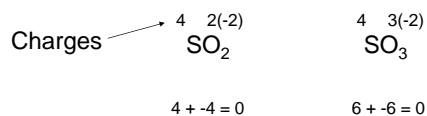
- 1) Pure elements have oxidation of 0 (Na, O₂, N₂, etc)
- 2) More electronegative element takes its anion charge. The less electronegative takes its cation charge.
- 3) Fluorine is always -1
- 4) Oxygen is -2 (Unless with halogens or as a peroxide)
- 5) Hydrogen is +1 with more electronegative elements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

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Using Oxidation Numbers for Formulas and Names

Oxidation numbers can help predict possible molecular formulas by knowing possible values of an element.

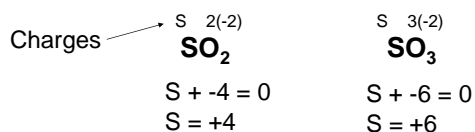
S is known to have the states of +4 and +6. This could predict that SO₂ and SO₃ may exist.



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Oxidations Numbers to Determine Stock System

Stock system can be used for molecular compounds.



Stock System → sulfur(IV) oxide sulfur(VI) oxide

Prefix System → sulfur dioxide sulfur trioxide

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