

## Rules for Assigning Oxidation States

1. The oxidation state of an atom in its elemental form is zero; thus, the oxidation states for the following are all 0:



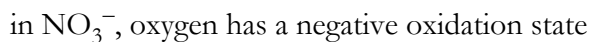
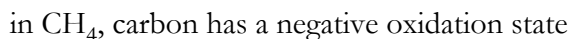
2. The oxidation state of a monatomic cation or anion is the same as the ion's charge; thus:



3. The algebraic sum of oxidation states for the elements in a polyatomic compound or ion must equal the compound's or ion's total charge; thus:



4. When more than one element is present, the more electronegative element maintains the negative oxidation state; thus:



5. There are a few elements that have only one or two common oxidation states when not in their elemental form; these are:

hydrogen is always +1 when bound to a more electronegative element, such as in HCl or CH<sub>4</sub>, and -1 when bound to a less electronegative element, such as in NaH

alkali metals are always +1

alkaline earths are always +2

oxygen is usually -2, but it is -1 in peroxide, O<sub>2</sub><sup>2-</sup>, and it is -1/2 in superoxide, O<sub>2</sub><sup>-</sup>

6. Other oxidation states almost always can be determined by applying these rules; thus:

