

Oxidation Numbers

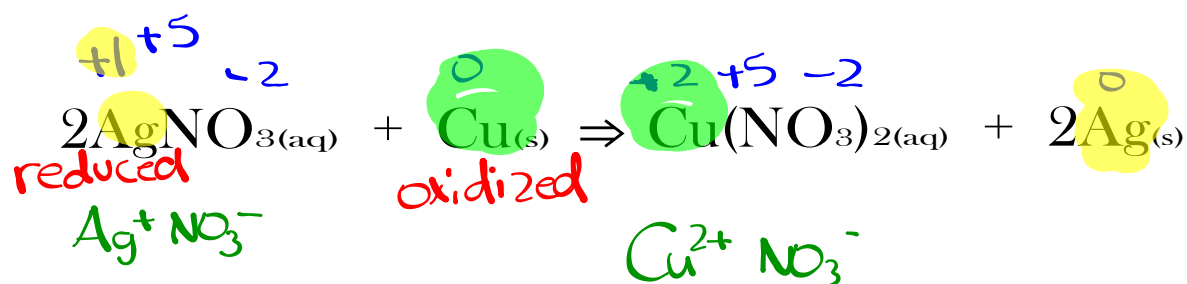
oxidation number - positive or negative number assigned to an atom to indicate its degree of oxidation or reduction

- A bonded atom's oxidation number is the charge that it would have if the electrons in the bond were assigned to the more electronegative element.

Rules for Assigning Oxidation Numbers

1. The oxidation number of a monatomic ion is equal to the ionic charge of that ion.
Ex. Oxidation number of Na^+ is +1
2. The oxidation number of hydrogen in a compound is +1, except in metal hydrides, such as NaH , where it is -1.
3. The oxidation number of oxygen in a compound is -2, except in peroxides, such as H_2O_2 , where it is -1, and in compounds with the more electronegative fluorine, where it is positive.
4. The oxidation number of an atom in elemental form is 0.
5. For any neutral compound, the sum of the oxidation numbers of the atoms in the compound must equal 0.
6. For a polyatomic ion, the sum of the oxidation numbers must equal the ionic charge of the ion.

Oxidation-Number Changes in Chemical Reactions



Oxidation and reduction can be defined by the change in each element's oxidation number.

An increase in the oxidation number of an atom or ion indicates oxidation.

An decrease in the oxidation number of an atom or ion indicates reduction.

Homework

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